MATERIAL SAFETY DATA SHEET

PARAFORMALDEHYDE

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Paraformaldehyde grade 96±1%
(Prill & Powder)

Synonym: Polyformaldehyde, ; Polyoxymethylene;
Trioxymethylene

Empirical Formula: HO-(C-H2-O)n-H

UN No: 2213, Flammable Solid
CAS#: 30525-89-4
RTECS: RV0540000
Hazchem Code: 1Z

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City 31951
Kingdom of Saudi Arabia

www.chemanol.com

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flammable solid. Harmful if inhaled. May cause allergic skin reaction. May be harmful if swallowed. Target Organs: Respiratory system, eyes and skin.

POTENTIAL HEALTH EFFECTS

Eye: May result in corneal injury or blindness. Causes severe eye irritation, burns, redness and watering.

Skin: May cause skin sensitization, hives, severe skin irritation and possible burns. Contact with dust causes drying, cracking, and scaling of the skin. The amount of tissue damage depends on length of contact.

Ingestion: May be harmful if swallowed. May cause severe digestive tract irritation with inflammation of the mouth, throat and stomach, Symptoms may include: headache, nausea, vomiting, diarrhea, fatigue, stupor, and coma. Prolonged ingestion may affect the kidneys.

Inhalation: May cause severe irritation of the upper respiratory tract with pain, burns, and inflammation of the lining of the nose, throat and lungs. Inhalation of high concentrations may cause loss of smell, pulmonary edema, lung damage, choking, unconsciousness or death. Repeated or prolonged inhalation may cause asthma.

SECTION III: COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraformaldehyde</td>
<td>30525-89-4</td>
<td>96±1%</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

**Eyes:** Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes). Cold water may be used, check for & remove any contact lenses.

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. May use disinfectant soap. Cover the irritated skin with an emollient/anti-bacterial cream.

**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cup of milk or water with some citrus juice. Never give anything by mouth to an unconscious person. Get medical aid immediately. Loosen tight clothing.

**Inhalation:** Remove from exposure and move to fresh air. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. Get medical aid immediately.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** Flammable solid. Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes. May re-ignite after fire is extinguished. May burn rapidly with flare-burning effect. May explode with explosive violence. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH approved or equivalent and full protective gear.

**Auto ignition Temperature:** 300 deg C (572.00 deg F)

**Flash Point:** Above 71 deg C (160 deg F) closed cup

**Flammable Limits, Lower:** 7.00 vol. %

**Flammable Limits, Upper:** 73.00 vol. %

**Dust Explosion Lower Explosive Limit :** 40g/m³

**Minimum Ignition Energy:** 20mJ

**NFPA Rating (estimated):** Health: 3; Flammable: 2; Instability: 0

SECTION VI : ACCIDENT RELEASE MEASURES

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam or water spray may be used. Prevent entry into sewer, basements or confined areas. Dike if needed.

SECTION VII : HANDLING AND STORAGE

**Handling:** Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Wear suitable respiratory equipment in case of insufficient ventilation. Minimize dust generation and accumulation. Do not get on skin or in eyes. Do not ingest or inhale.

**Storage:** Keep away from heat, flame or ignition sources. Smoking is strictly prohibited. Store in a cool, dry, well-ventilated area away from incompatible substances such as oxidizing agent, reducing agent, acids, & strong base. Keep containers tightly closed. The appropriate type of FIBC with anti-static features and grounding provision is to be used for all type of bagging / collection / storage of paraformaldehyde powder.”
SECTION VIII : EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use process enclosures.

EXPOSURE LIMITS:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA – Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraformaldehyde</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PEL’s:

Paraformaldehyde: No OSHA Vacated PELs are listed for this chemical.

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure, boots.

Clothing: Wear appropriate protective clothing to prevent skin exposure, synthetic apron.

Respirators: Approved/certified vapor and dust respirator. Self contained breathing apparatus, if needed. A respiratory protection program that meets OSHA’s 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 is to be followed whenever workplace conditions warrant respirator use.

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Solid (free flowing granules, prill or fine powder.)

Odor: Pungent. (Slight.)

Taste: Not available.

Color: White.

pH of 10% aqueous solution: 3 - 7

Boiling Point: Not available

Viscosity: Not available

Melting Point: 120 – 170 deg. C

Decomposition temperature: 260 C

Critical Temperature: Not available.

Specific Gravity: Density: 1.46 (Water = 1)

Vapor Pressure: 1.2 mm Hg @ 25 deg C

Vapor Density: 1.03 (Air = 1)

Solubility: Sparingly soluble in cold water. Soluble in hot water
SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable, however, can decompose above 260°C.

Conditions to Avoid: Dust generation, temperatures above 160°C, ignition sources (spark, flame, Friction), incompatible material.

Incompatibilities with Other Materials: Strong oxidizing agents, strong reducing agents, acids, strong bases, anhydrides, liquid oxygen, isocyanates, bronze, brass, copper, copper alloys.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, formaldehyde.

Hazardous Polymerization: Will not occur.

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: RV0540000

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

Acute oral toxicity (LD50): 800 mg/kg [Rat].
Acute inhalation toxicity of the dust (LC50): 1070 mg/m³ hour [Rat].

Lowest Published Lethal Dose:
LDL [Rabbit] - Route: skin; Dose: 10000 mg/kg.

Toxicity to Human (Chronic Effects):

Neurotoxicity: No information available.

Mutagenicity: The data were insufficient to adequately evaluate the mutagenic potential of this compound.

Carcinogenicity: Not listed by ACGIH or IARC.

Epidemiology: The epidemiological studies provide inadequate evidence to assess the carcinogenicity of formaldehyde in man.

Teratogenicity: No teratogenic effects were observed. The data were insufficient to adequately evaluate the teratogenic potential of this compound.

Reproductive effects: None identified.

Other Studies: Standard Draize test : Administration onto the skin (rabbit) = 500 mg / 24 hrs(severe), Standard Draize test : Administration onto the eye (rabbit) = 100 mg (severe),

SECTION XII : ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Channel catfish: TLm = 32 ppm; 24 Hr; Fresh water (Unspecified). Paraformaldehyde hydrolyzes as it dissolves in water, and its solutions behave like methanol-free formaldehyde solutions. Formaldehyde forms a strongly acidic aqueous solution, and this property may cause adverse environmental effects. It is readily biodegradable and it is not likely to bio-concentrate.
SECTION XIII: DISPOSAL CONSIDERATION

Waste must be disposed of in accordance with local environmental control regulations or USEPA guidelines using a registered waste disposal contractor.

SECTION XIV: TRANSPORT INFORMATION

US DOT

Shipping Name: PARAFORMALDEHYDE, Hazard Class: 4.1, UN Number: UN 2213, Packing Group: III, Flammable solid.

IMDG code- Page 4164

SPECIAL PROVISIONS FOR TRANSPORT: Not available

SECTION XV: REGULATORY INFORMATION

HMIS (U.S.A)

Health Hazard: 3
Fire Hazard: 2
Reactivity: 0
Personal Protection: J

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):

Health: 3
Flammability: 2
Reactivity: 0

TSCA
CAS#: 30525-89-4 is listed on the TSCA inventory.

SARA
Section 313
No chemicals are reportable under section 313

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.

European Labeling in Accordance with EC Directives

Hazard Symbols: XN
Risk Phrases:
R 20/22 Harmful by inhalation and if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 40 Limited evidence of a carcinogenic effect.
R 43 May cause sensitization by skin contact.
Safety Phrases:
S 24 Avoid contact with skin.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/40 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CANADA
CAS# 30525-89-4 is listed on Canada’s DSL list. This product has a WHMIS classification of B4,D2B
CAS# 30525-89-4 is listed on Canada’s Ingredient Disclosure List
EINECS : Unlisted

GLOBALLY HARMONIZED SYSTEM (GHS)

GHS Pictogram :

Signal Word : DANGER

Hazard Statements
H228 : Flammable Solid
H315 : Causes skin irritation
H319 : Causes serious eye irritation
H332 : Harmful If inhaled.
H302: Harmful if swallowed.
H370 : Cause damage to organs (lung); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)
H402 : Harmful to Aquatic Life
H412 : Harmful to aquatic life with long lasting effects

Precautionary Statements
P102: Keep out of reach of children.
P210 : Keep away from heat/sparks/open flame/hot surfaces.-No smoking.
P240 : Ground/Bond Container and receiving equipment.
P241 : Use explosion proof electrical/lighting/ventilating equipment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+ P313 : If skin irritation or rash occurs : Get medical advice /attention.
P370+P378 : In case of fire use Water spray/foam/DCP for extinguion.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.

Supplementary information
Dust at sufficient concentration can form explosive mixture with air.
### SECTION XVI: OTHER INFORMATION

**References:** Not available.

**Other Special considerations:** Not available.

Information contact: Technical services Department.  
For any enquiry/comment regarding this Material safety Data sheet,  
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
MONOMETHYLAMINE SOLUTION

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: MONOMETHYLAMINE SOLUTION
Synonym: Methanamine, MMA
Use: Catalyst, Agricultural chemical manufacture Industry, Solvent
Empirical Formula: CH3NH2
UN No: 1235
CAS#: 74-89-5
EINECS#: 200-820-0
Hazchem Code: 2WE

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monomethylamine</td>
<td>74-89-5</td>
<td>40 % min</td>
</tr>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>60 % max</td>
</tr>
</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Highly flammable. Irritant to eyes, skin and mucous membranes. Inhalation may result in chemical pneumonitis & pulmonary edema.

F+, C, Xn; R12-20/22-34
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: 14 Deg F (-10 Deg C)
Explosion Limits, Lower: 4.9 %
Explosion Limits, Upper: 20.9 %
NFPA Rating (estimated): Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature: 806 Deg F (430 Deg C)
Explosion sensitivity to static electricity: Yes
Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen
Extinguishing Media: Carbon dioxide, dry chemical powder.
Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel a considerable distance to a source of ignition. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Be careful that the product is not present at a concentration level above TLV.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO tank containers – Type T 11 (IMO 1)

Handling: Wear appropriate NIOSH /MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/trap in the discharge line to prevent hazardous back flow.

Storage: Carbon steel, Stainless steel & Monel are acceptable for use with monomethylamine. Most other metals are not compatible particularly silver, copper & its alloys, tin, nickel, zinc & its alloys. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit. Subject to storage regulations: US OSHA 29 CFR 1910.101

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS:  

<table>
<thead>
<tr>
<th></th>
<th>ACGIH</th>
<th>TLV-STEI</th>
<th>TLV-TWA</th>
<th>15 ppm, 5 ppm</th>
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</thead>
<tbody>
<tr>
<td>NIOSH</td>
<td>TWA</td>
<td>10 ppm(12 mg/m3), 10 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td>TWA</td>
<td>10 ppm(12 mg/m3),</td>
<td></td>
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<tr>
<td>OEL- UK</td>
<td>TWA</td>
<td>10 ppm(12 mg/m3),</td>
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</tr>
<tr>
<td>EH 40 Jan 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield

Skin: Butyl rubber, PVC or polyethylene.

Respirators: Wear appropriate NIOSH /OSHA approved respirator

Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless liquid
Odor: Fishy ammonical
Boiling point: 48°C
Melting point: -39°C
Relative density (water = 1): 0.89
Vapour pressure, kPa at 20°C: 31
Relative vapour density (air = 1): 1.08
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02
Flash point: -10°C
Auto-ignition temperature: 430°C

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat. Keep out of water supplies & sewers.
Incompatibilities with Other Materials: Acid, Copper, Mercury, Silver, Zinc & Oxidizing compound.
Hazardous reaction Product: Carbon monoxide, Carbon dioxide, Nitrogen oxides

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: PF6300000

Routes of Entry: Skin contact, skin absorption, eye contact, inhalation, ingestion

Toxicity to Animals:
Oral LD50 = 100 - 200 mg/Kg (10% solution in rat)
Inhalation LC 50 = 5000 ppm/1 hr (rat)

Acute Health Effects

Toxic: Inhalation
Moderately toxic: Ingestion

Skin: Irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.

Eyes: Corrosive & irritating to eyes. Mild concentration can cause conjunctivitis. Contact with high concentration of vapour causes painful burn & ulcerations. May cause blindness.
Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause
shortness of breath, headache, nausea & vomiting.
Ingestion: Dimethylamine is a poison by ingestion.
Toxicity to Human (chronic effect) Carcinogenicity:
OSHA: Not classified
NTP: Not classified
IARC: Not classified
Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available

## SECTION XII: ECOLOGICAL INFORMATION

### Ecological Information

EC50/48H/daphnia magna = 163 mg/l

### Mobility

Soluble in water

### Persistence and Degradability

According to the result of tests on biodegradability this product is considered as being readily biodegradable.

### Bioaccumulative Potential

Bio concentration Factor (BCF) = 0.3

## SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>U.S DOT/ Transport by sea (IMDG-Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product shipping Name Monomethylamine</td>
</tr>
<tr>
<td>2</td>
<td>Class 3</td>
</tr>
<tr>
<td>3</td>
<td>Identification no. UN1235</td>
</tr>
<tr>
<td>4</td>
<td>Packing group II</td>
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<tr>
<td>5</td>
<td>Code no. 2157</td>
</tr>
</tbody>
</table>

SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 3
Fire Hazard: 4
Reactivity: 0
Personal Protection: C

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health: 3
Flammability: 4
Reactivity: 0
Specific Hazard:

Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monomethylamine</td>
<td>74-89-5</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives Hazard symbol
F+: Extremely Flammable

C: Corrosive

Risk Statements:
12 - 20 / 22 - 34

Safety Statements:
1/2 - 3-16-26-29-36 / 37/39-45

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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Material Safety Data Sheet
Acetaldehyde MSDS

Section 1: Chemical Product and Company Identification

Product Name: Acetaldehyde
Catalog Codes: SLA1309
CAS#: 75-07-0
RTECS: AB1925000
TSCA: TSCA 8(b) inventory: Acetaldehyde
Cl#: Not applicable.
Synonym: Ethyl Aldehyde; Ethanal; Acetic Aldehyde
Chemical Name: Acetaldehyde
Chemical Formula: CH₃CHO

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

Section 2: Composition and Information on Ingredients

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde</td>
<td>75-07-0</td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients: Acetaldehyde: ORAL (LD50): Acute: 661 mg/kg [Rat.], 900 mg/kg [Mouse]. DERMAL (LD50): Acute: 3540 mg/kg [Rabbit]. VAPOR (LC50): Acute: 13300 ppm 4 hours [Rat]. 23000 mg/m³ 4 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Hazardous in case of skin contact (irritant). Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to liver. Repeated or prolonged exposure to the substance can produce target organs damage.
Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.


Flash Points:
CLOSED CUP: -38°C (-36.4°F) (Buvardi (1996); Clayton and Clayton, 1993; Lewis, 1996); -38.89 deg. C (American Conference of Governmental Industrial Hygienists) OPEN CUP: -40°C (-40°F) (Lewis, 1997; ACGIH, 1996 (Cleveland)).

Flammable Limits:
LOWER: 4% UPPER: 55% (Clayton; Patty's Industrial Hygiene and Toxicology); 57% (American Conference of Governmental Industrial Hygienists); 60% (National Fire Protection Association)

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Extremely flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, auto ignition or explosion.

Special Remarks on Fire Hazards: When heated to decomposition it emits acrid smoke and fumes.

Special Remarks on Explosion Hazards:
Hazardous or explosive polymerization may occur with acids, alkaline materials, heat, strong bases, trace metals. Forms explosive peroxides on exposure to air, heat or sunlight.
Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, combustible materials, organic materials, metals, acids, alkalis.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 25 (ppm) from ACGIH (TLV) [United States] TWA: 200 STEL: 150 (ppm) from OSHA (PEL) [United States] TWA: 360 STEL: 270 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Fuming liquid.)
Odor: Fruity. Pungent. (Strong.)
Taste: Leafy green
Molecular Weight: 44.05 g/mole
Color: Colorless.

pH (1% soln/ water): Not available.
Boiling Point: 21°C (69.8°F)
Melting Point: -123.5°C (-190.3°F)
Critical Temperature: 188°C (370.4°F)

Specific Gravity: 0.78 (Water = 1)
Vapor Pressure: 101.3 kPa (@ 20°C)
Vapor Density: 1.52 (Air = 1)
Volatile: Not available.
Odor Threshold: 0.21 ppm
Water/Oil Dist. Coefficient : NA.
Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Easily soluble in cold water, hot water. Soluble in diethyl ether, acetone. Miscible with benzene, gasoline, solvent naphtha, toluene, xylene, turpentine. Solubility in water: 1000 g/l @ 25 deg.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks), incompatible materials

Incompatibility with various substances:
Highly reactive with metals, acids, alkalis. Reactive with oxidizing agents, combustible materials, organic materials.

Corrosively: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Reacts with oxidizing materials, halogens, amines, strong alkalis (bases), and acids, cobalt acetate, phenols, ketones, ammonia, hydrogen cyanide, hydrogen sulfide, hydrogen peroxide, mercury (II) salts (chlorate or perchlorate), acid anhydrides, alcohols, iodine, isocyanates, phosphorus, phosphorus isocyanate, tris(2-chlorobutyl)amine. It can slowly polymerize to paraldehyde. Polymerization may occur in presence of acid traces causing exothermic reaction, increased vessel pressure, fire, and explosion. Impure material polymerizes readily in presence of traces of metals (iron) or acids. Acetaldehyde is polymerized violently by concentrated sulfuric acid. Acetaldehyde can dissolve rubber.

Special Remarks on Corrosivity: Not available.
Polymerization: Not available.
### Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 661 mg/kg [Rat.]. Acute dermal toxicity (LD50): 3540 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 23000 mg/m3 4 hours [Mouse].

**Chronic Effects on Humans:**
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. May cause damage to the following organs: liver.

**Other Toxic Effects on Humans:**
Hazardous in case of ingestion, of inhalation (lung irritant). Slightly hazardous in case of skin contact (irritant, permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**
May cause adverse reproductive effects and birth defects(teratogenic) based on animal test data May affect genetic material (mutagenic). May cause cancer based on animal test data

**Special Remarks on other Toxic Effects on Humans:**
Acute Potential Health Effects: Skin: Causes mild skin irritation. It can be absorbed through intact skin. Eyes: Causes severe eye irritation. Eye splashes produce painful but superficial corneal injuries which heal rapidly. Inhalation: It causes upper respiratory tract and mucous membrane irritation. It decreases the amount of pulmonary macrophages. It may cause bronchitis. It may cause pulmonary edema, often the cause of delayed death. It may affect respiration (dyspnea) and respiratory arrest and death may occur. It may affect behavior/central nervous and cause central nervous system depression. Irritation usually prevents voluntary exposure to airborne concentrations high enough to cause CNS depression, although this effect has occurred in experimental animals. It may also affect the peripheral nervous system and cardiovascular system (hypotension or hypertension, tachycardia, bradycardia), kidneys (albuminuria) Chronic Potential Health Effects: Skin: Prolonged direct skin contact causes erythema and burns. Repeated exposure may cause dermatitis secondary to primary irritation or sensitization. Ingestion: Symptoms of chronic Acetaldehyde exposure may resemble those of chronic alcoholism. Acetaldehyde is the a metabolite of ethanol in humans and has been implicated as the active agent damaging the liver in ethanol-induced liver disease.

### Section 12: Ecological Information

**Eco toxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.
Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.
Identification: Acetaldehyde UNNA: 1089 PG: I
Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):

HMIS (U.S.A.):
- Health Hazard: 2
- Fire Hazard: 4
- Reactivity: 0
- Personal Protection:

National Fire Protection Association (U.S.A.):
- Health: 3
- Flammability: 4

FORM#MKT/F10Q REV.00
Issue Date 10/10/ 2016
Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves (impervious). Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

effects. S16- Keep away from sources of ignition - No smoking. S33- Take precautionary measures against static discharges. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

Section 16: Other Information

References:

Other Special considerations: Not available.

Information contact: QC & PD / Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet, Kindly contact: Dr.E.H.Khan , drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET

DIMETHYLAMINE ANHYDROUS

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DIMETHYLAMINE ANHYDROUS
Synonym: N- Methylmethanamine
Use: Catalyst, electronic / explosive / pharmaceutical Industry, gas/oil treatment, personal care
Molecular Formula: C2H7N
UN No: 1032
CAS#: 124-40-3
EINECS#: 204-697-4
Hazchem Code: 2PE

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>99.6 % min</td>
</tr>
<tr>
<td>Monomethylamine</td>
<td>74 – 89 - 5</td>
<td>0.2 % max</td>
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<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
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</tr>
<tr>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>0.05 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>0.2 % max</td>
</tr>
</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Flammable gas. Irritant to eyes, skin and respiratory track. Contact with high vapour concentration causes severe burns and may cause tissue destruction. May cause flash fire.
F+, Xn, Xi; R12-20-37/38-41
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: - 18 Deg C Explosion

Limits, Lower: 2.8 % Explosion

Limits, Upper: 14.4 %

NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0

Auto ignition temperature : 402 Deg C(gas)

Explosion sensitivity to static electricity : Yes

Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen

Extinguishing Media: Carbon dioxide, dry chemical powder.

Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel along the ground; distant ignition is possible. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Be careful that the product is not present at a concentration level above TLV.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO Gas Tank Containers – Type T 50 (IMO 5)

Handling: Wear appropriate NIOSH / MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/trap in the discharge line to prevent hazardous back flow.

Storage: Carbon steel, stainless steel & Monel are acceptable for use with dimethylamine. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit.

SECTION VIII : EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS: ACGIH TLV-STEL TLV-TWA

NIOSH TWA 10 ppm (18 mg/m3), 10 hours
OSHA TWA 10 ppm (18 mg/m3),
OEL- UK TWA STEL 2 ppm (3.8 mg/m3), 6 ppm (11 mg/m3),

EH 40 Jan 2000

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield
Skin: Butyl rubber, PVC or polyethylene.
Respirators: Wear appropriate NIOSH / MSHA approved respirator
Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless gas
Odor: Fishy, Ammonia odour
Vapor Density (Air=1) : 1.6
Vapor Pressure: 206 kPa @ 20 Deg C
Specific Gravity: 0.66
Freezing point: -92.2 deg C
Solubility: 23.7 in water, g/100 ml at 20 deg C
Boiling Point: 6.9 Deg C
Melting point: -92 Deg C

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat.
Incompatibilities with Other Materials: Galvanised iron, Copper, mercury, Silver, Tin, Zinc & Oxidizing compound.
Hazardous reaction Product: Ammonia

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: IP8750000

Routes of Entry: Skin contact, eye contact, inhalation, ingestion

Toxicity to Animals:
Oral LD50 = 698 mg/Kg(rat)
Inhalation LC 50 > 5.8 mg/L/4H(rat)
Dermal LD 50 = 3900 mg/Kg(rat)

Acute Health Effects

Toxic: Inhalation
Moderately toxic: Ingestion
Skin: Irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.
Eyes: Mild concentration can cause conjunctivitis. Contact with high concentration of vapour causes painful burn & ulcerations. May cause blindness.
Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause shortness of breath, headache, nausea & vomiting.
Ingestion: Dimethylamine is a poison by ingestion.

Toxicity to Human (chronic effect) Carcinogenicity:

ACGIH: A4-not classified as human carcinogen
OSHA: No classified
NTP: No classified
IARC: Not classified
Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information
Toxicity to fish  LC50: 118 mg/l
EC50/48h/daphnia =(40%)88.70 mg/l
LC50/96h/algae=9 mg/l
Mobility
Soluble in water
Persistence and Degradability
According to the result of tests on biodegradability this product is considered as being readily biodegradable.
Bioaccumulative Potential
Bio concentration Factor(BCF)=0.3

SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
### SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>DOT/ Transport by sea (IMDG-Code)</th>
<th>Product shipping Name</th>
<th>Class</th>
<th>Identification no.</th>
<th>Packing group</th>
<th>Code no.</th>
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<tr>
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<td>Dimethylamine, anhydrous</td>
<td>2.1</td>
<td>UN1032</td>
<td>II</td>
<td>3118</td>
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<tr>
<td>2</td>
<td></td>
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<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### SECTION XV : REGULATORY INFORMATION

HMIS
- Health Hazard: 3
- Fire Hazard: 4
- Reactivity: 0
- Personal Protection: H

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
- Health: 3
- Flammability: 4
- Reactivity: 0
- Specific Hazard:

**Global Chemical Inventory status**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
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<tbody>
<tr>
<td>1</td>
<td>Dimethyl amine</td>
<td>124-40-3</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives

**Hazard symbol**

F+: Extremely Flammable
Xn: Harmful

Risk Statements:
12 – 20 – 37/38 - 41

Safety Statements:
2 -16-26-39

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material Safety Data sheet,
Kindly contact: drkhan@chemanol.com

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# MATERIAL SAFETY DATA SHEET.

## HEXAMETHYLENE TETRAMINE

### SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>HEXAMETHYLENE TETRAMINE</th>
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<tbody>
<tr>
<td>Synonym:</td>
<td>Hexamine, Methenamine</td>
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<tr>
<td>UN No:</td>
<td>1328</td>
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<tr>
<td>CAS#:</td>
<td>100-97-0</td>
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<tr>
<td>EINECS number:</td>
<td>202-905-8</td>
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<td>Hazchem Code:</td>
<td>1Z</td>
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<tr>
<td>REACH Reg. No.:</td>
<td>01-2119474895-20-0003</td>
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<tr>
<td>Use:</td>
<td>Fertilizer, Pharmaceutical, Explosive Industry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Tel. No: 00966-13-343-8320</td>
</tr>
<tr>
<td>Emergency Contact No: 00966-13-343-8999</td>
</tr>
</tbody>
</table>

### SECTION II : HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Flammable & moderately toxic. Mild poison by sub-cutaneous route. May be ignited by friction, heat or spark. Dust at sufficient concentration can form explosive mixture with air.

#### POTENTIAL HEALTH EFFECTS

- **Eye:** Exposure to high concentrations causes irritation
- **Skin:** May cause rashes to skin.
- **Inhalation:** Inhaling can irritate nose, throat & lungs causing coughing, wheezing & shortness of breath.

**Classification:** Flammable solids

<table>
<thead>
<tr>
<th>Risk phrases</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>R 11</td>
<td>Highly flammable</td>
</tr>
<tr>
<td>R 43</td>
<td>May cause sensitization by skin contact</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety phrases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S 16</td>
<td>Keep away from source of ignition- no smoking</td>
</tr>
<tr>
<td>S 22</td>
<td>Do not breathe dust</td>
</tr>
<tr>
<td>S 37</td>
<td>Wear suitable gloves</td>
</tr>
<tr>
<td>S 24</td>
<td>Avoid contact with skin</td>
</tr>
</tbody>
</table>

---

**Issue Date:** 01/08/2014

**Supersedes:** 01/08/2011
Symbols and Indication of Danger:

+ F Highly Flammable
+ Xi Irritant

GHS pictogram

Signal word: WARNING

Hazard Statements

H228: Flammable Solid
H317: May cause an allergic skin reaction

Precautionary Statements

P210: Keep away from heat/sparks/open flame/hot surfaces.-No smoking. P240: Ground/Bond Container and receiving equipment.
P241: Use explosion proof electrical/lighting/ventilating equipment.
P261: Avoid breathing dust.
P272: Contaminated work clothing should not be allowed out of the workplace. P280: Wear protective gloves/protective clothing/eye protection/face protection. P302+P352: IF ON SKIN Wash with plenty of soap and water.
P363: Wash contaminated clothing before reuse..
P333+P313: If skin irritation or rash occurs: Get medical advice /attention.
P370+P378: In case of fire use Water spray/foam/DCP for extinction.
P501: Dispose of contents/container in accordance with local/regional/national International regulation.

SECTION III: COMPOSITION AND INFORMATION ON INGREDIENTS

Formula: C₆H₁₂N₄
Mol. Wt.: 140.22
Proportion: 98.2% min (stab), 99.5% min (unstab)
Metal Content: N.T
SECTION IV : FIRST AID MEASURES

General Advice: In case of accident or if you feel unwell, seek medical advice immediately. (show the level where possible).

Eyes: Contact with eyes may produce irritation. Wash gently with clean water.

Skin: Contact with skin may cause rash. Wash affected skin with water.

Ingestion: If taken orally, make the victim drink large quantities of water or milk. Do not introduce vomiting without medical advice.

Inhalation: In case of inhalation move patient to fresh air. Begin rescue breathing & CPR in case of a complicated scenario. Transfer to a medical facility.

SECTION V : FIRE AND EXPLOSION DATA

Fire and Explosion Hazard: Flammable /combustible material. May be ignited by friction, heat, sparks or flame. Burns rapidly with flare burning effect. Powders, dust shavings, borings, turnings, or cutting may explode or burn with explosive violence. May re-ignite after fire is extinguished. Concentrated dust may form a cloud & produce an explosion.

Auto ignition Temperature: 390°C

Flash Point (Closed Cup): 250°C

Dust Explosion
Lower Explosive Limit : 20g/m³ (dust)

NFPA Rating (estimated) : Health: 2, Flammable: 1, Instability: 0

Extinguishing Media: Water spray, foam, dry chemical powder and carbon dioxide. Sand in presence of electrical equipment.

Fire fighting procedure: Keep containers cool by spraying water. Fire fighters should wear self-contained breathing apparatus and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURES

Evacuate personnel. Eliminate all ignition sources. To clean up spill, the OSHA hazardous waste operations & emergency response standard (29 CFR 1910.120) may apply. Do not wash into sewer or surface water.
### SECTION VII: HANDLING AND STORAGE

**Storage containers:** Polypropylene woven bags with loose inner Polyethylene liner: 25 Kgs, 500 kgs & 1000 kgs net.

**Storage recommendations & precautions:** As it is sensitive to moisture it should be stored in dry cool and well-ventilated area (relative humidity below 60%). Keep away from any ignition sources, moisture, combustible & incompatible material. Smoking is strictly prohibited in storage area. Use only non-sparking tools & equipment.

---

### SECTION VIII: EXPOSURE CONTROL /PERSONAL PROTECTION

**Engineering Measures:** Ensure adequate ventilation, especially in confined areas.

**Personal Protection**
- **Hand:** PVC disposable gloves.
- **Eyes:** Safety goggles or face shield.
- **Skin & Body:** Impervious long sleeved clothing.
- **Respirators:** Wear dust mask or respirator. If > 30 mg/m3, use SCBA.

**Exposure limits**
- PAC-1=30mg/m³ (mild health effect)
- PAC-2=50mg/m³ (serious health effect)
- PAC-3=500mg/m³ (life threatening health effect)

---

### SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

**Appearance & Odor:** White crystalline Powder & slight odor of amine

**pH of 10% aq. solution:** 8 – 9

**Vapor Pressure:** 0.0035 mbar @20°C

**Bulk Density:** 700-800 gm/liter

**Solubility in water:** Soluble

**Specific gravity:** 1.33 at 20°C
SECTION X : STABILITY AND REACTIVITY

Stability: Stable

Hazardous Decomposition Products: Nitrogen Oxides(NOX) / Ammonia / CN- Formaldehyde

Incompatibility(Materials to avoid): React with oxidizing materials, explosive reaction with Acetic Acid + Acetic Unhydride + Ammonium nitrate + Nitric Acid. Reaction with nitric Acid + Acetic Unhydride forms the military explosives RDX & HMX. Reacts violently with Na₂O₂, strong oxidizing agents.

Conditions to Avoid: Avoid direct heat and naked flames. Ensure that equipment is earthed. Do not expose to air or moisture over prolonged period.

Recommended Material for Equipment: Stainless Steel

SECTION XI : TOXICOLOGICAL INFORMATION

Acute Toxicity : RTECS Number : MN4725000
Oral, LD 50 Mouse : 569 mg / kg

Chronic Toxicity : Chronic exposure may cause nausea & vomiting, higher exposure causes unconsciousness.

Local effect : Symptoms of overexposure may be headache, dizziness, tiredness, nausea & vomiting.

Carcinogenic effect : No data available

Mutagenic effect : No data available

Reproductive toxicity: No data available. May be harmful in case of pregnancy

SECTION XII: ECOLOGICAL INFORMATION

Mobility: No data available
Bio accumulation: No data available
Eco Toxicity Effect: No data available
Aquatic Toxicity: May cause long term adverse effects in the aquatic environment

SECTION XIII : DISPOSAL CONSIDERATION

Any waste or contaminated spills should be collected and disposed off in accordance with local and statutory regulations using a registered waste disposal contractor. Waste disposal is possible by total incineration. Do not reuse empty containers.
SECTION XIV : TRANSPORT INFORMATION

Proper Shipping Name: Hexamethylene Tetramine
Packaging: Polypropylene sacks with liner.
Transport classification: Flammable solid.
DOT number: UN 1328
IMO class: 4.1 flammable solids.
IMDG code (page no): 4150
Packing group: III
Emergency action code (Hazchem code): 1 Z

SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 2
Fire Hazard: 1
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
Health : 2
Flammability: 1
Reactivity: 0
Specific Hazard:

OSHA : Hazardous by definition of hazard communication standard ( 29CFR1910.1200)
WHMIS (CANADA) : Class B-4 Flammable solid
                      Class D-2B material causing other toxic effect(TOXIC)
EU EINECS List: 202-905-8
AICS (Australia): Present
Inventory (China): Present
KECL (Korea): KE-18615
PICCS (Philippines): Present

SECTION XVI : OTHER INFORMATION

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
# MATERIAL SAFETY DATA SHEET

## MONOMETHYLAMINE ANHYDROUS

### SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>MONOMETHYLAMINE ANHYDROUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>Methylamine, MMA</td>
</tr>
<tr>
<td>Use:</td>
<td>Catalyst, Agricultural chemical manufacture Industry, Solvent</td>
</tr>
<tr>
<td>Empirical Formula:</td>
<td>CH3NH2</td>
</tr>
<tr>
<td>UN No:</td>
<td>1061</td>
</tr>
<tr>
<td>CAS#:</td>
<td>74-89-5</td>
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<tr>
<td>EINECS#:</td>
<td>200-820-0</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>2PE</td>
</tr>
<tr>
<td>Contact Information:</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td></td>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Tel. No:</td>
<td>00966-13-343-8320</td>
</tr>
<tr>
<td>Emergency Contact No:</td>
<td>00966-13-343-8999</td>
</tr>
</tbody>
</table>

### SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
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</thead>
<tbody>
<tr>
<td>Monomethylamine</td>
<td>74-89-5</td>
<td>99.6 % min</td>
</tr>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>0.2 % max</td>
</tr>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
<td>0.2 % max</td>
</tr>
<tr>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>0.1 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>0.2 % max</td>
</tr>
</tbody>
</table>

### SECTION III : HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW**

Highly flammable. Irritant to eyes, skin and mucous membranes. Inhalation may result in chemical pneumonitis & pulmonary edema.

F+, Xn, Xi; R12-20-37/38-41
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Explosion Limits, Lower: 4.9 %
Explosion Limits, Upper: 20.9 %
NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature : 806 Deg F(430 Deg C)
Explosion sensitivity to static electricity : Yes

Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen

Extinguishing Media: Carbon dioxide, dry chemical powder.

Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing. If water is used as extinguishing media, recognize that aqueous solutions of Monomethylamines are also flammable.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel a considerable distance to a source of ignition. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Be careful that the product is not present at a concentration level above TLV.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO Gas Tank Containers – Type T 50 (IMO 5)

Handling: Wear appropriate NIOSH / MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/ trap in the discharge line to prevent hazardous back flow.

Storage: Carbon steel, Stainless steel & Monel are acceptable for use with monomethylamine. Most other metals are not compatible particularly silver, copper & its alloys, tin, nickel, zinc & its alloys. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit. Subject to storage regulations: US OSHA 29 CFR 1910.101

SECTION VIII : EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS:  
AGCIH TLV-STEL 15 ppm,  
AGCIH TLV-TWA 5 ppm  
NIOSH TWA 10 ppm(12 mg/m3), 10 hours  
OSHA TWA 10 ppm(12 mg/m3),  
OEL- UK TWA 10 ppm(12 mg/m3),  
EH 40 Jan 2000

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield.

Skin: Butyl rubber, PVC or polyethylene.

Respirators: Wear appropriate NIOSH / OSHA approved respirator.

Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath
SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless gas  
Odor: Fishy, Ammonia odour  
Vapor Density at STP (Air=1) : 1.07  
Vapor Pressure: 304 kPa @ 20 Deg C  
Specific Gravity: 0.67  
Freezing point: -93 deg C  
Solubility in water: Very good  
Boiling Point: -6 Deg C Melting point: -94 Deg C  
Relative Density (water=1): 0.7

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.  
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat. Keep out of water supplies & sewers.  
Incompatibilities with Other Materials: Acid, Copper, Mercury, Silver, Zinc & Oxidizing compound.  
Hazardous reaction Product: Carbon monoxide, Carbon dioxide, Nitrogen oxides

SECTION XI: TOXICOLOGICAL INFORMATION

RTECS: PF6300000  
Routes of Entry: Skin contact, skin absorption, eye contact, inhalation, ingestion  
Toxicity to Animals:  
Oral LD50 = 100 - 200 mg/Kg (10% solution in rat)  
Inhalation LC 50 = 5000 ppm/1 hr (rat)  
Acute Health Effects  
Toxic: Inhalation  
Moderately toxic: Ingestion  
Skin: Irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.  
Eyes: Corrosive & irritating to eyes. Mild concentration can cause conjunctivitis.
Contact with high concentration of vapour causes painful burn & ulcerations. May cause blindness.
Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause shortness of breath, headache, nausea & vomiting.
Ingestion: Dimethylamine is a poison by ingestion.
Toxicity to Human (chronic effect) Carcinogenicity:
OSHA: Not classified
NTP: Not classified
IARC: Not classified
Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information
EC50/48H/daphnia magna = 163 mg/l
Mobility
Soluble in water
Persistence and Degradability
According to the result of tests on biodegradability this product is considered as being readily biodegradable.
Bioaccumulative Potential
Bio concentration Factor(BCF)=0.3

SECTION XIII: DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
### SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>U.S DOT/ Transport by sea (IMDG-Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product shipping Name</td>
</tr>
<tr>
<td>2</td>
<td>Class</td>
</tr>
<tr>
<td>3</td>
<td>Identification no.</td>
</tr>
<tr>
<td>4</td>
<td>Packing group</td>
</tr>
<tr>
<td>5</td>
<td>Code no.</td>
</tr>
</tbody>
</table>

- **1** Product shipping Name: Monomethylamine, anhydrous
- **2** Class: 2.1
- **3** Identification no.: UN1061
- **4** Packing group: II
- **5** Code no.: 2157

### SECTION XV : REGULATORY INFORMATION

#### HMIS
- **Health Hazard**: 3
- **Fire Hazard**: 4
- **Physical Hazard**: 0
- **Personal Protection**: C

#### NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
- (Estimated)
  - **Health**: 3
  - **Flammability**: 4
  - **Reactivity**: 0
  - **Specific Hazard:**

#### Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Dimethyl amine</td>
<td>74-89-5</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

- **European Labeling in Accordance with EC Directives**

#### Hazard symbol

- **F+**: Extremely Flammable
Xn: Harmful

Risk Statements:
12 – 20 – 37/38 - 41

Safety Statements:
2 -16-26-39

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
MONOMETHYLAMINE SOLUTION

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: MONOMETHYLAMINE SOLUTION
Synonym: Methanamine, MMA
Use: Catalyst, Agricultural chemical manufacture Industry, Solvent
Empirical Formula: CH3NH2
UN No: 1235
CAS#: 74-89-5
EINECS#: 200-820-0
Hazchem Code: 2WE

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II: COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
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<tbody>
<tr>
<td>Monomethylamine</td>
<td>74-89-5</td>
<td>40 % min</td>
</tr>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>60 % max</td>
</tr>
</tbody>
</table>

SECTION III: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Highly flammable. Irritant to eyes, skin and mucous membranes. Inhalation may result in chemical pneumonitis & pulmonary edema.

F+, C, Xn; R12-20/22-34
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: 14 Deg F(-10 Deg C)
Explosion Limits, Lower: 4.9 %
Explosion Limits, Upper: 20.9 %
NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature : 806 Deg F(430 Deg C)
Explosion sensitivity to static electricity : Yes
Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen
Extinguishing Media: Carbon dioxide, dry chemical powder.
Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel a considerable distance to a source of ignition. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Be careful that the product is not present at a concentration level above TLV.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO tank containers – Type T 11 (IMO 1)

Handling: Wear appropriate NIOSH /MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/trap in the discharge line to prevent hazardous back flow.

Storage: Carbon steel, Stainless steel & Monel are acceptable for use with monomethylamine. Most other metals are not compatible particularly silver, copper & its alloys, tin, nickel, zinc & its alloys. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit. Subject to storage regulations: US OSHA 29 CFR 1910.101

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS:

<table>
<thead>
<tr>
<th></th>
<th>ACGIH</th>
<th>TLV-STEL</th>
<th>TLV-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>15 ppm,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 ppm</td>
</tr>
<tr>
<td>NIOSH</td>
<td></td>
<td>TWA</td>
<td>10 ppm(12 mg/m3), 10 hours</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>TWA</td>
<td>10 ppm(12 mg/m3),</td>
</tr>
<tr>
<td>OEL- UK</td>
<td></td>
<td>TWA</td>
<td>10 ppm(12 mg/m3),</td>
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<tr>
<td>2000</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield

Skin: Butyl rubber, PVC or polyethylene.

Respirators: Wear appropriate NIOSH /OSHA approved respirator

Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless liquid
Odor: Fishy ammonical
Vapor Density at STP (Air=1) : 1.07
Vapor Pressure: 304 kPa @ 20 Deg C
Freezing point: - 93 deg C Solubility in water: Very good Boiling Point: - 6.3 Deg C
Melting point : -94 Deg C
Relative Density(water=1):0.7

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat. Keep out of water supplies & sewers.
Incompatibilities with Other Materials: Acid, Copper, Mercury, Silver, Zinc & Oxidizing compound.
Hazardous reaction Product: Carbon monoxide, Carbon dioxide, Nitrogen oxides

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: PF6300000

Routes of Entry: Skin contact, skin absorption, eye contact, inhalation, ingestion

Toxicity to Animals:
Oral LD50 = 100 - 200 mg/Kg( 10% solution in rat)
Inhalation LC 50 = 5000 ppm/1 hr (rat)

Acute Health Effects

Toxic: Inhalation
Moderately toxic: Ingestion

Skin: Irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.

Eyes: Corrosive & irritating to eyes. Mild concentration can cause conjunctivitis. Contact with high concentration of vapour causes painful burn & ulcerations. May cause blindness.

Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause
shortness of breath, headache, nausea & vomiting.

Ingestion: Dimethylamine is a poison by ingestion.

Toxicity to Human (chronic effect) Carcinogenicity:

OSHA: Not classified
NTP: Not classified
IARC: Not classified

Mutagenicity: No information available.

Teratogenicity: No information available

Reproductive effects: No information available

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information

EC50/48H/daphnia magna = 163 mg/l

Mobility

Soluble in water

Persistence and Degradability

According to the result of tests on biodegradability this product is considered as being readily biodegradable.

Bioaccumulative Potential

Bio concentration Factor (BCF) = 0.3

SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
### SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>U.S DOT/ Transport by sea (IMDG-Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product shipping Name Monomethylamine</td>
</tr>
<tr>
<td>2</td>
<td>Class 3</td>
</tr>
<tr>
<td>3</td>
<td>Identification no. UN1235</td>
</tr>
<tr>
<td>4</td>
<td>Packing group II</td>
</tr>
<tr>
<td>5</td>
<td>Code no. 2157</td>
</tr>
</tbody>
</table>

### SECTION XV : REGULATORY INFORMATION

**HMIS**
- Health Hazard: 3
- Fire Hazard: 4
- Reactivity: 0
- Personal Protection: C

**NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):**
(Estimated)
- Health: 3
- Flammability: 4
- Reactivity: 0
- Specific Hazard:

**Global Chemical Inventory status**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monomethylamine</td>
<td>74-89-5</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives [Hazard symbol](#)
F+: Extremely Flammable

C: Corrosive

Risk Statements:

12 - 20 / 22 - 34

Safety Statements:

1/2 - 3-16-26-29-36 / 37/39-45

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET

DIMETHYLAMINE 40% SOLUTION

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DIMETHYLAMINE
Synonym: N- Methylmethanamine
Use: Catalyst, electronic/ explosive /pharmaceutical Industry, gas/oil treatment, personal care
Molecular Formula: C2H7N
UN No: 1160
CAS#: 124-40-3
EINECS#: 204-697-4
Hazchem Code: 2WE

Contact Information:
Methanol Chemicals Company
(CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II: COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>40 % min</td>
</tr>
<tr>
<td>Monomethylamine</td>
<td>74 – 89 -5</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 -3</td>
<td>0.08 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>60 % max</td>
</tr>
</tbody>
</table>

SECTION III: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Highly flammable. Irritant to eyes, skin and respiratory track. Contact with the liquid or high vapour concentration causes severe burns and may cause tissue destruction. Poison by ingestion.
F+, C, Xn; R12-20/22-34
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Take off all contaminated cloths and shoes and wash before reuse. Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable liquid. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: - 18 Deg C Explosion
Limits, Lower: 2.8 % Explosion
Limits, Upper: 14.4 %

NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0

Auto ignition temperature : 402 Deg C(gas)
Explosion sensitivity to static electricity : Yes

Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen

Extinguishing Media: Carbon dioxide, dry chemical powder or foam.

Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spills: Evacuate area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel along the ground; distant ignition is
possible. Prevent entry into sewer, basement or confined area; dyke if needed. Be careful that the product is not present at a concentration level above TLV.

SECTION VII : HANDLING AND STORAGE

Storage containers: ISO tank containers – Type T 11 (IMO 1)
Handling: Wear appropriate NIOSH /MSHA approved respirator, chemical resistant cold insulating gloves, safety goggles, other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame.

Storage: Carbon steel, stainless steel & Monel are acceptable for use with Dimethylamine. Electrical equipment should be non sparking or explosion proof. Keep away from sources of ignition – no smoking. Ground all equipment containing material. Keep container in a cool, well-ventilated area. Avoid contact with acid. Keep container tightly closed.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS: ACGIH TLV- STEL 15 ppm, TLV-TWA 5 ppm

hours

NIOSH TWA 10 ppm(18 mg/m3), ≤ 0

OSHA TWA 10 ppm(18 mg/m3),

OEL- UK TWA STEL 2 ppm(3.8 mg/m3), 6 ppm (11 mg/m3),

EH 40 Jan 2000

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield
Skin: Butyl rubber, PVC or polyethylene.
Respirators: Wear appropriate NIOSH /MSHA approved respirator
Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless liquid
Odor: Strong Ammonical
pH of solution: Alkaline
Boiling Point: 6.9 Deg C
Melting point: -92 Deg C  
Vapor Density (Air=1): 1.6 (gas)  
Vapor Pressure: 206 kpa @ 20 Deg C  
Specific Gravity: 0.66  
Freezing point: -92.2 deg C  
Solubility: 23.7 in water, g/100 ml at 20 deg C

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable  
Conditions to Avoid: Avoid contact with acid. The substance is a medium strong base. Attacks plastics, rubber and coatings.  
Incompatibilities with Other Materials: Galvanized iron, Copper, Aluminum, Tin and Zinc.  
Reacts Violently With: Mercury causing fire & explosion hazard, Acids, Strong oxidants such as chlorine, Halogens, Nitrates, Permanganates, Nitric acid, Peroxides  
Hazardous reaction Product: Hazardous decomposition Product - Ammonia

SECTION XI: TOXICOLOGICAL INFORMATION

RTECS: IP8750000  
Routes of Entry: Skin contact, eye contact, inhalation, ingestion  
Toxicity to Animals:  
Oral LD50 = 698 mg/Kg (rat)  
Inhalation LC50 = 3 gm/m3/2 hr (rat)  
Irritation data = 50 mg/5 min eyes (rabbit)  
Acute Health Effects  
Skin: Corrosive & irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.  
Eyes: Mild concentration can cause conjunctivitis. Contact with liquid or high concentration of vapour causes painful burn & ulcerations. May cause blindness.  
Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause shortness of breath, headache, nausea & vomiting.  
Ingestion: Dimethylamine is a poison by ingestion.  
Toxicity to Human (chronic effect) Carcinogenicity:  
ACGIH: A4-not classified as human carcinogen  
OSHA: Not classified  
NTP: Not classified
IARC: Not classified
Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information

Toxicity to fish  LC50: 118 mg/l
EC50/48h/daphnia = (40%) 88.70 mg/l
LC50/96h/algae = 9 mg/l

Mobility
Soluble in water

Persistence and Degradability

According to the result of tests on biodegradability this product is considered as being readily biodegradable.

Bioaccumulative Potential
Bio concentration Factor (BCF) = 0.3

SECTION XIII: DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 262

SECTION XIV: TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Transport by sea (IMDG-Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product Name: Dimethyl amine</td>
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<tr>
<td>2</td>
<td>Class: 3</td>
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<td>Identification no.: UN1160</td>
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<td>4</td>
<td>Packing group: II</td>
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<td>5</td>
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</table>
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 3
Fire Hazard: 4
Reactivity: 0
Personal Protection: H

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 3
Flammability: 4
Reactivity: 0
Specific Hazard:

Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
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<tr>
<td>1</td>
<td>Dimethyl - amine</td>
<td>124-40-3</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives

Hazard symbol

F+: Extremely Flammable

C: Corrosive

Xn: Harmful

Risk Statements:
12 - 20 / 22 - 34

Safety Statements:
1/2 - 3-16-26-29-36 / 37/39-45
SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
DIMETHYLAMINE 45% SOLUTION

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: DMA-45
Synonym: N- Methylmethanamine
Use: Catalyst, electronic/ explosive /pharmaceutical Industry, gas/oil treatment, personal care
Molecular Formula: C2H7N
UN No: 1160
CAS#: 124-40-3
EINECS#: 204-697-4
Hazchem Code: 2WE

Contact Information:
Methanol Chemicals Company
(CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

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<th>CAS#</th>
<th>% by weight</th>
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<td>124-40-3</td>
<td>45 % min</td>
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<td>Monomethylamine</td>
<td>74 – 89 - 5</td>
<td>0.03 % max</td>
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<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 5</td>
<td>0.02 % max</td>
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<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>55 % max</td>
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</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Highly flammable. Irritant to eyes, skin and respiratory track. Contact with the liquid or high vapour concentration causes severe burns and may cause tissue destruction. Poison by ingestion.

F+, C, Xn; R12-20/22-34
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Take off all contaminated cloths and shoes and wash before reuse. Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable liquid. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: - 25 Deg C Explosion Limits, Lower: 2.8 % Explosion Limits, Upper: 14.4 %

NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature : 402 Deg C(gas)

Explosion sensitivity to static electricity : Yes

Hazardous combustion product: Carbon Monoxide & Oxides of Nitrogen

Extinguishing Media: Carbon dioxide, dry chemical powder or foam.

Special firefighting procedure: Wear Self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spills: Evacuate area. Shut off all ignition sources. Use non sparking tools. The gas is heavier than air and may travel along the ground; distant ignition is
possible. Prevent entry into sewer, basement or confined area; dyke if needed. Be careful that the product is not present at a concentration level above TLV.

SECTION VII : HANDLING AND STORAGE

Storage containers: ISO tank containers – Type T 11 (IMO 1)

Handling: Wear appropriate NIOSH /MSHA approved respirator, chemical resistant cold insulating gloves, safety goggles, other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame.

Storage: Carbon steel, stainless steel & Monel are acceptable for use with Dimethylamine. Electrical equipment should be non sparking or explosion proof. Keep away from sources of ignition – no smoking. Ground all equipment containing material. Keep container in a cool, well-ventilated area. Avoid contact with acid. Keep container tightly closed.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation.

EXPOSURE LIMITS:  

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<tr>
<th>Source</th>
<th>TLV- STEL</th>
<th>TLV-TWA</th>
<th>TWA hours</th>
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<tr>
<td>ACGIH</td>
<td>15 ppm</td>
<td>5 ppm</td>
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<td>NIOSH</td>
<td>10 ppm(18 mg/m3), 0</td>
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<tr>
<td>OSHA</td>
<td>10 ppm(18 mg/m3),</td>
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<tr>
<td>OEL- UK</td>
<td>2 ppm(3.8 mg/m3),</td>
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<td></td>
<td>6 ppm (11 mg/m3),</td>
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<td>EH 40 Jan 2000</td>
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</table>

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield
Skin: Butyl rubber, PVC or polyethylene.
Respirators: Wear appropriate NIOSH /MSHA approved respirator
Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Clear liquid
Odor: Strong Ammonical
pH of solution: Alkaline
Boiling Point: 42 Deg C
Melting point: -43 Deg C
Vapor Density (Air=1): 1.6 (gas)
Vapor Pressure: 215 mm Hg @ 35 Deg C
Specific Gravity: 0.85 Freezing point: -37 deg C
Solubility in water @ 30 C: Soluble

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Avoid contact with acid. The substance is a medium strong base. Attacks plastics, rubber, and coatings.
Incompatibilities with Other Materials: Galvanized iron, Copper, Aluminum, Tin, and Zinc.
Reacts Violently With: Mercury causing fire & explosion hazard, Acids, Strong oxidants such as chlorine, Halogens, Nitrates, Permanganates, Nitric acid, Peroxides
Hazardous reaction Product: Hazardous decomposition Product - Ammonia

SECTION XI: TOXICOLOGICAL INFORMATION

RTECS: IP8750000
Routes of Entry: Skin contact, eye contact, inhalation, ingestion

Toxicity to Animals:
Oral LD50 = 698 mg/Kg (rat)
Inhalation LC50 = 3 gm/m3/2 hr (rat)
Irritation data = 50 mg/5min eyes (rabbit)

Acute Health Effects
Skin: Corrosive & irritating to skin & all living tissue. Severe destruction of tissue may result from prolonged exposure.
Eyes: Mild concentration can cause conjunctivitis. Contact with liquid or high concentration of vapour causes painful burn & ulcerations. May cause blindness.
Inhalation: Corrosive & irritating to the upper & lower respiratory track. May cause shortness of breath, headache, nausea & vomiting.
Ingestion: Dimethylamine is a poison by ingestion.

Toxicity to Human (chronic effect) Carcinogenicity:
ACGIH: A4 - not classified as human carcinogen
OSHA: Not classified
NTP: Not classified
IARC: Not classified
Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information
Toxicity to fish  LC50: 118 mg/l
EC50/48h/daphnia =(40%)88.70 mg/l
LC50/96h/algae=9 mg/l
Mobility
Soluble in water
Persistence and Degradability
According to the result of tests on biodegradability this product is considered as being readily biodegradable.
Bioaccumulative Potential
Bio concentration Factor (BCF)=0.3

SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 262

SECTION XIV : TRANSPORT INFORMATION

<table>
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<tr>
<th>Sr. No</th>
<th>Transport by sea (IMDG-Code)</th>
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<tbody>
<tr>
<td>1</td>
<td>Product Name</td>
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<tr>
<td>2</td>
<td>Dimethyl amine</td>
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<tr>
<td>3</td>
<td>Class</td>
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<td>Identification no.</td>
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## SECTION XV : REGULATORY INFORMATION

**HMIS**
- Health Hazard: 3
- Fire Hazard: 4
- Reactivity: 0
- Personal Protection: H

### NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
- Health: 3
- Flammability: 4
- Reactivity: 0
- Specific Hazard:

### Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
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<tbody>
<tr>
<td>1</td>
<td>Dimethyl - amine</td>
<td>124-40-3</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

**European Labeling in Accordance with EC Directives**

### Hazard symbol

- **F+**: Extremely Flammable
- **C**: Corrosive
- **Xn**: Harmful

**Risk Statements:**
- 12 - 20 / 22 - 34

**Safety Statements:**
- 1/2 - 3-16-26-29-36 / 37/39-45
SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET.

DIMETHYLFORMAMIDE

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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<th>Product Name:</th>
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<td>Synonym:</td>
<td>N,N-dimethyl formamide</td>
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<td>N,N-dimethylmehtanamide</td>
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<td></td>
<td>N-fromyldimethylamine</td>
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<td>68-12-2</td>
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<td>EC No.:</td>
<td>200-679-5</td>
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<td>Hazchem Code:</td>
<td>2P</td>
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Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is flammable and Toxic. Flammable in presence of open flames and sparks, of heat under emergency conditions. Harmful by inhalation and in contact with skin or swallowed; irritating to eye.

POTENTIAL HEALTH EFFECTS
Eye: Irritating to eye.
Skin: Harmful in contact with skin. Readily absorbed through skin. Causes irritation.
Ingestion: Harmful if swallowed. Causes stomach pains, vomiting, and diarrhea.
Inhalation: Harmful if inhaled. Irritating to mucous membranes and upper respiratory tract. Resulting effects from the substance could be delayed from several hours up to several days.

Classification in accordance with Regulation (EC) No. 1272 / 2008

Acute Toxicity 4* ; H312
Acute Toxicity 4* ; H332
Eye irritation 2 ; H319
Flam. liquid 3 ; H 226
Repr. 1B ; H360D**

Classification in accordance with Regulation 67/548/EEC or 1999/45/EC
Repr. Cat. 2; R61 - Xi; R20/21 - X; R36

Risk Phrases:
R20/21- Harmful by inhalation and in contact with skin.
R36- Irritating to eyes.
R61- May cause harm to the unborn child.
**Safety Phrases:**
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53- Avoid exposure - obtain special instructions before use.

**Globally Harmonized System (GHS)**

**GHS- Labeling :**

**Hazard Pictogram :**

![GHS Pictograms]

**Signal Word**
Danger

**Hazard Statements**

H360D : May damage the unborn child
H226 : Flammable liquid and vapor
H332: Harmful if inhaled.
H312 : Harmful in contact with skin
H319: Causes serious eye irritation.

**Precautionary Statements**

P201: Obtain special instructions before use.
P210  Keep away from heat/sparks/open flames/hot surfaces-No smoking
P261: Avoid breathing dust/fume/gas/mist/vapors/spray
P280: Wear protective gloves/protective clothing/eye protection/face protection
P303+P361+P353 IF ON SKIN (or hair): REMOVE /Take off immediately all contaminated clothing. Rinse skin Water/shower.
P304+P340  IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313: IF exposed or concerned: Get Medical advice / Attention.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P363: Wash contaminated clothing before reuse.
P370+P378 : In case of fire use Water spray/foam/DCP for extinction
P403+P235: Store in a well-ventilated place. Keep cool.
P405 : Store locked up
P501: Dispose of contents/ container to hazardous or special waste collection point.

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**SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS**

**Composition:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
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</thead>
<tbody>
<tr>
<td>(N,N-)Dimethylformamide</td>
<td>68-12-2</td>
<td>100 %</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.

**Skin:** Remove contaminated clothes and shoes. Flush skin and hair with running water. Seek medical attention in event of irritation.

**Ingestion:** Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.

**Inhalation:** Remove victim from the area of exposure to fresh air and rest. If not breathing give artificial respiration or seek medical attention.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** Flammable in presence of open flames and sparks, of heat. Decomposes on heating emitting toxic fumes.

**Auto ignition Temperature:** 435 Deg C

**Flash Point:** 57.5 Deg C

**Flammable Limits, Lower:** 2.2 %

**Flammable Limits, Upper:** 15.2 %

**NFFA Rating (estimated):** Health: 1; Flammable: 2; Reactivity: 0

**Extinguishing Media:** Carbon dioxide, Alcohol resistant Foam, dry chemical powder or water spray.

**Fire fighting instructions:** Flammable liquid, soluble or dispersed in water.

**SMALL FIRE:** Use DRY chemical powder. **LARGE FIRE:** Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, auto ignition or explosion. Wear Self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use complete protective clothing including self contained breathing apparatus.

**Spills/Leaks:** Evacuate area. Ventilate area and remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place.

SECTION VII : HANDLING AND STORAGE

**Storage containers:** Available in HM/HDPE 200 Kg or MS drums 195 Kg, ISO Tankers or Road tankers.

**Handling:** Keep container in a cool, well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas. Wear approved respirator, chemical resistant gloves, safety goggles, other protective clothing. Hygroscopic avoid contact with copper, brass.

**Storage:** Under nitrogen atmosphere. Keep container in a cool, well-ventilated area. Keep away from any ignition sources. Ground all equipment containing material. Keep away from acids and oxidizing agents and halogens.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** TLV-TWA : 10 ppm (30 mg/m³) [skin] (ACGIH/NIOSH/OSHA), IDLH : 500 ppm (NIOSH)

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eyes:** Use approved Chemical splash protective goggles.

**Skin:** Use approved chemical protective clothing, shoes and hand gloves.

**Respirators:** Use approved respirators. Selection of the Class and Type of respirator will depend upon the level of concentration of contaminant.
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

**Physical state and appearance:** Colorless liquid
**Odor:** Ammonical
**Color:** Colorless
**PH of solution:** Not available.
**Boiling Point:** 152-153 Deg C
**Melting point:** -61 Deg C
**Viscosity:** 0.92 – 0.9248 mPa.s (@ 20 Deg C)
**Relative Density (water):** 0.95
**Vapor Density (Air=1):** 2.5 (Heavier than air)
**Vapor Pressure:** 3 mmHg / Around 0.3 kPa @ 20 Deg C
**Relative Density of vapor air mixture at 20 Deg C(Air=1):** 1.0
**Solubility:** miscible in water. Easily soluble in cold water, hot water. Soluble in diethyl ether, acetone. Miscible organic solvents. Soluble in benzene, and chloroform.
**Critical Temperature:** 374 Deg C
**Flash Point:** 57.5 Deg C
**Auto Ignition Temperature:** 435 Deg C
**Octanol/water partition coefficient As log power:** -0.85 (@ 25 Deg C)

SECTION X : STABILITY AND REACTIVITY

**Chemical Stability:** Stable.
**Conditions to Avoid:** Keep away from strong acids oxidizing materials, heat and naked flame.
**Incompatibilities with Other Materials:** Reactive with oxidizing agents, acids Can react vigorously with oxidizing agents, halogenated hydrocarbons, and inorganic nitrates. Incompatible with carbon tetrachloride, alkyl aluminums, sodium tetrahydroborate, nitrates, chromic acid, disocyanatomethane, triethylaluminum, sodium hydride, lithium azide, metallic sodium, bromine, magnesium nitrate, potassium permanganate, nitric acid, chromium trioxide, borohydrides, phosphorus trioxide, diborane, octafluorosobutylate, sodium nitrite, perchloryl fluoride, potassium methyl 4,4'-dinitrobutylate. Reaction with inorganic acid chlorides, such as phosphorus oxychloride and thionyl chloride, may form dimethylcarbamoyl, a suspect carcinogen.
**Hazardous Decomposition Products:** May release dimethylamine and carbon monoxide if heated above 350 C (662 F).
**Special Remarks on Corrosivity:** Pure dimethylformamide is essentially non-corrosive to metals.
**Polymerization:** Will not occur.

SECTION XI : TOXICOLOGICAL INFORMATION

**RTECS:** LQ2100000
**Routes of Entry:** Eye/Skin contact. Inhalation. Ingestion.
**Toxic Effects:**

**ACUTE HEALTH EFFECTS**
**Skin:** Causes skin irritation with itching, burning, redness, swelling, or rash. It may be absorbed through the skin in toxic amounts and cause systemic effects similar to that of ingestion.
**Eyes:** Causes eye irritation (possibly severe) with tearing pain or blurred vision.
**Inhalation:** May cause respiratory tract irritation. Short-term overexposure by inhalation may affect behavior/central nervous system (convulsions, muscle weakness and other symptoms similar to that of acute ingestion), respiration (dyspnea).
**Ingestion:** It can cause gastrointestinal tract irritation with heartburn, abdominal pain, nausea, vomiting or diarrhea. It may also affect the cardiovascular system (hypertension, tachycardia, ECG abnormalities), blood (elevated white blood cell counts), and liver damage (hepatomegaly, jaundice, altered liver enzymes, fatty liver
**CHRONIC HEALTH EFFECTS**
Principal routes of exposure are by skin and eye contact and by inhalation of Vapors
**SKIN:** Harmful if absorbed through skin causes skin irritation.
**EYE:** Irritating to eyes.
**INHALATION:** Harmful by inhalation. Material may be irritating to mucous membranes and upper respiratory tract.
**INGESTION:** Ingestion can cause stomach pains, vomiting, and diarrhea.

Intolerance for alcohol can occur up to 4 days after dimethyl formamide exposure. It is considered to be a potent liver toxin.

**Toxicity to Animals:**
Acute oral toxicity (LD50): 2800 mg/kg [Rat], Symptoms: Gastro intestinal disturbance. (IUCLID)
Acute dermal toxicity (LD50): 1500 mg/kg [Rabbit] Symptoms: Absorption, No irritation (IUCLID)
Acute toxicity of the vapor (LC50): 9-15 mg/l, 4 hours [Rat]. Symptoms: Absorption (IUCLID)
LCL[Rat] - Route: Inhalation; Dose: 5000 ppm/6H

**Toxicity to Human**

**Chronic Effects on Humans:**

**Carcinogenicity:** - Not classified as carcinogen to human.

**ACGIH:** A4 – Not classifiable as Human Carcinogen

**NTP:** Included in NTP. No additional testing for carcinogenicity.

**IARC:** Group 3 Not classified as carcinogen to human by IARC B Volume 47, 71 1999.

**Neurotoxicity:** No information available

**Mutagenicity:** No information available.

**Teratogenicity:** May cause harm to the unborn child. Pregnant women must not be exposed to the product.

**Epidemiology:** No information available.

**Reproductive effects:** May cause adverse reproductive effects (paternal and maternal) and birth defects.

**CMR Effect:** Toxic to reproduction: category 2. May cause adverse reproductive effects paternal and maternal and birth defects.

---

**SECTION XII: ECOLOGICAL INFORMATION**

**Ecotoxicity:**
Toxicity to Fish (LC 50) in mg/l : 7,100 (Lepomis macrochirus)
Toxicity to algae (Green algae) : 10 mg/l, (IUCLID, Maximum permissible toxic concentration)
Toxicity to bacteria EC50 (Photo bacterium phosphorus): 2000 mg/l, 5 min (Lit.)

**Persistence and Degradability**
Stability in water
Ca. 50d
Reaction with Hydroxyl radicals

**Biodegradability:** Readily Biodegradable 100 %
Exposure time 21 d, Method OECD 301E

**Biological Oxygen Demand (BOD):** BOD 900 mg/g (5 D) (Lit.)
Theoretical Oxygen Demand (ThOD): 1.863 mg/g (Lit)

**Additional information:** Do not allow to enter water, waste water, or soil.
SECTION XIII : DISPOSAL CONSIDERATION

Waste must be disposed of in accordance with local environmental Control regulations.

SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product Name</th>
<th>Railroad and road ADR, RID</th>
<th>Transport by air IATA-DGR</th>
<th>Transport by sea IMDG-Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N,N-Dimethylformamide</td>
<td>N,N-Dimethylformamide</td>
<td>N,N-Dimethylformamide</td>
<td>N,N-Dimethylformamide</td>
</tr>
<tr>
<td>2</td>
<td>Class</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>UN no.</td>
<td>2265</td>
<td>2265</td>
<td>2265</td>
</tr>
<tr>
<td>4</td>
<td>Packing group</td>
<td>III</td>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>5</td>
<td>Code no.</td>
<td>ADR HIN : 30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADR : European Agreement concerning Transport of Dangerous Good by Road
RID : Regulations concerning International carriage of Dangerous Goods by Rail
HIN : Hazard Identification Number
IATA-DGR : International Air Transport Authority- Dangerous Goods Regulation
IMDG-Code : International Maritime Dangerous Goods code

SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 2
Fire Hazard: 2
Reactivity: 0
Personal Protection: H

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 2
Flammability: 2
Reactivity: 0
Specific Hazard:
Protective Equipment:
Chemical Gloves.
Chemical splash goggles.
Approved Vapor respirator

Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL Sec 8</th>
<th>TSCA Sec 8</th>
<th>TSCA 12 b</th>
<th>EINECS</th>
<th>AICS</th>
<th>ENCS</th>
<th>ECL</th>
<th>IECSC Toxic</th>
<th>PICCS</th>
<th>NZIoC</th>
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<tbody>
<tr>
<td>1</td>
<td>N,N-Dimethylformamide</td>
<td>68-12-2</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>200-679-5</td>
<td>Yes</td>
<td>2-140</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet, Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
AQUEOUS FORMALDEHYDE SOLUTION (AF- 37 - 40)

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: AF-37
Synonym: Formalin
Empirical Formula: HCHO
RTECS: LP 8925000
UN No : 2209 , Corrosive Liquid
CAS #: 50-00-0 Formaldehyde
Hazchem Code: 2 Z
EINECS : 200-001- 8

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No’s:
00966-3-358-9905 / 358-1111
Emergency Contact No:
00966-3-358-0384

SECTION 2: COMPOSITION AND INFORMATION ON MAJOR INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>37 - 40</td>
</tr>
<tr>
<td>Methanol[METHYLALCOHOL]</td>
<td>67-56-1</td>
<td>3 - 10</td>
</tr>
</tbody>
</table>

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Hazardous in cases of eye contact, ingestion as it is irritant and corrosive. Upon skin contact (irritant, sensitizer, penetrant). Causes digestive and respiratory tract burns. Target Organs: Kidneys, central nervous system, liver, eyes, and skin. Repeated or prolonged exposure to the substance can produce target organs damage. Severe over-exposure can result in death.

POTENTIAL HEALTH EFFECTS

Eye: Causes eye burns. Inflammation of the eye is characterized by redness, watering, and itching.
Skin: Causes skin burns. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

Ingestion: May cause liver and kidney damage. May cause burns to the digestive tract. May cause central nervous system depression. May be fatal or cause blindness if swallowed.

Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause asthmatic attacks due to allergic sensitization of the respiratory tract.

Chronic: There is evidence that formaldehyde causes nasopharyngeal cancer in humans, cancer of the nasal cavity, para-nasal sinuses and leukemia. Repeated exposure may cause skin discoloration and thickening and nail decay.

SECTION 4: FIRST AID MEASURES

Eyes: Flush eyes immediately with plenty of water for at least 15 minutes until no evidence of chemical remains, keeping eyelids open. Remove any contact lenses. Do NOT allow victim to rub eyes or keep eyes closed Continue irrigating with normal saline until pH has returned to normal(30 – 60 min). Get medical aid immediately

Skin: Immediately flush skin with plenty of running water until no evidence of chemical remains (for at least 15 minutes) while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Get medical aid if irritation develops or persists. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water and activated charcoal to dilute, inactivate or absorb ingested formaldehyde. Any organic material will inactivate formaldehyde. Do not use gastric lavage or induce vomiting. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Treat symptomatically & supportively. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

SECTION 5: FIRE AND EXPLOSION DATA

General Information:
Moderately flammable as 37% solution. Vapors can travel to a source of ignition and flash back. Toxic vapors are generated during decomposition in fire (e.g. Formic Acid). Keep upwind. Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. CAUTION: MAY BURN WITH NEARLY
INVISIBLE FLAME (Methyl alcohol). Reaction with peroxide, nitrogen dioxide, and perm formic acid can cause an explosion. (Formaldehyde gas)

Auto ignition Temperature : ~430°C
Flash Point (closed cup) : 50°C - 85°C
Explosive Limits: Lower : 6.0 % Upper: 36.5% (Methyl alcohol)
Explosive Limits : Lower : 7.0 vol. % Upper: 73.0 vol. % (Formaldehyde gas)
NFPA Rating (estimated) : Health: 3; Flammability: 2; Instability: 0

Extinguishing Media:

SMALL FIRE: Use dry chemical powder, carbon dioxide, etc.

LARGE FIRE: Use alcohol-resistant foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosion. Water runoff can cause environmental damage. Dike and collect water used to fight fire.

SECTION 6: ACCIDENT RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Flammable & Poisonous liquid. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all sources of ignition and use only spark-proof tool. A vapor suppressing foam may be used to reduce vapors. Provide ventilation. Absorb spill with dry inert material (e.g. vermiculite, sand or earth), then place in suitable container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate. Avoid runoff into storm sewers and ditches which lead to waterways.

SECTION 7: HANDLING AND STORAGE

Handling: Do not get in eyes, on skin, or on clothing. Do not breathe vapor or mist. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Empty containers retain product residue (liquid and/or vapor), and can be dangerous. Keep away from heat, sparks and flame. Use only with adequate ventilation.

Storage: Packaging in 30 litre HDPE canisters/ polycans (32.5 kgs net.), 220 litre HDPE drums(225 kgs. net.), IBCs and 20000 – 25000 litre IMO-1 type isothermal tank containers (20-25 MT) . Storable under controlled temperature conditions in a dry, well-ventilated area away from incompatible substances and all possible sources of ignition (spark or flame). Keep container tightly closed and sealed until ready for use.
SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. See 29CFR 1910.1048 for regulatory requirements pertaining to all occupational exposures to formaldehyde. Ventilation equipment must be explosion proof. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA – Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>0.3 ppm Ceiling</td>
<td>0.016 ppm TWA; 20 ppm IDLH</td>
<td>0.5 ppm Action Level; 0.75 ppm TWA; 2 ppm STEL (Irritant and potential cancer hazard - see 29 CFR 1910.1048)</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>200ppmTWA;250 ppm STEL; Skin – potential significant contribution to overall exposure by the cutaneous route</td>
<td>200 ppm TWA; 6000 ppm IDLH</td>
<td>200 ppm TWA; 260 mg/m3 TWA</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs: Formaldehyde: 3 ppm TWA (unless specified in 1910.1048) Methyl alcohol: 200 ppm TWA; 260 mg/m3

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Wear chemical splash goggles and face shield as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear protective gloves, apron & boots.

Clothing: PVC, Nitrile, Neoprene, Natural rubber or any other type of glove, apron or splash suit.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Physical state: Clear aqueous solution  
Color: (APHA scale) 5 – 10 max  
Odor: Pungent  
Taste: Not available.  
Molecular weight: 30.03  
\[ \text{pH} : 2.8 \text{ – } 3.0 \]  
Specific Gravity: 1.08 @ 25 °C  
Vapor Pressure: 67 – 88 mm Hg at 20°C  
Flash Point (closed cup): 50°C - 85°C  
Solubility in water: Complete  
Boiling Point: 91 – 101° @ 760 mm Hg

## SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperature and pressure. But on exposure to very low temperatures appearance may become cloudy due to formation of a precipitate of trioxymethylene, which slowly oxidizes to formic acid in the air.  
Conditions to Avoid: Ignition sources, excess heat, incompatibles.  
Incompatibilities with Other Materials: Inorganic Acids, Strong Alkali, Phenols and strong oxidizers.  
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.  
Hazardous Polymerization: Has not been reported.

## SECTION 11: TOXICOLOGICAL INFORMATION

RTECS: CAS# 50-00-0: LP8925000  
Routes of Entry:  
Absorbed through skin, Dermal contact, Eye contact & Inhalation.
Toxicity to Animals:

Acute oral toxicity (LD50): 42 mg/kg [Mouse]. (Formaldehyde)
Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. (Methyl alcohol).
Draize test, rabbit, skin: 2 mg/24H Severe; (Formaldehyde)
Inhalation, mouse (LC50): 505 mg/m3/2H; (Formaldehyde)

Epidemiological studies and case reports indicate an excess occurrence of a number of cancers in rat, but evidence for involvement for formaldehyde is strongest for nasal and nasopharyngeal cancer.

Toxicity to Human (Chronic Effects):

CARCINOGENIC EFFECTS: (Formaldehyde) –
ACGIH: A2 - Suspected Human Carcinogen
NTP: Suspect carcinogen
IARC: Group 2A (probable )

MUTAGENIC EFFECTS: Exposure to Formaldehyde & Methanol may affect genetic material.

TERATOGENIC EFFECTS: Classified POSSIBLE for human [Methyl alcohol]. [Formaldehyde].

DEVELOPMENTAL TOXICITY: Not available.

REPRODUCTIVE EFFECTS (Formaldehyde): Studies produced a weak association (limited evidence) between adverse human female reproductive effects and occupational exposure.

SECTION 12: ECOLOGICAL INFORMATION

Formaldehyde:

It is harmful to aquatic life in very low concentrations.
It may be dangerous if it enters water intakes.
Notify local health & wildlife officials and operators of nearby water intakes.
Aquatic Toxicity: 25 mg/l/96 hours channel catfish TLM in fresh H2O.

Algae and some invertebrates seem to be more susceptible to formaldehyde, however responses differ widely:
Bacteria (E.Coli): 1mg/L
Algae (Scenedesmus): 0.3-0.5 mg/L

Methanol:

Aquatic Toxicity:
Trout LC50 (48 hrs): 8000 mg/L
SECTION 13: DISPOSAL CONSIDERATION

Waste must be disposed of in a manner consistent with local environmental control regulations or USEPA guidelines using a registered waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

US DOT

Shipping Name : Aqueous Formaldehyde Solution
UN No. : 2209
Hazard Class : 8- Corrosive
Packaging Group : III
IMDG Code (Version 1994 ) : Page 8176-1
Subsidiary risk : None allocated
Haz-chem Code : 2Z

SECTION 15: REGULATORY INFORMATION

HMIS (U.S.A)
Health Hazard: 3
Fire Hazard: 2
Reactivity: 0
Personal Protection: G

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
Health: 3
Flammability: 2
Reactivity: 0

US Federal
TSCA
CAS# 50-00-0 is listed on the TSCA Inventory

SARA TITLE III (Superfund Amendment & Reauthorization Act):
Section 302 & 304 - Extremely Hazardous Substance List (40 CFR 355) - Listed
Section 313 - Toxic Chemicals Listing (40 CFR 372.65) - Listed as a toxic chemical

CERCLA (Comprehensive Environmental Response, Compensation & Liability Act):
Section 102(A) - Hazardous Substances (40 CFR 302.4) - Listed Reportable Quantity - 1,000 lbs
European Labeling in Accordance with EC Directives

Hazard Symbols: T

Risk Phrases:
R 10  Flammable.
R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R 34 Causes burns
R 40 Limited evidence of a carcinogenic effect.
R 43 May cause sensitization by skin contact.

Safety Phrases:
S 26 In case of contact with eyes rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
S 51 Use only in well-ventilated areas.

WGK (Water Danger/Protection)
CAS# 50-00-0: 2
Poison Schedule(Australia): S6

SECTION 16: OTHER INFORMATION

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET.

MELAMINE FORMALDEHYDE RESIN

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Melamine Formaldehyde Resin
Synonym: MELFORES 101P
Use: Impregnation of base/ decorative papers and overlay in the manufacture of high pressure decorative laminates
UN No: Not available.
CAS#: 9003-08-1
RTECS: Not listed
Hazchem Code: None

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No’s: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS
Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

SECTION III : COMPOSITION AND INFORMATION ON INGRADIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELAMINE FORMALDEHYDE RESIN</td>
<td>9003-08-1</td>
<td>&gt;97</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>=3</td>
</tr>
</tbody>
</table>
### SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.

**Skin:** Flush skin and hair with running water. Seek medical attention in event of irritation.

**Ingestion:** Do not induce vomiting. If abdominal discomfort occurs, seek medical attention.

**Inhalation:** Remove victim from the area of exposure. Avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume the most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

### SECTION V : FIRE AND EXPLOSION DATA

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.

**Auto Ignition Temperature:** Not Applicable

**Flash Point:** > 200 °F (93 °C) (CC)

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated):** Health: 1; Flammable: 1; Instability: 0

**Fire Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

**Fire Fighting Instructions:** Fire may produce toxic thermal decomposition products. Firefighter should wear breathing apparatus or full face-piece supplied air mask. Do not release runoff into sewers or waterways.

**The dust explosion limit data of resin MELFORSES101P – 85g/m³**

### SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** May create slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

### SECTION VIII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with poly ethylene liner.

**Handling:** The bags of MF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas. It is advisable to wear dust mask during handling.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

### SECTION VII : EXPOSURE CONTROL / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** MF Resin (Dust) 10 mg/m³, Formaldehyde (vapor) : 0.3 ppm
PERSONAL PROTECTIVE EQUIPMENT:
Eyes: Use of approved Safety goggles.
Skin: Barrier cream and Neoprene rubber gloves. Overalls.
Respirators: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES
Physical state and appearance: White free flowing powder
Odor: Slight formaldehyde
Color: white free flowing powder
Bulk Density : Min 0.400 g/cc
Boiling Point: Not applicable
Melting point : Approx. 110 deg C
Storage life @20 °C : > 6 months
Solution Density@25 °C : 1.23 g/cm3
Solution pH@25 °C : 9.3-10.5
Dilutability@25 °C : Dilutable up to 30% solid without precipitation

SECTION X : STABILITY AND REACTIVITY
Chemical Stability: Stable,
Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.
Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.
Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.

SECTION XI : TOXICOLOGICAL INFORMATION
RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
EYE: May be irritating to eyes
INHALATION: Dust may be irritating to respiratory system.
INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.
Toxicity to Human (Chronic Effects):
No data available
Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: -
ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)
NTP: Not listed
SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. However, avoid contaminating waterways.

SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose in accordance with local/state/national regulations.

SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Melamine Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.): None.
SPECIAL PROVISIONS FOR TRANSPORT : None

SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 1
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 1
Flammability: 1
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

Health & Safety Reporting List
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

Chemical Test Rules
None of the chemicals in this products are under a Chemical Test Rules
Section 12 b. None of the chemicals are listed under TSCA section 12 b
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA, 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 9003-08-1 No information available.

Globally Harmonized System (GHS)

GHS pictogram

Signal word: WARNING

Hazard Statements
H316 : May cause mild skin irritation
H320 : Cause eye irritation
H335 : May cause respiratory irritation

Precautionary Statements
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation
### SECTION XVI : OTHER INFORMATION

**References**: Not available.

**Other Special considerations**: Not available.

**Last Updated**: November 2009.

**Reference**: Not available.

**Information Contact**: Technical Services Department.

For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET

MELAMINE FORMALDEHYDE RESIN

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Melamine Formaldehyde Resin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>MELFORES 102P</td>
</tr>
<tr>
<td>Use:</td>
<td>Impregnation of base/ decorative papers and overlay in the manufacture of high pressure decorative laminates</td>
</tr>
<tr>
<td>UN No:</td>
<td>Not available.</td>
</tr>
<tr>
<td>CAS#:</td>
<td>9003-08-1</td>
</tr>
<tr>
<td>RTECS:</td>
<td>Not listed</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
</tbody>
</table>

Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)

Tel. No's:
00966-3-358-9905 / 358-1111

Emergency Contact No:
00966-3-358-0384

SECTION II: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

SECTION III: COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Composition:</th>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MELAMINE FORMALDEHYDE RESIN</td>
<td>9003-08-1</td>
<td>&gt;97</td>
</tr>
<tr>
<td></td>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td></td>
<td>WATER</td>
<td>7732-18-5</td>
<td>=3</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.

**Skin:** Flush skin and hair with running water. Seek medical attention in event of irritation.

**Ingestion:** Do not induce vomiting. If abdominal discomfort occurs, seek medical attention.

**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.

**Auto ignition Temperature:** Not Applicable

**Flash Point:** > 200 °F (93 °C) (CC)

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated):**
- Health: 1
- Flammable: 1
- Instability: 0

**Fire Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

**Fire fighting Instructions:** Fire may produce toxic thermal decomposition products. Fire fighter should wear breathing apparatus or full face-piece supplied air mask. Do not release runoff into sewers or waterways.

**The dust explosion limit data of**

MELFORS 102P - 65g/m$^3$

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** May create slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with polyethylene liner.

**Handling:** The bags of MF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas. It is advisable to wear dust mask during handling.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:**
- MF Resin (Dust) 10 mg/m$^3$
- Formaldehyde (vapor) 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT:**

- **Eyes:** Use of approved Safety goggles.
- **Skin:** Barrier cream and Neoprene rubber gloves. Overalls.
**Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

**SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Physical state and appearance: White free flowing powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor: Slight formaldehyde</td>
</tr>
<tr>
<td>Color: white free flowing powder</td>
</tr>
<tr>
<td>Bulk Density : Min 0.400 g/cc</td>
</tr>
<tr>
<td>Boiling Point: Not applicable</td>
</tr>
<tr>
<td>Melting point : Approx. 110 deg C</td>
</tr>
<tr>
<td>Storage life @20 °C : &gt; 6 months</td>
</tr>
<tr>
<td>Solution Density@25 °C : 1.23 g/cm3</td>
</tr>
<tr>
<td>Solution pH@25 °C : 9.3-10.5</td>
</tr>
<tr>
<td>Dilutability@25 °C : Dilutable up to 30% solid without precipitation</td>
</tr>
</tbody>
</table>

**SECTION X : STABILITY AND REACTIVITY**

<table>
<thead>
<tr>
<th>Chemical Stability: Stable,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.</td>
</tr>
<tr>
<td>Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.</td>
</tr>
<tr>
<td>Hazardous Decomposition Products: Emits toxic fumes of NOX on burning</td>
</tr>
</tbody>
</table>

**SECTION XI : TOXICOLOGICAL INFORMATION**

<table>
<thead>
<tr>
<th>RTECS: Not listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.</td>
</tr>
<tr>
<td>Toxic Effects:</td>
</tr>
<tr>
<td>ACUTE HEALTH EFFECTS</td>
</tr>
<tr>
<td>SKIN: May be irritating to skin.</td>
</tr>
<tr>
<td>EYE: May be irritating to eyes</td>
</tr>
<tr>
<td>INHALATION: Dust may be Irritating to respiratory system.</td>
</tr>
<tr>
<td>INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.</td>
</tr>
<tr>
<td>CHRONIC HEALTH EFFECTS</td>
</tr>
<tr>
<td>Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.</td>
</tr>
<tr>
<td>Toxicity to Animals:</td>
</tr>
<tr>
<td>No information available.</td>
</tr>
<tr>
<td>Toxicity to Human (Chronic Effects):</td>
</tr>
<tr>
<td>No data available</td>
</tr>
<tr>
<td>Neurotoxicity: No information available.</td>
</tr>
<tr>
<td>Mutagenicity: No information available.</td>
</tr>
<tr>
<td>Carcinogenicity: -</td>
</tr>
<tr>
<td>ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)</td>
</tr>
<tr>
<td>NTP: Not listed</td>
</tr>
<tr>
<td>IARC: Group 2A (probable ) (Formaldehyde)</td>
</tr>
<tr>
<td>Epidemiology: No information available.</td>
</tr>
<tr>
<td>Reproductive effects: No information available.</td>
</tr>
</tbody>
</table>
# SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:**
No Information available. However, avoid contaminating waterways.

# SECTION XIII: DISPOSAL CONSIDERATION

Recycle wherever possible or dispose in accordance with local/state/national regulations.

# SECTION XIV: TRANSPORT INFORMATION

**Shipping Name:** Melamine Formaldehyde Resin  
**Hazard Class:** None  
**UN Number:** None  
**Packing Group:** None  
**IMDG Code (Page No.):** None  
**SPECIAL PROVISIONS FOR TRANSPORT:** None

# SECTION XV: REGULATORY INFORMATION

**HMIS**  
Health Hazard: 1  
Fire Hazard: 1  
Reactivity: 0  
Personal Protection: E

**NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):**  
(Estimated)  
Health : 1  
Flammability: 1  
Reactivity: 0  
Specific Hazard:

**Protective Equipment:**  
Chemical Gloves.  
Safety goggles.  
Dust Mask respirator.

**TSCA**  
Not listed.

**Health & Safety Reporting List**  
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

**Chemical Test Rules**  
None of the chemicals in this products are under a Chemical Test Rules  
Section 12 b. None of the chemicals are listed under TSCA section 12 b

**TSCA Significant New Use Rule**  
None of the chemicals in this material have a SNUR under TSCA.
CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA , 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 9003-08-1 No information available.

Globally Harmonized System (GHS)

GHS pictogram

Signal word: **WARNING**

Hazard Statements

H316 : May cause mild skin irritation
H320 : Cause eye irritation
H335 : May cause respiratory irritation

Precautionary Statements

P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation
### SECTION XVI : OTHER INFORMATION

<table>
<thead>
<tr>
<th>References: Not available.</th>
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</thead>
<tbody>
<tr>
<td>Other Special considerations: Not available.</td>
</tr>
<tr>
<td>Last Updated: June 2010</td>
</tr>
<tr>
<td>Reference: Not available.</td>
</tr>
</tbody>
</table>

**Information Contact:** Technical Services Department.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.

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MATERIAL SAFETY DATA SHEET

MELAMINE FORMALDEHYDE RESIN

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Melamine Formaldehyde Resin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>MELFORES 103P</td>
</tr>
<tr>
<td>Use:</td>
<td>Impregnation of base/ decorative papers and overlay in the manufacture of high pressure decorative laminates. Glazing of amino molded articles, in the manufacture of abrasives.</td>
</tr>
<tr>
<td>UN No:</td>
<td>Not available.</td>
</tr>
<tr>
<td>CAS#:</td>
<td>9003-08-1</td>
</tr>
<tr>
<td>RTECS:</td>
<td>Not listed</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
<tr>
<td>Contact Information:</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td></td>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Tel. No’s:</td>
<td>00966-3-358-9905 / 358-1111</td>
</tr>
<tr>
<td>Emergency Contact No:</td>
<td>00966-3-358-0384</td>
</tr>
</tbody>
</table>

SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS
Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELAMINE FORMALDEHYDE RESIN</td>
<td>9003-08-1</td>
<td>&gt;97</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>=3</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

Eyes: Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.
Skin: Flush skin and hair with running water. Seek medical attention in event of irritation.
Ingestion: Do not induce vomiting. If abdominal discomfort occurs seek medical attention.
Inhalation: Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

General Information: The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.
Auto ignition Temperature: Not Applicable
Flash Point: > 200 °F (93 °C) (CC)
Flammable Limits, Lower: Not Applicable
Flammable Limits, Upper: Not Applicable
NFPA Rating (estimated): Health: 1; Flammable: 1; Instability: 0
Fire Extinguishing Media: Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
Fire fighting Instructions: Fire may produce toxic thermal decomposition products. Fire fighter should wear breathing apparatus or full face-piece supplied air mask. Do not release runoff into sewers or waterways.
The dust explosion limit data of **MELFORS 103P** -65g/m³

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII : HANDLING AND STORAGE

Storage containers: Paper bags of 25 kg capacity with poly ethylene liner.
Handling: The bags of MF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas. It is advisable to wear dust mask during handling.
Storage: Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.
**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m³, Formaldehyde (vapor) : 0.3 ppm
PERSONAL PROTECTIVE EQUIPMENT:
Eyes: Use of approved Safety goggles.
Skin: Barrier cream and Neoprene rubber gloves. Overalls.
Respirators: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of
Breathing zone contaminant and the chemical nature of the contaminant.
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: White free flowing powder
Odor: Slight formaldehyde
Color: white free flowing powder
Bulk Density: Min 0.400 g/cc
Boiling Point: Not applicable
Melting point: Approx. 110 deg C
Storage life @20 °C: > 6 months
Dilutability@25 °C: Dilutable up to 30% solid without precipitation
Specific Gravity (Water=1, 4 °C): 0.6-0.7
Vapor Density (Air=1) : < 1
Vapor Pressure: None
Properties of 50 % solution
Appearance: Clear transparent liquid
Density@20 °C : 1.2
Viscosity@25 °C: 25-35 CPS
pH@25 °C: 7.4-8.4
Stability@25 °C: >24 hrs

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable,
Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.
Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.
Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
EYE: May be irritating to eyes
INHALATION: Dust may be irritating to respiratory system.
INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.
Toxicity to Human (Chronic Effects):
No data available
Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: 
ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)
NTP: Not listed
IARC: Group 2A (probable) (Formaldehyde)
Epidemiology: No information available.
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. However, avoid contaminating waterways.

SECTION XIII: DISPOSAL CONSIDERATION

Recycle wherever possible or dispose in accordance with local/state/national regulations.

SECTION XIV: TRANSPORT INFORMATION

Shipping Name: Melamine Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.): None.
SPECIAL PROVISIONS FOR TRANSPORT: None

SECTION XV: REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 1
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health: 1
Flammability: 1
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

Health & Safety Reporting List
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA
Chemical Test Rules
None of the chemicals in this products are under a Chemical Test Rules Section 12 b. None of the chemicals are listed under TSCA section 12 b

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA, 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 9003-08-1: No information available.

Globally Harmonized System (GHS)

GHS pictogram

Signal word: WARNING

Hazard Statements
H316: May cause mild skin irritation
H320: Cause eye irritation
H335: May cause respiratory irritation

Precautionary Statements
P102: Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235: Store in well ventilated place. Keep cool
P501: Dispose of contents/container in accordance with local/regional/national International regulation
**SECTION XVI : OTHER INFORMATION**

- **References:** Not available.
- **Other Special considerations:** Not available.
- **Last Updated:** June 2010
- **Reference:** Not available.

**Information Contact:** Technical Services Department.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET

MELAMINE FORMALDEHYDE RESIN

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>Melamine Formaldehyde Resin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>MELFORES 106P</td>
</tr>
<tr>
<td>Use:</td>
<td>Moulding of school furniture and as adhesieve in woodworking industry.</td>
</tr>
<tr>
<td>UN No:</td>
<td>Not available.</td>
</tr>
<tr>
<td>CAS#:</td>
<td>9003-08-1</td>
</tr>
<tr>
<td>RTECS:</td>
<td>Not listed</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
<tr>
<td>Contact Information:</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td></td>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Tel. No’s:</td>
<td>00966-3-358-9905 / 358-1111</td>
</tr>
<tr>
<td>Emergency Contact No:</td>
<td>00966-3-358-0384</td>
</tr>
</tbody>
</table>

SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

SECTION III : COMPOSITION AND INFORMATION ON INGRADIENTS

<table>
<thead>
<tr>
<th>Composition:</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELAMINE FORMALDEHYDE RESIN</td>
<td>9003-08-1</td>
<td>&gt;97</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>=3</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.

**Skin:** Flush skin and hair with running water. Seek medical attention in event of irritation.

**Ingestion:** Do not induce vomiting. If abdominal discomfort occurs, seek medical attention.

**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.

**Auto Ignition Temperature:** Not Applicable

**Flash Point:** > 200 °F (93 °C) (CC)

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated):** Health: 1; Flammable: 1; Instability: 0

**Fire Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

**Fire Fighting Instructions:** Fire may produce toxic thermal decomposition products. Fire fighter should wear breathing apparatus or full face-piece supplied air mask. Do not release runoff into sewers or waterways.

**The dust explosion limit data of resin MELFORS 106P – 85g/m³**

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** May create slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with poly ethylene liner.

**Handling:** The bags of MF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas. It is advisable to wear dust mask during handling.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** MF Resin (Dust) 10 mg/m³, Formaldehyde (vapor) : 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eyes:** Use of approved Safety goggles.

**Skin:** Barrier cream and Neoprene rubber gloves. Overalls.

**Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of...
Breathing zone contaminant and the chemical nature of the contaminant.
**SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES**

**Physical state and appearance:** White free flowing powder  
**Odor:** Slight formaldehyde  
**Color:** white free flowing powder  
**Bulk Density:** Min 0.400 g/cc  
**Boiling Point:** Not applicable  
**Melting point:** Approx. 110 deg C  
**Storage life @20 °C :** > 6 months  
**Dilutability@25 °C :** Dilutable up to 30% solid without precipitation  
**Vapor Pressure:** None  
**Properties of 50 % solution**  
**Appearance:** Clear to slight hazy solution free from contamination  
**Density@20 °C :** 1.2  
**Viscosity@25 °C :** 25-35 CPS  
**pH@25 °C :** 9.0-10.0

**SECTION X : STABILITY AND REACTIVITY**

**Chemical Stability:** Stable,  
**Conditions to Avoid:** Keep away from strong acids oxidizing materials, heat and naked flame.  
**Incompatibilities with Other Materials:** Product is considered stable. Hazardous polymerization will not occur.  
**Hazardous Decomposition Products:** Emits toxic fumes of NOX on burning.

**SECTION XI : TOXICOLOGICAL INFORMATION**

**RTECS:** Not listed  
**Routes of Entry:** Eye/Skin contact. Inhalation. Ingestion.  
**Toxic Effects:**

**ACUTE HEALTH EFFECTS**  
**SKIN:** May be irritating to skin.  
**EYE:** May be irritating to eyes  
**INHALATION:** Dust may be irritating to respiratory system.  
**INGESTION:** Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

**CHRONIC HEALTH EFFECTS**  
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.  

**Toxicity to Animals:**  
No information available.  

**Toxicity to Human (Chronic Effects):**  
No data available  
**Neurotoxicity:** No information available.  
**Mutagenicity:** No information available.  
**Carcinogenicity:** -  
**ACGIH:** A2 - Suspected Human Carcinogen (Formaldehyde)  
**NTP:** Not listed  
**IARC:** Group 2A (probable ) (Formaldehyde)  
**Epidemiology:** No information available.  
**Reproductive effects:** No information available.
SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. However, avoid contaminating waterways.

SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose in accordance with local/state/national regulations.

SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Melamine Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.): None.
SPECIAL PROVISIONS FOR TRANSPORT : None

SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 1
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 1
Flammability: 1
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

Health & Safety Reporting List
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

Chemical Test Rules
None of the chemicals in this products are under a Chemical Test Rules
Section 12 b. None of the chemicals are listed under TSCA section 12 b

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

**CERCLA**: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)

**SARA** Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)

**SARA** Section 313
X (As Formaldehyde solution)

**RCRA**
U122 (As Formaldehyde solution)

**Clean Air Act:**
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

**Clean Water Act:**
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA , 29 CFR 1910.119 App A

**European Labeling in Accordance with EC Directives**
CAS# 9003-08-1 No information available.

**Globally Harmonized System (GHS)**

**GHS pictogram**

![Exclamation Mark]

**Signal word : WARNING**

**Hazard Statements**
H316 : May cause mild skin irritation
H320 : Cause eye irritation
H335 : May cause respiratory irritation

**Precautionary Statements**

P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool

P501 : Dispose of contents/container in accordance with local/regional/national International regulation
## SECTION XVI : OTHER INFORMATION

<table>
<thead>
<tr>
<th>References</th>
<th>Not available.</th>
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</thead>
<tbody>
<tr>
<td>Other Special considerations</td>
<td>Not available.</td>
</tr>
<tr>
<td>Last Updated</td>
<td>June 2010</td>
</tr>
<tr>
<td>Reference</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

**Information Contact:** Technical Services Department.  
The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET.

METHANOL

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name: Methyl alcohol, Absolute</th>
<th>Contact Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS#: 67-56-1</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td>RTECS: PC1400000</td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td>TSCA: TSCA 8(b) inventory: Methyl alcohol, Absolute</td>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td>Synonym: Wood alcohol, Methanol; Methylol; Wood</td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td>Spirit; Carbinol</td>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Chemical Name: Methanol</td>
<td>Tel. No: 00966-13-343-8320</td>
</tr>
<tr>
<td>Chemical Formula: CH3OH</td>
<td>Emergency Contact No: 00966-13-343-8999</td>
</tr>
<tr>
<td>UN No.# 1230</td>
<td></td>
</tr>
<tr>
<td>HAZCHEM# 2WE</td>
<td></td>
</tr>
</tbody>
</table>

SECTION II : HAZARD IDENTIFICATION

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator). Severe over-exposure can result in death.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to eyes. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS)

SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Composition:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>METHYL ALCOHOL</td>
</tr>
</tbody>
</table>
SECTION IV: FIRST AID MEASURES

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

SECTION V: FIRE AND EXPLOSION DATA

Flammability of the Product: Flammable.
Auto-Ignition Temperature: 464°C (867.2°F)
Flash Points: CLOSED CUP: 12°C (53.6°F). OPEN CUP: 16°C (60.8°F).
Flammable Limits: LOWER: 6% UPPER: 36.5%
Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Explosive in the form of vapor when exposed to heat or flame. Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition, it emits acrid smoke and irritating fumes. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME.

Special Remarks on Explosion Hazards:
Forms an explosive mixture with air due to its low flash point. Explosive when mixed with Chloroform + sodium methoxide and diethyl zinc. It boils violently and explodes.

SECTION VI: ACCIDENTAL RELEASE MEASURE

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Large Spill:
Flammable liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

SECTION VII : EXPOSURE CONTROL /PERSONAL PROTECTION

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 from OSHA (PEL) [United States] TWA: 200 STEL: 250 (ppm) from ACGIH (TLV) [United States] [1999]

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Liquid.
Odor: Alcohol like. Pungent when crude
Taste: Not available.
Molecular Weight: 32.04 g/mole
Color: Colorless.
ph (1% soln/water): Not available.
Boiling Point: 64.5°C (148.1°F)
Melting Point: -97.8°C (-144°F)
Critical Temperature: 240°C (464°F)
Specific Gravity: 0.7915 (Water = 1)
Vapor Pressure: 12.3 kPa (@ 20°C)
Vapor Density: 1.11 (Air = 1)
Volatility: Not available.
Odor Threshold: 100 ppm
Water/Oil Dist. Coeff.: The product is more soluble in water; log(oil/water) = -0.8
Dispersion Properties: See solubility in water.
Solubility: Easily soluble in cold water, hot water.
### SECTION X: STABILITY AND REACTIVITY

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Heat, ignition sources, incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents, metals, acids.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**
Can react vigorously with oxidizers. Violent reaction with alkyl aluminum salts, acetyl bromide, chloroform + sodium methoxide, chromic anhydride, cyanuric chloride, lead perchlorate, phosphorous trioxide, nitric acid. Exothermic reaction with sodium hydroxide + chloroform. Incompatible with beryllium dihydride, metals (potassium and magnesium), oxidants (barium perchlorate, bromine, sodium hypochlorite, chlorine, hydrogen peroxide), potassium tert-butoxide, carbon tetrachloride, alkali metals, metals (aluminum, potassium magnesium, zinc), and dichlormethane. Rapid autocatalytic dissolution of aluminum, magnesium or zinc in 9:1 methanol + carbon tetrachloride - sufficiently vigorous to be rated as potentially hazardous. May attack some plastics, rubber, and coatings.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

### SECTION XI: TOXICOLOGICAL INFORMATION

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.
Acute oral toxicity (LD50): 5628 mg/kg [Rat.]. Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit.]. Acute toxicity of the vapor (LC50): 64000 4 hours [Rat].

**Chronic Effects on Humans:**
MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast.

TERATOGENIC EFFECTS: Classified POSSIBLE for human. Causes damage to the following organs: eyes. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), optic nerve.

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**
Passes through the placental barrier. May affect genetic material. May cause birth defects and adverse reproductive effects (paternal and maternal effects and fetotoxicity) based on animal studies.

**Special Remarks on other Toxic Effects on Humans:**
Acute Potential Health effects: May cause eye and skin irritation. Methanol can be absorbed through the skin, producing systemic effects that include visual disturbances. Inhalation: May cause respiratory tract irritation with coughing and wheezing.

May affect behavior/central nervous system/peripheral nervous system, gastrointestinal tract, respiration, lungs, and blood, and heart /cardiovascular system (bradycardia, tachyardia). May also cause metabolic acidosis and severely visual effects which may include reduced reactivity/and or increased sensitivity to light, blurred, double/and or snowy vision, and blindness.

Ingestion: May be harmful and affect eyes (cause significant visual disturbances including blindness) if swallowed. May cause gastrointestinal tract irritation with abdominal pain, fatigue, nausea, vomiting, and diarrhea.

### SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:** Ecotoxicity in water (LC50): 29400 mg/l 96 hours [Fathead Minnow].

**BOD5 and COD:** Not available.

**Products of Biodegradation:**
Possibly hazardous short term degradation products are not likely. However, long term degradation products may
arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:**
Methanol in water is rapidly biodegraded and volatilized. Aquatic hydrolysis, oxidation, photolysis, adsorption to sediment, and bio concentration are not significant fate processes. The half-life of methanol in surface water ranges from 24 hrs. to 168 hrs. Based on its vapor pressure, methanol exists almost entirely in the vapor phase in the ambient atmosphere. It is degraded by reaction with photo chemically produced hydroxyl radicals and has an estimated half-life of 17.8 days. Methanol is physically removed from air by rain due to its solubility. Methanol can react with NO2 in polluted to form methyl nitrate. The half-life of methanol in air ranges from 71 hrs. (3 days) to 713 hrs. (29.7 days) based on photo oxidation half-life in air.

---

**SECTION XIII : DISPOSAL CONSIDERATION**

Waste must be disposed of in accordance with state and local environmental control regulations.

---

**SECTION XIV : TRANSPORT INFORMATION**

**DOT Classification:** CLASS 3: Flammable liquid.
**Identification:** Methyl alcohol UN No: 1230 PG: II
**Special Provisions for Transport:** Not available.

---

**SECTION XV : REGULATORY INFORMATION**

**HMIS**
Health Hazard: 1
Fire Hazard: 3
Reactivity: 0
Personal Protection: H

**NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):**
(Estimated)
Health: 1
Flammability: 3
Reactivity: 0
Specific Hazard:

Hazardous Right to Know: Methyl alcohol, Absolute TSCA 8(b) inventory: Methyl alcohol, Absolute SARA 313 toxic chemical notification and release reporting: Methyl alcohol, Absolute CERCLA: Hazardous substances: Methyl alcohol, Absolute: 5000 lbs. (2268 kg)

**Other Regulations:**
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**
**WHMIS (Canada):**
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC) CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC):**
R11- Highly flammable. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R39- Danger of very serious irreversible effects. R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. S7- Keep container tightly closed. S16- Keep away from sources of ignition - No smoking. S36/37- Wear suitable protective clothing and gloves. S45- In case of accident or if you feel unwell, seek medical advice immediately and show them this leaflet.
medical advice immediately (show the label where possible).

Globally Harmonized System (GHS)

GHS pictogram

Signal word: DANGER

Hazard Statements
H226: Flammable liquid and vapor
H301: Toxic if swallowed
H311: Toxic in contact with skin
H318: Causes serious eye damage
H331: Toxic if Inhaled.
H351: Suspected of causing cancer.
H360: May damage fertility or unborn child.

Precautionary Statements
P102: Keep out of reach of children.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat/sparks/open flame/hot surfaces.-No smoking.
P233: Keep containers tightly closed.
P240: Ground/Bond Container and receiving equipment.
P241: Use explosion proof electrical/lighting/ventilating equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P260: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313: If skin irritation or rash occurs: Get medical advice /attention.
P370+P378: In case of fire use Water spray/foam/DCP for extinction.
P403 +P235: Store in well ventilated place. Keep cool
P405: Store locked up.
P501: Dispose of contents/container in accordance with local/regional/national International regulation.

Supplementary information
Forms an explosive mixture with air due to its low flash point. Keep away from oxidizing agents, metals, Acids.

SECTION XVI: OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Last Updated: August 2014
Reference: Not available.
**Information Contact:** Technical Services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET.

MELAMINE UREA FORMALDEHYDE RESIN 501P

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>MUFORES 501P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>Melamine Urea Formaldehyde Resin</td>
</tr>
<tr>
<td>UN No:</td>
<td>Not available.</td>
</tr>
<tr>
<td>CAS#:</td>
<td>25036-13-9</td>
</tr>
<tr>
<td>RTECS:</td>
<td>Not listed</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
</tbody>
</table>

Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II: COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELAMINE UREA FORMALDEHYDE RESIN</td>
<td>25036-13-9</td>
<td>&gt;96</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 0.8</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>3</td>
</tr>
</tbody>
</table>

SECTION III: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.
### SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.  
**Skin:** Flush skin and hair with running water. Seek medical attention in event of irritation.  
**Ingestion:** Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.  
**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

### SECTION V : FIRE AND EXPLOSION DATA

**General Information:** The material is not readily combustable under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.  
**Auto ignition Temperature:** Not Applicable  
**Flash Point:** Not Applicable  
**Flammable Limits, Lower:** Not Applicable  
**Flammable Limits, Upper:** Not Applicable  
**NFPA Rating (estimated):**  
- Health: 1; Flammable: 0; Instability: 0  
**Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

### SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.  
**Spills/Leaks:** May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

### SECTION VII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with poly ethylene liner.  
**Handling:** The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.  
**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

### SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.  
**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m3, Formaldehyde (vapor) : 0.3 ppm  
**PERSONAL PROTECTIVE EQUIPMENT:**  
- **Eyes:** Use of approved Safety goggles.  
- **Skin:** Barrier cream and Neoprene rubber gloves. Overalls.  
- **Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.
### SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

**Physical state and appearance:** White free flowing powder  
**Odor:** Slight.  
**Color:** white free flowing powder  
**pH of solution:** 8.5 – 9.5  
**Boiling Point:** Not applicable  
**Melting point:** Approx. 110 deg C  
**Viscosity of 100: 40 solution:** 2000 -4000 CP  
**Bulk Density:** 0.4-0.6 g/cc  
**Solubility:** soluble in water

### SECTION X : STABILITY AND REACTIVITY

**Chemical Stability:** Stable,  
**Conditions to Avoid:** Keep away from strong acids oxidizing materials, heat and naked flame.  
**Incompatibilities with Other Materials:** Product is considered stable. Hazardous polymerization will not occur.  
**Hazardous Decomposition Products:** Emits toxic fumes of NOX on burning.

### SECTION XI : TOXICOLOGICAL INFORMATION

**RTECS:** Not listed  
**Routes of Entry:** Eye/Skin contact. Inhalation. Ingestion.  
**Toxic Effects:**

**ACUTE HEALTH EFFECTS**  
**SKIN:** May be irritating to skin.  
**EYE:** May be irritating to eyes  
**INHALATION:** Dust may be irritating to respiratory system.  
**INGESTION:** Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

**CHRONIC HEALTH EFFECTS**  
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

**Toxicity to Animals:**  
No information available.  
**Toxicity to Human (Chronic Effects):**  
No data available

**Neurotoxicity:** No information available.  
**Mutagenicity:** No information available.  
**Carcinogenicity:** -  
**ACGIH:** A2 - Suspected Human Carcinogen (Formaldehyde)  
**NTP:** Not listed  
**IARC:** Group 2A (probable ) (Formaldehyde)  
**Epidemiology:** No information available.  
**Reproductive effects:** No information available.
### SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:**
No Information available. However, avoid contaminating waterways.

### SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

### SECTION XIV : TRANSPORT INFORMATION

**Shipping Name:** Melamine Urea Formaldehyde Resin  
**Hazard Class:** None  
**UN Number:** None  
**Packing Group:** None  
**IMDG Code (Page No.):** None  
**SPECIAL PROVISIONS FOR TRANSPORT:** None

### SECTION XV : REGULATORY INFORMATION

**HMIS**  
Health Hazard: 1  
Fire Hazard: 0  
Reactivity: 0  
Personal Protection: E

**NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):**  
(Estimated)  
Health : 1  
Fire hazard: U  
Reactivity: 0  
Specific Hazard:

**Protective Equipment:**  
Chemical Gloves.  
Safety goggles.  
Dust Mask respirator.

**TSCA**  
Not listed.

**Health & Safety Reporting List**  
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

**Chemical Test Rules**  
None of the chemicals in this products are under a Chemical Test Rules  
Section 12 b. None of the chemicals are listed under TSCA section 12 b

**TSCA Significant New Use Rule**  
None of the chemicals in this material have a SNUR under TSCA.
CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA, 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 25036-13-9 No information available.

GHS pictogram

Signal word

WARNING

Hazard Statements
H317 :: May cause an allergic skin reaction

Precautionary Statements
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.
SECTION XVI: OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET

MELAMINE UREA FORMALDEHYDE RESIN 505P

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: MUFORES 505P
Synonym: Melamine Urea Formaldehyde Resin
UN No: Not available.
CAS#: 25036-13-9
RTECS: Not listed
Hazchem Code: None

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 1.6</td>
</tr>
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<td>3</td>
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Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

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Eye: May be an eye irritant.
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**Inhalation**: Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

**General Information**: The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.

**Auto ignition Temperature**: Not Applicable

**Flash Point**: Not Applicable

**Flammable Limits, Lower**: Not Applicable

**Flammable Limits, Upper**: Not Applicable

**NFPA Rating (estimated)**: Health: 1; Flammable: 0; Instability: 0

**Extinguishing Media**: Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information**: Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks**: May create slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

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SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS**: Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS**: UF Resin (Dust) 10 mg/m3, Formaldehyde (vapor) : 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT**;

**Eyes**: Use of approved Safety goggles.

**Skin**: Barrier cream and Neoprene rubber gloves. Overalls.

**Respirators**: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.
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Physical state and appearance: White free flowing powder
Odor: Slight.
Color: white free flowing powder
pH of solution: 8.0 – 9.0
Boiling Point: Not applicable
Melting point: Approx. 110 deg C
Viscosity of 2: 1 solution: 2000 - 4000 CP
Bulk Density: 0.4-0.6 g/cc
Solubility: soluble in water

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable,
Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.
Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.
Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.

SECTION XI: TOXICOLOGICAL INFORMATION

RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
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INHALATION: Dust may be Irritating to respiratory system.
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CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.
Toxicity to Human (Chronic Effects):
No data available

Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: -
ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)
NTP: Not listed
IARC: Group 2A (probable) (Formaldehyde)
Epidemiology: No information available.
Reproductive effects: No information available.
### SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. However, avoid contaminating waterways.

### SECTION XIII: DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

### SECTION XIV: TRANSPORT INFORMATION

- **Shipping Name:** Melamine Urea Formaldehyde Resin
- **Hazard Class:** None
- **UN Number:** None
- **Packing Group:** None
- **IMDG Code (Page No.):** None

### SECTION XV: REGULATORY INFORMATION

#### HMIS
- Health Hazard: 1
- Fire Hazard: 0
- Reactivity: 0
- Personal Protection: E

#### NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
- Health : 1
- Reactivity : 0
- Specific Hazard:

#### Protective Equipment:
- Chemical Gloves.
- Safety goggles.
- Dust Mask respirator.

#### TSCA
Not listed.

#### Health & Safety Reporting List
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

#### Chemical Test Rules
None of the chemicals in this products are under a Chemical Test Rules Section 12 b. None of the chemicals are listed under TSCA section 12 b

#### TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

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product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA , 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 25036-13-9 No information available.

GHS pictogram

Signal word

WARNING

Hazard Statements
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Precautionary Statements
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present
and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national
International regulation.
### SECTION XVI : OTHER INFORMATION

**References:** Not available.

**Other Special considerations:** Not available.

Information contact: Technical services Department.

For any enquiry/comment regarding this Material safety Data sheet, kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
SULFONATED NAPHTHALENE FORMALDEHYDE – LIQUID

SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product</th>
<th>SULFONATED NAPHTHALENE FORMALDEHYDE (NAFORES 801L).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>Sodium Salt of Sulfonated Naphthalene Formaldehyde Sulfonated Admixture Polymer, Sodium Salt of Polynaphthalene Sulfonic Acid.</td>
</tr>
</tbody>
</table>
| Contact Information | METHANOL CHEMICALS COMPANY  
P.O. Box 2101, Jubail Industrial City 31951  
Kingdom of Saudi Arabia.  
www.chemanol.com |
| Tel. No.  | 00966-13-343-8320 |
| Emergency Tel. No. | 00966-13-343-8999 |

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium salt of Poly-Naphthalene sulfonic acid</td>
<td>36290-04-7</td>
<td>30 - 45 % (w/w)</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>55 - 70 % (w/w)</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Brown liquid.</td>
</tr>
<tr>
<td>PH @ 25°C</td>
<td>7.0- 9.0</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>105 °C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific Gr. @ 25°C</td>
<td>1.19- 1.24</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water, methanol and acetone.</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-2 °C</td>
</tr>
</tbody>
</table>
## SECTION 4: STABILITY AND REACTIVITY DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Stability</td>
<td>Stable under normal storage &amp; application temperature.</td>
</tr>
<tr>
<td>Conditions of Instability</td>
<td>Strong oxidizing agent and direct heat.</td>
</tr>
<tr>
<td>Instability Temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Avoid contact with oxidizing materials.</td>
</tr>
<tr>
<td>Recommended materials for equipment</td>
<td>Stainless steel (304), stainless steel (316), etc.</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Special Remarks on Reactivity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

## SECTION 5: HAZARDS IDENTIFICATION

According to the present state of knowledge, provided that the product is handled correctly, there is no known danger to human.

## SECTION 6: FIRE & EXPLOSION DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire and Explosion Hazards</td>
<td>Non-flammable and non-explosive.</td>
</tr>
<tr>
<td>Flash Point &amp; Flammable Limit</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosion Hazards in presence of various substances</td>
<td>Not available.</td>
</tr>
<tr>
<td>Hazchem Code</td>
<td>None allocated.</td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>Water Spray, Dry Chemical, CO2 or Foam.</td>
</tr>
<tr>
<td>Protective Measures</td>
<td>Fire fighters should wear self-contained breathing apparatus and protective clothing.</td>
</tr>
</tbody>
</table>
### SECTION 7: TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Ey...</th>
<th>Toxicity to animals</th>
<th>Acute oral toxicity (LD 50): 3400 mg/Kg (RAT).&lt;br&gt;(LC 50): No information found.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on Contact:</td>
<td>Eye Contact</td>
<td>May cause slight irritation. Does not require label up.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Contact</td>
<td>Skin irritation is unlikely. Not absorbed through skin.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sensitization</td>
<td>Not expected to be a skin-sensitizer. But hypersensitive individual may develop an allergic reaction resulting in dermatitis, rash or hives.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ingestion</td>
<td>This product is an ingestion hazard. Swallowing significant amount may cause burns to the gastrointestinal track.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>Not hazardous incase of inhalation.</td>
<td></td>
</tr>
<tr>
<td>Chronic Effects on Human</td>
<td>:</td>
<td>CARCINOGENIC EFFECT: Classified as - NONE by NTP. Mutagenic EFFECT: Not available. DEVELOPMENTAL TOXICITY: Not available. REPRODUCTIVE TOXICITY: Not available.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is imperative that all forms of exposure be kept to an absolute minimum.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 8: EXPOSURE & FIRST AID MEASURES

| Inhalation | : No specific data. Get fresh air. |
| Skin Contact | : Rinse with water for a few minutes. Remove contaminated clothing and wash before reuse. |
| Eyes Contact | : Flush eyes with clean water for at least 15 minutes keeping eyelids open. If discomfort persists, consult a physician. |
| Ingestion | : Immediately give two glasses of water, if not unconscious. Do not induce vomiting. If vomiting occurs spontaneously, lower head below waist to prevent fluid from entering lungs. Loosen tight clothing such as collar, tie, belt etc. If victim is not breathing, perform mouth to mouth resuscitation. Seek immediate medical attention. |
### SECTION 9: ACCIDENTAL RELEASE MEASURES.

<table>
<thead>
<tr>
<th>Small spill and leak</th>
<th>Prevent product from entering drinking water, drainage system, waterways, water streams or soil. Absorb with an inert material and place in a closed container for disposal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large spill</td>
<td>Evacuation area of none essential personnel. Use safety glass &amp; gloves. Clean up large spills with a pump or vacuum truck. Prevent spilled product or contaminated wash water from entering drinking water supplies or water streams. Dispose of all waste in accordance with applicable government regulations.</td>
</tr>
</tbody>
</table>

### SECTION 10: HANDLING AND STORAGE

<table>
<thead>
<tr>
<th>Storage</th>
<th>Keep containers tightly closed; in a cool (around 25C), well ventilated place. Avoid contact with strong oxidizing agents. Keep away from heat &amp; sources of ignition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling Procedures &amp; Equipment</td>
<td>Handle with care &amp; avoid unnecessary personal contact. Wash thoroughly after handling. Avoid contact with eyes. Wear suitable protective clothing. Employ grounding of equipments.</td>
</tr>
</tbody>
</table>

### SECTION 11: EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Engineering Controls</th>
<th>Use process enclosures. If user operations generate dust, fume or mist, use proper filtration and ventilation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Protection</td>
<td>Eye Protection – chemical workers goggles, Glove type – nitrile rubber or PVC gauntlets, Respirator type- vapor respirator, Footwear - chemical resistant footwear.</td>
</tr>
</tbody>
</table>
### SECTION 12: ECOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecotoxicity</td>
<td>No information found.</td>
</tr>
<tr>
<td>BOD5 and COD</td>
<td>The BOD5 is 24000 (5 days). The COD IS 1800,000 mg/l.</td>
</tr>
<tr>
<td>Biodegradability</td>
<td>Biodegradable, further data not available.</td>
</tr>
<tr>
<td>PRODUCTS OF BIO-DEGRADATION</td>
<td>Possibly hazardous short-term degradation products are not likely.</td>
</tr>
<tr>
<td>Toxicity of products of Bio-degradation</td>
<td>No information found.</td>
</tr>
</tbody>
</table>

### SECTION 13: DISPOSAL CONSIDERATION

Recycle if possible. Any waste or contaminated spills should be disposed off in accordance with local environment control regulations or USEPA guidelines using a registered waste disposal contractor.

### SECTION 14: TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging in 24000 litres ISO tank containers, 220 litres drums and 1000 litres IBC cans.</td>
<td>Non-flammable</td>
</tr>
<tr>
<td>Transport classification</td>
<td></td>
</tr>
<tr>
<td>Substance Identification Number</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>IMCO Class</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Packing Group</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>ADR/ADNR/RID/IATA/IMDG</td>
<td>Not restricted.</td>
</tr>
<tr>
<td>MARITIME Transportation</td>
<td>Not pollutant.</td>
</tr>
<tr>
<td>DOT</td>
<td>Not a DOT controlled material (United States).</td>
</tr>
<tr>
<td>Emergency Action Code</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>UN number</td>
<td>Not regulated.</td>
</tr>
<tr>
<td>Dangerous goods class</td>
<td>None allocated.</td>
</tr>
<tr>
<td>Subsidiary Risk</td>
<td>None allocated.</td>
</tr>
</tbody>
</table>
**SECTION 15: REGULATORY INFORMATION**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCS(USA)</td>
<td>Not controlled under the HCS (United States).</td>
</tr>
<tr>
<td>DSCL(EEC)</td>
<td>This product is not classified according to EU regulations &amp; does not require a hazard warning label.</td>
</tr>
<tr>
<td>International Regulations Lists</td>
<td>No ingredient of this product is subject to the reporting requirements of section 313 of the title III of the super fund amendments and reauthorization act 11 (SARA 1986) and 40 CFR Part 392 of the United States.</td>
</tr>
<tr>
<td>NFPA rating(estimated)</td>
<td>Health: 1, Flammable: 0, Instability: 0</td>
</tr>
<tr>
<td>Hazardous material information system.</td>
<td></td>
</tr>
<tr>
<td>Risk phrases</td>
<td>R36 Irritating to Eyes.</td>
</tr>
<tr>
<td>Safety phrases</td>
<td>S 9 Keep containers in well ventilated Area</td>
</tr>
<tr>
<td></td>
<td>☰ 25 Avoid contact with eyes.</td>
</tr>
<tr>
<td></td>
<td>☰ 37/39 Wear suitable gloves and eye/face</td>
</tr>
</tbody>
</table>

**SECTION 16: OTHER INFORMATION**

References: Not available.

Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet, Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
## SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product</th>
<th>SULFONATED NAPHTHALENE FORMALDEHYDE - (NAFores 801P).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym</td>
<td>Sodium Salt of Poly Naphthalene Sulphonic Acid, Sulfonated Admixture Polymer.</td>
</tr>
<tr>
<td>Contact Information</td>
<td>METHANOL CHEMICALS COMPANY</td>
</tr>
<tr>
<td></td>
<td>P.O. Box 2101, Jubail Industrial City 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia.</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td>Tel. No.</td>
<td>00966-13-343-8320</td>
</tr>
<tr>
<td>Emergency Tel. No.</td>
<td>00966-13-343-8999</td>
</tr>
</tbody>
</table>

## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No.</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium salt of Poly-</td>
<td>36290-04-7</td>
<td>93 - 95 % (w/w)</td>
</tr>
<tr>
<td>Naphthalene Sulphonic acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>5 - 7 % (w/w)</td>
</tr>
</tbody>
</table>

## SECTION 3: PHYSICAL AND CHEMICAL PROPERTIES

| Appearance                   | Beige to brownish solid, powder. |
| PH of 2% solution            | 7.0 - 9.0                      |
| Bulk Density                 | 0.65 - 0.70 gm/cc              |
| Flash Point                  | Not applicable                 |
| Volatiles                    | 5 – 7 %                        |
| Solubility                   | Easily Soluble in Water.       |
| Nature                       | Anionic                        |
| Flammability                 | May be combustible at higher temperatures. |
| Explosion hazards            | Non-explosive.                 |

Issue Date 01/08/ 2014: Supersedes 01/08/2011
SECTION 4: STABILITY AND REACTIVITY DATA

| Chemical Stability                  | Stable under normal storage & application temperature. |
| Conditions of Instability           | Strong oxidizing agent and direct heat.                |
| Instability Temperature             | Not available.                                       |
| Materials to avoid                  | Avoid contact with oxidizing materials.               |
| Hazardous decomposition products    | Sulphur Oxides (SO₂, SO₃) Carbon Oxides (CO, CO₂).    |
| Recommended materials for equipment | Stainless steel (304), stainless steel (316), etc.    |
| Corrosivity                         | Not available.                                       |
| Special Remarks on Reactivity       | Not available.                                       |

SECTION 5: HAZARDS IDENTIFICATION

Product dust can cause irritation to the eyes & respiratory track. Swallowing may cause burns to the gastrointestinal track. Sulfur oxides may be released during a fire.

SECTION 6: FIRE & EXPLOSION DATA

| Fire and Explosion Hazards          | Non-flammable and non-explosive.                     |
| Flash Point & Flammable Limit       | Not Available.                                       |
| Explosion Hazards in presence of various substances | Not Available.                                      |
| Hazchem Code                        | None allocated.                                      |
| Extinguishing Media                 | Water Spray, Dry Chemical, CO2 or Foam.              |
| Protective Measures                 | Fire fighters should wear self-contained breathing apparatus and protective clothing. |
### SECTION 7: TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Routes of Entry</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact, inhalation, ingestion.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Toxicity to animals</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity (LD 50): 3400 mg/Kg (RAT) (LC 50): No information found.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eye Contact</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>May cause slight irritation. Does not require label up.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skin Contact</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical skin irritation is possible, but unlikely. Not absorbed through skin.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensitization</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not expected to be a skin-sensitizer. But hypersensitive individual may develop an allergic reaction resulting in dermatitis, rash or hives.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingestion</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>This product is an ingestion hazard. Swallowing significant amount may cause caustic burns to the gastrointestinal track.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inhalation</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation of high concentration may cause mechanical irritation &amp; discomfort. Hypersensitive individuals may experience allergic respiratory reaction &amp; wheezing.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronic Effects on Human</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARCINOGENIC EFFECT: Classified as - NONE by NTP.</td>
<td></td>
</tr>
<tr>
<td>MUTAGENIC EFFECT: Not available.</td>
<td></td>
</tr>
<tr>
<td>DEVELOPMENTAL TOXICITY: Not available.</td>
<td></td>
</tr>
<tr>
<td>REPRODUCTIVE TOXICITY: Not available.</td>
<td></td>
</tr>
<tr>
<td>It is imperative that all forms of exposure be kept to an absolute minimum.</td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 8: EXPOSURE & FIRST AID MEASURES

<table>
<thead>
<tr>
<th>Inhalation</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get fresh air. Give artificial respiration then oxygen if needed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skin Contact</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rinse with water for a few minutes. Remove contaminated clothing and wash before reuse.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eyes Contact</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flush eyes with clean water for at least 15 minutes keeping eyelids open. If discomfort persists, consult a physician.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingestion</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not induce vomiting. Immediately give two glasses of water, if not unconscious. If vomiting occurs spontaneously, lower head below waist to prevent fluid from entering lungs. Loosen tight clothing such as collar, tie, belt etc. If victim is not breathing, perform mouth to mouth resuscitation. Seek immediate medical attention.</td>
<td></td>
</tr>
</tbody>
</table>
### SECTION 9: ACCIDENTAL RELEASE MEASURES.

<table>
<thead>
<tr>
<th>Small spill and leak</th>
<th>Prevent product from entering drinking water, drainage system, waterways, water streams or soil. Sweep up and place in a closed container for disposal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large spill</td>
<td>Evacuation area of none essential personnel. Use safety glass &amp; gloves. Respiratory protection is required if dust is generated. Sweep or shovel spilled material using methods which avoids creating dust. Place in suitable containers &amp; remove for disposal. Prevent spilled product from entering water streams. Dispose of all waste in accordance with applicable government regulations.</td>
</tr>
</tbody>
</table>

### SECTION 10: HANDLING AND STORAGE

<table>
<thead>
<tr>
<th>Storage</th>
<th>Keep bags tightly closed; in a cool (around 25C), well ventilated place. Avoid contact with strong oxidizing agents. Keep away from heat &amp; sources of ignition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling Procedures &amp; Equipment</td>
<td>Handle with care &amp; avoid unnecessary personal contact. Wash thoroughly after handling. Do not breathe dust. Avoid contact with eyes. Wear suitable protective clothing. Employ grounding of equipments.</td>
</tr>
</tbody>
</table>

### SECTION 11: EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Engineering Controls</th>
<th>Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below the recommended exposure limits. If user operations generate dust, fume or mist, use proper filtration and ventilation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Protection</td>
<td>Clothing – coveralls, Eye Protection – chemical workers goggles, Respirator type – class P1 or dust mask, Glove type – nitrile rubber or PVC gauntlets, Footwear-Safety Shoe.</td>
</tr>
<tr>
<td>TLV / PEL</td>
<td>TWA: 15 mg/m3 8 hour total dust. 5 mg/m3 8 hour respirable dust (OSHA).</td>
</tr>
</tbody>
</table>
SECTION 12: ECOLOGICAL INFORMATION

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecotoxicity</td>
<td>No information found.</td>
</tr>
<tr>
<td>BOD5 and COD</td>
<td>The BOD5 is 24000 (5 days)</td>
</tr>
<tr>
<td></td>
<td>The COD IS 1800,000 mg/l</td>
</tr>
<tr>
<td>Biodegradability</td>
<td>Biodegradable, further data not available.</td>
</tr>
<tr>
<td>PRODUCTS OF BIO-</td>
<td>Possibly hazardous short-term degradation products are not</td>
</tr>
<tr>
<td>DEGRADATION</td>
<td>likely. However long term degradation product may arise.</td>
</tr>
<tr>
<td>Toxicity of products of Bio-degradation</td>
<td>No information found.</td>
</tr>
</tbody>
</table>

SECTION 13: DISPOSAL CONSIDERATION

Recycle if possible. Any waste or contaminated spills should be disposed off in accordance with local environment control regulations or USEPA guidelines using a registered waste disposal contractor.

SECTION 14: TRANSPORT INFORMATION

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging in 25 kgs. paper bags, and in 600 kgs. jumbo bags polyethylene woven bags.</td>
</tr>
<tr>
<td>Transport classification                            Non-flammable</td>
</tr>
<tr>
<td>Substance Identification Number                     Not applicable.</td>
</tr>
<tr>
<td>Number IMCO Class                                   Not applicable.</td>
</tr>
<tr>
<td>Packing Group                                       Not applicable.</td>
</tr>
<tr>
<td>ADR/ADNR/RID/IATA/IMDG                              Not restricted.</td>
</tr>
<tr>
<td>MARITIME Transportation                             Not pollutant.</td>
</tr>
<tr>
<td>DOT                                                 Not a DOT controlled material (United States).</td>
</tr>
</tbody>
</table>

Emergency Action Code Not applicable. UN number Not Regulated. Dangerous goods class None allocated. Subsidiary Risk None allocated.
## SECTION 15: REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>Hazardous Lists</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCS(USA)</td>
<td>Not controlled under the HCS (United States).</td>
</tr>
<tr>
<td>DSCL(EEC)</td>
<td>This product is not classified according to EU regulations &amp; does not require a hazard warning label.</td>
</tr>
<tr>
<td>International Regulations Lists</td>
<td>No ingredient of this product is subject to the reporting requirements of section 313 of the title III of the super fund amendments and reauthorization act 11 (SARA 1986) and 40 CFR Part 392 of the United States.</td>
</tr>
<tr>
<td>NFPA rating (estimated)</td>
<td>Health: 1, Flammable: 1, Instability: 0</td>
</tr>
</tbody>
</table>

### Hazardous material information system.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>0</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>E</td>
</tr>
</tbody>
</table>

### Risk phrases
- R36/37 /38 Irritating to Eyes, Respiratory System & Skin.

### Safety phrases
- S 9 Keep containers in well ventilated Area.
- 3 Keep in cool place.
- 24/25 Avoid contact with skin & eyes.
- 36/37/39 Wear suitable protective clothing, Gloves and eye/face protection shield.

## SECTION 16: OTHER INFORMATION

References: Not available.

Other Special considerations: Not available.

Information contact: Technical services Department.

For any enquiry/comment regarding this Material safety Data sheet, kindly contact: drkhan@chemanol.com

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SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraformaldehyde grade 96±1% (Prill &amp; Powder)</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td>Synonym</td>
<td>Tel. No: 00966-13-343-8320</td>
</tr>
<tr>
<td>Empirical Formula</td>
<td>Emergency Contact No: 00966-13-343-8999</td>
</tr>
<tr>
<td>UN No</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td>CAS#</td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td>RTECS</td>
<td>Jubail Industrial City 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
</tbody>
</table>

SECTION II: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flammable solid. Harmful if inhaled. May cause allergic skin reaction. May be harmful if swallowed. Target Organs: Respiratory system, eyes and skin.

POTENTIAL HEALTH EFFECTS

Eye: May result in corneal injury or blindness. Causes severe eye irritation, burns, redness and watering.

Skin: May cause skin sensitization, hives, severe skin irritation and possible burns. Contact with dust causes drying, cracking, and scaling of the skin. The amount of tissue damage depends on length of contact.

Ingestion: May be harmful if swallowed. May cause severe digestive tract irritation with inflammation of the mouth, throat and stomach. Symptoms may include: headache, nausea, vomiting, diarrhea, fatigue, stupor, and coma. Prolonged ingestion may affect the kidneys.

Inhalation: May cause severe irritation of the upper respiratory tract with pain, burns, and inflammation of the lining of the nose, throat and lungs. Inhalation of high concentrations may cause loss of smell, pulmonary edema, lung damage, choking, unconsciousness or death. Repeated or prolonged inhalation may cause asthma.

SECTION III: COMPOSITION AND INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraformaldehyde</td>
<td>30525-89-4</td>
<td>96±1%</td>
</tr>
</tbody>
</table>
SECTION IV : FIRST AID MEASURES

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes). Cold water may be used, check for & remove any contact lenses.

Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. May use disinfectant soap. Cover the irritated skin with an emollient/anti-bacterial cream.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cup of milk or water with some citrus juice. Never give anything by mouth to an unconscious person. Get medical aid immediately. Loosen tight clothing.

Inhalation: Remove from exposure and move to fresh air. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. Get medical aid immediately.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable solid. Dusts at sufficient concentrations can form explosive mixtures with air. Combustion generates toxic fumes. May re-ignite after fire is extinguished. May burn rapidly with flare-burning effect. May explode with explosive violence. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH approved or equivalent and full protective gear.

Auto Ignition Temperature: 300 deg C (572.00 deg F)
Flash Point: Above 71 deg C (160 deg F) closed cup
Flammable Limits, Lower: 7.00 vol. %
Flammable Limits, Upper: 73.00 vol. %
Dust Explosion Lower Explosive Limit : 40g/m³
Minimum Ignition Energy: 20mJ
NFPA Rating (estimated) : Health: 3; Flammable: 2; Instability: 0

SECTION VI : ACCIDENT RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam or water spray may be used. Prevent entry into sewer, basements or confined areas. Dike if needed.

SECTION VII : HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Wear suitable respiratory equipment in case of insufficient ventilation. Minimize dust generation and accumulation. Do not get on skin or in eyes. Do not ingest or inhale.

Storage: Keep away from heat, flame or ignition sources. Smoking is strictly prohibited. Store in a cool, dry, well-ventilated area away from incompatible substances such as oxidizing agent, reducing agent, acids, & strong base. Keep containers tightly closed. The appropriate type of FIBC with anti-static features and grounding provision is to be used for all type of bagging / collection / storage of paraformaldehyde powder.”
SECTION VIII : EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Use process enclosures.

EXPOSURE LIMITS:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA – Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraformaldehyde</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PEL’s:

Paraformaldehyde: No OSHA Vacated PELs are listed for this chemical.

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure, boots.

Clothing: Wear appropriate protective clothing to prevent skin exposure, synthetic apron.

Respirators: Approved/certified vapor and dust respirator. Self contained breathing apparatus, if needed. A respiratory protection program that meets OSHA’s 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 is to be followed whenever workplace conditions warrant respirator use.

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Solid (free flowing granules, prill or fine powder.)

Odor: Pungent. (Slight.)

Taste: Not available.

Color: White.

pH of 10% aqueous solution: 3 - 7

Boiling Point: Not available

Viscosity: Not available

Melting Point: 120 – 170 deg. C

Decomposition temperature: 260 C

Critical Temperature: Not available.

Specific Gravity: Density: 1.46 (Water = 1)

Vapor Pressure: 1.2 mm Hg @ 25 deg C

Vapor Density: 1.03 (Air = 1)

Solubility: Sparingly soluble in cold water. Soluble in hot water.
SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable, however, can decompose above 260°C.

Conditions to Avoid: Dust generation, temperatures above 160°C, ignition sources (spark, flame, Friction), incompatible material.

Incompatibilities with Other Materials: Strong oxidizing agents, strong reducing agents, acids, strong bases, anhydrides, liquid oxygen, isocyanates, bronze, brass, copper, copper alloys.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, formaldehyde.

Hazardous Polymerization: Will not occur.

SECTION XI: TOXICOLOGICAL INFORMATION

RTECS: RV0540000

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

Acute oral toxicity (LD50): 800 mg/kg [Rat].
Acute inhalation toxicity of the dust (LC50): 1070 mg/m³/4 hour [Rat].

Lowest Published Lethal Dose:
LDL [Rabbit] - Route: skin; Dose: 10000 mg/kg.

Toxicity to Human (Chronic Effects):

Neurotoxicity: No information available.

Mutagenicity: The data were insufficient to adequately evaluate the mutagenic potential of this compound.

Carcinogenicity: Not listed by ACGIH or IARC.

Epidemiology: The epidemiological studies provide inadequate evidence to assess the carcinogenicity of formaldehyde in man.

Teratogenicity: No teratogenic effects were observed. The data were insufficient to adequately evaluate the teratogenic potential of this compound.

Reproductive effects: None identified.

Other Studies: Standard Draize test: Administration onto the skin (rabbit) = 500 mg / 24 hrs(severe), Standard Draize test: Administration onto the eye (rabbit) = 100 mg (severe).

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Channel catfish: TLm = 32 ppm; 24 Hr; Fresh water (Unspecified). Paraformaldehyde hydrolyzes as it dissolves in water, and its solutions behave like methanol-free formaldehyde solutions. Formaldehyde forms a strongly acidic aqueous solution, and this property may cause adverse environmental effects. It is readily biodegradable and it is not likely to bio-concentrate.
SECTION XIII : DISPOSAL CONSIDERATION

Waste must be disposed of in accordance with local environmental control regulations or USEPA guidelines using a registered waste disposal contractor.

SECTION XIV : TRANSPORT INFORMATION

US DOT

Shipping Name: PARAFORMALDEHYDE, Hazard Class: 4.1, UN Number: UN 2213, Packing Group: III, Flammable solid,

IMDG code- Page 4164

SPECIAL PROVISIONS FOR TRANSPORT : Not available

SECTION XV : REGULATORY INFORMATION

HMIS (U.S.A)

Health Hazard: 3
Fire Hazard: 2
Reactivity: 0
Personal Protection: J

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):

Health: 3
Flammability: 2
Reactivity: 0

TSCA

CAS#: 30525-89-4 is listed on the TSCA inventory.

SARA

Section 313
No chemicals are reportable under section 313

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:
R 20/22 Harmful by inhalation and if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 40 Limited evidence of a carcinogenic effect.
R 43 May cause sensitization by skin contact.
Safety Phrases:
S 24 Avoid contact with skin.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CANADA
CAS# 30525-89-4 is listed on Canada's DSL list. This product has a WHMIS classification of B4,D2B
CAS# 30525-89-4 is listed on Canada's Ingredient Disclosure List

EINECS : Unlisted

GLOBALLY HARMONIZED SYSTEM (GHS)

GHS Pictogram:

Signal Word : DANGER

Hazard Statements
H228 : Flammable Solid
H315 : Causes skin irritation
H319 : Causes serious eye irritation
H332 : Harmful If inhaled.
H302 : Harmful if swallowed.
H370 : Cause damage to organs (lung); May cause respiratory irritation or may cause drowsiness and dizziness (respiratory tract irritation)
H402 : Harmful to Aquatic Life
H412 : Harmful to aquatic life with long lasting effects

Precautionary Statements
P102: Keep out of reach of children.
P210 : Keep away from heat/sparks/open flame/hot surfaces.-No smoking.
P240 : Ground/Bond Container and receiving equipment.
P241 : Use explosion proof electrical/lighting/ventilating equipment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+ P313 : If skin irritation or rash occurs : Get medical advice /attention.
P370+P378 : In case of fire use Water spray/foam/DCP for extinction.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.

Supplementary information
Dust at sufficient concentration can form explosive mixture with air.
## SECTION XVI: OTHER INFORMATION

**References**: Not available.

**Other Special considerations**: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
PENTAERYTHRITOL MIX

SECTION I  IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product name: PENTAERYTHRITOL MIX

Application of the substance / the preparation:
Chemical intermediate

UN Number: Not regulated

Hazchem Code: Not applicable

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia

Website: www.chemanol.com
Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II  COMPOSITION/INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS / EINECS Number</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentaerythritol</td>
<td>CAS: 115-77-5 EINECS: 204-104-9</td>
<td>25-55%</td>
</tr>
<tr>
<td>Dipentaerythritol (2,2',2',2'-tetraakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)</td>
<td>CAS: 126-58-9 EINECS: 204-794-1</td>
<td>55-25%</td>
</tr>
</tbody>
</table>

SECTION III  HAZARDS IDENTIFICATION

Hazard description: Not classified

Information concerning particular hazards for human and environment:
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
SECTION IV  FIRST AID MEASURES

General information: Remove any clothing soiled by the product.
After inhalation: Fresh air and rest.
After skin contact: Generally the product does not irritate the skin.
After eye contact: Rinse opened eye under running water.
After swallowing: Rinse out mouth and then drink plenty of water or milk. If you feel unwell consult doctor.

SECTION V  FIRE FIGHTING MEASURES

Suitable extinguishing agents:
Use fire extinguishing methods suitable to surrounding conditions.
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
For safety reasons unsuitable extinguishing agents: Water with full jet

SECTION VI  ACCIDENTAL RELEASE MEASURES

Person-related safety precautions: Use respiratory protective device.
Measures for environmental protection: Do not allow to enter sewers/surface or ground water.
Measures for cleaning/collecting: Pick up mechanically.
Additional information: No dangerous substances are released

SECTION VII  HANDLING AND STORAGE

Information for safe handling: Pentaerythritol Mix is non-toxic. Containers carrying pentaerythritol mix should be properly earthed while filling or unloading the material. Mixtures of pentaerythritol mix dust and air can cause explosion at high temperature (>370°C) and at concentrations more than 25 g/m³ of air. However material is wet cake and possibility of dust formation is very remote.
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location. Protect against electro static charges.
Further information about storage conditions: Store in dry conditions.
Packing: 500kgs/750kgs/1000kgs polypropylene jumbo bags with antistatic provision.

SECTION VIII  EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical facilities: No further data; see item 7.

115-77-5 Pentaerythritol

| WEL                  | Short-term value: **20 mg/m³, Long-term value: 10*4** mg/m³  
|                      | * total dust, ** respirable fraction 
| NIOSH PEL            | TWA 10 mg/m³ (total) TWA 5 mg/m³ (resp)  
| OSHA PEL             | TWA 15 mg/m³ (total) TWA 5 mg/m³ (resp)  

Page 2 of 7
126-58-9 Dipentaerythritol

<table>
<thead>
<tr>
<th>WEL</th>
<th>None listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH PEL</td>
<td>None listed</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>None listed</td>
</tr>
</tbody>
</table>

**Personal protective equipment:**

**General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals.

**Protection of hands:**

- **Protection gloves**
- **Material of gloves** Chloroprene rubber, CR
- **Penetration time of glove material** The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:**

- **Safety glasses**

### SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Crystalline</td>
</tr>
<tr>
<td>Colour</td>
<td>Off White</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>Melting Point/Melting range</td>
<td>200 - 260°C</td>
</tr>
<tr>
<td>Boiling Point/Boiling range</td>
<td>~ 300°C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;150°C</td>
</tr>
<tr>
<td>Self Igniting</td>
<td>Product is not self igniting</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Formation of explosive air-vapour/dust mixture are possible in rare case when the material is dry</td>
</tr>
<tr>
<td>Explosion limit</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>25g/m³</td>
</tr>
</tbody>
</table>
Density at 20°C : ~ 700kg/m³

Solubility in/miscibility with water at 20°C : Sparingly soluble

SECTION X  STABILITY AND REACTIVITY

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications. Dangerous reactions No dangerous reactions known.

**Dangerous decomposition products:** No dangerous decomposition products known.

SECTION XI  TOXICOLOGICAL INFORMATION

**Acute toxicity:**

**LD/LC₅₀ values relevant for classification:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>LD₅₀</th>
<th>LC₅₀/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-77-5 Pentaerythritol</td>
<td>&gt;5110 mg/kg (rat)</td>
<td>NOEL &gt; 11 mg/l (rat)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compound</th>
<th>LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (OECD 401)</td>
<td>25 500 mg/kg (rat)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compound</th>
<th>LD₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (OECD 401)</td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Primary irritant effect:**

on the skin (OECD 404): No irritating effect.

on the eye (OECD 405): No irritating effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Ames test</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-77-5 Pentaerythritol</td>
<td>Negative - (Salmonella typhimurium)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compound</th>
<th>Ames test</th>
</tr>
</thead>
<tbody>
<tr>
<td>126-58-9 Dipentaerythritol (2,2',2'-tetrakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)</td>
<td>Negative - (Salmonella typhimurium)</td>
</tr>
</tbody>
</table>

**Additional toxicological information:**

Mutagenicity (Ames test): Negative
Carcinogenicity: Not listed by ACGIH, IARC, NTP or CA Prop65

SECTION XII  ECOLOGICAL INFORMATION

Information about elimination (persistence and degradability)

<table>
<thead>
<tr>
<th>Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>115-77-5 Pentaerythritol</td>
</tr>
</tbody>
</table>
BOD28 | 0.99g/g (OECD 301)
COD | 1380 mg/g
TOD | 1300mg/g

126-58-9 Dipentaerythritol (2,2,2',2'-tetrakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)

BOD28 | 2.2g/g (OECD 301)
BOD7 | 9.5mg/g
COD | 2g/g

**Behaviour in environmental systems:**
**Mobility and bioaccumulation potential:**
Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected.

126-58-9 Dipentaerythritol (2,2,2',2'-tetrakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)

BCF | 3.2

**Eco-toxicological effects:**

Aquatic toxicity:

115-77-5 Pentaerythritol

| EC10/18 h | 18 200 mg/l (bacteria) |
| EC3/7 d | 16 500 mg/l (algae) |
| EC50/24 h LC0/48 h | 38 900 mg/l (daphnia) |
| | > 5000 mg/l (fish) |

126-58-9 Dipentaerythritol (2,2,2',2'-tetrakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)

ECO | > 100 mg/l (algae) |
LC50/96 h | > 100 mg/l (daphnia) |
| | > 100 mg/l (fish) |

**Remark:** Harmless to fish up to the tested concentration.

**General notes:**
Water hazard class 1 (German Regulation): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

**SECTION XIII  DISPOSAL CONSIDERATION**

**European waste catalogue**

07 00 00 | Waste from organic chemical processes
07 01 00 | wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals
07 01 99 | wastes not otherwise specified

**Recommendation:** Disposal must be made according to official regulations.
SECTION XIV  TRANSPORT INFORMATION

Land transport ADR/RID (cross-border): ADR/RID class: -

Maritime transport IMDG: IMDG Class: -

Air transport ICAO-TI and IATA-DGR: ICAO/IATA Class: -

DOT: Not a DOT controlled material.

Transport/Additional information: Not dangerous goods according to the above specifications.

SECTION XV  REGULATORY INFORMATION

HMIS:

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Physical Hazard</th>
<th>Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>E</td>
</tr>
</tbody>
</table>

NATIONAL FIRE PROTECTION ASSOCIATION (USA):

Health: 1
Flammability: 1
Reactivity: 0
Specific Hazard:

Labeling according to EU guidelines:
Observe the general safety regulations when handling chemicals.
The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials.


• Special labelling of certain preparations:
Safety data sheet available for professional user on request

• National regulations:
Registrations:
TSCA (USA) YES
DSL (Canada) YES
ENCL (Japan) YES
ECL (Korea) YES

Water hazard class: Water hazard class 1 (German regulation): slightly hazardous for water.
SECTION XVI  OTHER INFORMATION

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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**MATERIAL SAFETY DATA SHEET**  
PENTAERYTHRITOL MONO

### SECTION I  IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Product name : Pentaerythritol mono</th>
<th>Contact Information:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application of the substance / the preparation:</strong> Chemical intermediate</td>
<td>Methanol Chemicals Company (CHEMANOL)</td>
</tr>
<tr>
<td><strong>UN Number:</strong> Not regulated</td>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td><strong>Hazchem Code:</strong> Not applicable</td>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td></td>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td></td>
<td>Tel. No: 00966-13-343-8320</td>
</tr>
<tr>
<td></td>
<td>Emergency Contact No: 00966-13-343-8999</td>
</tr>
</tbody>
</table>

### SECTION II  COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Composition:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
</tr>
<tr>
<td>Pentaerythritol</td>
</tr>
<tr>
<td>Dipentaerythritol (2,2,2′-tetraakis(hydroxymethyl)-3,3′-oxydipropan-1-ol)</td>
</tr>
</tbody>
</table>

### SECTION III  HAZARDS IDENTIFICATION

**Hazard description:** Not classified  
**Information concerning particular hazards for human and environment:**  
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.  

**Classification system:**  
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.  

**Additional Information:** Risk of dust explosion
SECTION IV  FIRST AID MEASURES

**General information:** Remove any clothing soiled by the product.
**After inhalation:** Fresh air and rest.
**After skin contact:** Generally the product does not irritate the skin.
**After eye contact:** Rinse opened eye under running water.
**After swallowing:** Rinse out mouth and then drink plenty of water or milk. If you feel unwell consult doctor.

SECTION V  FIRE FIGHTING MEASURES

**Suitable extinguishing agents:**
Use fire extinguishing methods suitable to surrounding conditions.
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**For safety reasons unsuitable extinguishing agents:** Water with full jet

SECTION VI  ACCIDENTAL RELEASE MEASURES

**Person-related safety precautions:** Use respiratory protective device.
**Measures for environmental protection:** Do not allow to enter sewers/surface or ground water.
**Measures for cleaning/collection:** Pick up mechanically.
**Additional information:** No dangerous substances are released

SECTION VII  HANDLING AND STORAGE

**Information for safe handling:** Prevent formation of dust. Ensure good ventilation/exhaustion at the workplace. Pentaerythritol mono is non-toxic. Containers carrying pentaerythritol mono should be properly earthed while filling or unloading the material. Mixtures of pentaerythritol mono dust and air can cause explosion at high temperature (>370°C) and at concentrations more than 30 g/m³ of air.

**Storage:**

- **Requirements to be met by store rooms and receptacles:** Store in a cool location. Protect against electrostatic charges
- **Further information about storage conditions:** Store in dry conditions.
- **Packing:** 500kgs/750kgs/1000kgs polypropylene jumbo bags with antistatic provision.

SECTION VIII  EXPOSURE CONTROLS/PERSONAL PROTECTION

**Additional information about design of technical facilities:** No further data; see item 7.

**Ingredients with limit value that require monitoring at workplace**

**115-77-5 Pentaerythritol**

| WEL       | Short-term value: **≥ 20 mg/m³**, Long-term value: 10* 4** mg/m³  
|           | * total dust, **respirable fraction  
| NIOSH PEL | TWA 10 mg/m³ (total) TWA 5 mg/m³ (resp)  
| OSHA PEL  | TWA 15 mg/m³ (total) TWA 5 mg/m³ (resp)  

Page 2 of 7  
FORM#MKT/F10R REV.02  
Issue Date 01/08/ 2014: Supersedes 01/08/ 2011
Personal protective equipment:

General protective and hygienic measures:
The usual precautionary measures are to be adhered to when handling chemicals

Protection of hands:

![Protection gloves]

Protection gloves

Material of gloves: Chloroprene rubber, CR

Penetration time of glove material: The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

![Safety glasses]

Safety glasses

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Crystalline</td>
</tr>
<tr>
<td>Colour</td>
<td>White</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>Melting Point/Melting range</td>
<td>264°C</td>
</tr>
<tr>
<td>Boiling Point/Boiling range</td>
<td>&gt;276°C</td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;150°C</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>445°C</td>
</tr>
<tr>
<td>Self Igniting</td>
<td>Product is not self-igniting</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Formation of explosive air-vapour/dust mixture are possible in rare case when the material is dry</td>
</tr>
<tr>
<td>Explosion limit</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>30g/m³</td>
</tr>
<tr>
<td>Vapour pressure at 20°C</td>
<td>&lt;0.001 Pa</td>
</tr>
<tr>
<td>Density at 20°C</td>
<td>800kg/m³</td>
</tr>
<tr>
<td>Solubility in/miscibility with water at 20°C</td>
<td>50g/L</td>
</tr>
<tr>
<td>pH value at 20°C</td>
<td>4 - 7</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>1.7log POW</td>
</tr>
</tbody>
</table>
### SECTION X  
**STABILITY AND REACTIVITY**

**Dangerous Reactions:** No dangerous reactions known.

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Dangerous decomposition products:** No dangerous decomposition products known.

### SECTION XI  
**TOXICOLOGICAL INFORMATION**

**Acute toxicity:**

**LD/LC50 values relevant for classification:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral (OECD 401)</th>
<th>Inhalative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>115-77-5 Pentaerythritol</strong></td>
<td>LD0</td>
<td>LC50/4 h</td>
</tr>
<tr>
<td></td>
<td>&gt;5110 mg/kg (rat)</td>
<td>NOEL &gt; 11 mg/l (rat)</td>
</tr>
</tbody>
</table>

**Inhalative LC50/4 h NOEL > 11 mg/l (rat)  
**Primary irritant effect:**

- **on the skin (OECD 404):** No irritating effect.
- **on the eye (OECD 405):** No irritating effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral (OECD 401)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>115-77-5 Pentaerythritol</strong></td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**126-58-9 Dipentaerythritol** (2,2,2',2'-tetrakis(hydroxymethyl)-3,3'-oxydipropan-1-ol)

**Primary irritant effect:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral (OECD 401)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>126-58-9 Dipentaerythritol</strong></td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral (OECD 401)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>115-77-5 Pentaerythritol</strong></td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral (OECD 401)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>115-77-5 Pentaerythritol</strong></td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>&gt; 2000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Mutagenicity (Ames test):** Negative

**Carcinogenicity:** Not listed by ACGIH, IARC, NTP or CA Prop65

### SECTION XII  
**ECOLOGICAL INFORMATION**

**Information about elimination (persistence and degradability):**

<table>
<thead>
<tr>
<th>Compound</th>
<th>BOD28</th>
<th>COD</th>
<th>TOC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>115-77-5 Pentaerythritol</strong></td>
<td>0.99g/g (OECD 301)</td>
<td>1380 mg/g</td>
<td>1300 mg/g</td>
</tr>
</tbody>
</table>
126-58-9 Dipentaerythritol  (\(2,2',2''\)-tetraakis(hydroxymethyl)-3,3''-oxydipropan-1-ol)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD28</td>
<td>2.2g/g (OECD 301)</td>
</tr>
<tr>
<td>BOD7</td>
<td>9.5mg/g</td>
</tr>
<tr>
<td>COD</td>
<td>2g/g</td>
</tr>
</tbody>
</table>

**Behaviour in environmental systems:**

**Mobility and bioaccumulation potential:**

Due to the distribution coefficient n-octanol/water an accumulation in organisms is not expected

**Eco-toxicological effects:**

**Aquatic toxicity:**

<table>
<thead>
<tr>
<th>Laboratory Assay</th>
<th>EC50/96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC10/18 h</td>
<td>&gt; 100 mg/l (alga)</td>
</tr>
<tr>
<td>EC3/7 d</td>
<td>&gt; 100 mg/l (daphnia)</td>
</tr>
<tr>
<td>EC50/24 h</td>
<td>&gt; 5000 mg/l (fish)</td>
</tr>
</tbody>
</table>

**Remark:** Harmless to fish up to the tested concentration

**General notes:**

Water hazard class 1 (German Regulation): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach groundwater, water course or sewage system.

**SECTION XIII DISPOSAL CONSIDERATION**

**European waste catalogue**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 00 00</td>
<td>Waste from organic chemical processes</td>
</tr>
<tr>
<td>07 01 00</td>
<td>Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals</td>
</tr>
<tr>
<td>07 01 99</td>
<td>Wastes not otherwise specified</td>
</tr>
</tbody>
</table>

**Recommendation:** Disposal must be made according to official regulations.
SECTION XIV  TRANSPORT INFORMATION

Land transport ADR/RID (cross-border): ADR/RID class: -

Maritime transport IMDG: IMDG Class: -

Air transport ICAO-TI and IATA-DGR: ICAO/IATA Class: -

DOT: Not a DOT controlled material.

Transport/Additional information: Not dangerous goods according to the above specifications.

SECTION XV  REGULATORY INFORMATION

HMIS:

Health Hazard: 1
Fire Hazard: 1
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (USA):

Health: 1
Flammability: 1
Reactivity: 0
Specific Hazard:

Labeling according to EU guidelines:
Observe the general safety regulations when handling chemicals.

The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials.


• Special labelling of certain preparations:
Safety data sheet available for professional user on request

• National regulations:
Registrations:
TSCA (USA) YES
DSL (Canada) YES
ENCL (Japan) YES
ECL (Korea) YES

Water hazard class: Water hazard class 1 (German regulation): slightly hazardous for water.
<table>
<thead>
<tr>
<th>SECTION XVI</th>
<th>OTHER INFORMATION</th>
</tr>
</thead>
</table>

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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# Material Safety Data Sheet

## Sodium Formate

### Section I: Identification of the substance/preparation and of the company/undertaking

**Product name:** Sodium Formate  
**Application of the substance / the preparation**  
In dyeing industry, paper industry, leather tanning process, electroplating process, initial product for chemical reactions, agricultural chemicals  
**UN Number:** Not regulated  
**Hazchem code:** None allocated  
**Contact Information:**  
Methanol Chemicals Company (CHEMANOL)  
P.O. Box 2101  
Jubail Industrial City, 31951  
Kingdom of Saudi Arabia  
Website: [www.chemanol.com](http://www.chemanol.com)  
**Tel. No:** 00966-13-343-8320  
**Emergency Contact No:** 00966-13-343-8999

### Section II: Composition/information on ingredients

**Chemical characterization**

**Chemical components:**

<table>
<thead>
<tr>
<th>CAS</th>
<th>EINECS</th>
<th>Sodium formate</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>141-53-7</td>
<td>205-488-0</td>
<td></td>
<td>90 - 100%</td>
</tr>
</tbody>
</table>

### Section III: Hazards identification

- **Hazard description:** Not applicable.  
- **Information concerning particular hazards for human and environment:** Not applicable.  
- **Carcinogenic effects:** Not available  
- **Mutagenic effects:** Not available  
- **Teratogenic effects:** Not available  
- **Developmental toxicity:** Not available

### Section IV: First-aid measures

- **After inhalation:** Take affected persons into fresh air and keep quiet.  
- **After skin contact:** Rinse with warm water.  
- **After eye contact:** Rinse opened eye for several minutes under running water.
Section V : Fire-fighting measures

Suitable extinguishing agents:
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Protective equipment: No special measures required.

Section VI : Accidental release measures

Person-related safety precautions: Use respiratory protective device.
Measures for environmental protection: Do not allow to enter sewers/ surface or ground water.
Measures for cleaning/collection: Pick up mechanically.
Additional information: No dangerous substances are released.

Section VII : Handling and storage

Handling:
Information for safe handling: Ensure good ventilation/exhaustion at the workplace.
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Further information about storage conditions: This product is hygroscopic.
Packing: In 25 kgs polypropylene bags & in 500/1000 kgs polypropylene jumbo bags.

Section VIII : Exposure controls/personal protection

Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Exposure limits: None listed (ACGIH/NIOSH/OSHA)

Personal protective equipment:
General protective and hygienic measures:
The usual precautionary measures are to be adhered to when handling chemicals.
Respiratory protection: Suitable respiratory protective device recommended.
Protection of hands:

Protective gloves

Material of gloves
Chloroprene rubber, CR
Nitrile rubber, NBR

Penetration time of glove material
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Safety glasses

Section IX : Physical and chemical properties

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form:</td>
<td>Crystalline powder</td>
</tr>
<tr>
<td>Colour:</td>
<td>White</td>
</tr>
<tr>
<td>Odour:</td>
<td>Odourless</td>
</tr>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>253-255°C</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Density at 20°C:</td>
<td>1919 kg/m³</td>
</tr>
<tr>
<td>Solubility in / Miscibility with water:</td>
<td>Easily soluble.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>-1.55/-0.22 log POW</td>
</tr>
</tbody>
</table>

Section X : Stability and reactivity

Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.

Dangerous reactions
No dangerous reactions known.

Dangerous decomposition products:
No dangerous decomposition products known.
# MATERIAL SAFETY DATA SHEET
## SODIUM FORMATE

### Section XI: Toxicological information

#### Acute toxicity:

<table>
<thead>
<tr>
<th>LD/LC50 values relevant for classification:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>141-53-7 sodium formate</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
</tr>
<tr>
<td></td>
<td>3000 mg/kg (rat)</td>
</tr>
</tbody>
</table>

#### Primary irritant effect:

**on the skin:**
No irritating effect.
OECD 404

**on the eye:**
No irritating effect.
OECD 405

**Sensitization:** No sensitizing effects known.

**Other information (about experimental toxicology):** Ames test: Negative (Not a mutagen)

### Section XII: Ecological information

#### Information about elimination (persistence and degradability):

<table>
<thead>
<tr>
<th>141-53-7 sodium formate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD28/COD</td>
<td>86 % (OECD 306)</td>
</tr>
<tr>
<td>COD</td>
<td>240 mg/g (O2)</td>
</tr>
<tr>
<td>Zahn-Wellen</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Other information:** The product is readily biodegradable.

**Behaviour in environmental systems:**

**Mobility and bioaccumulation potential:** Does not accumulate in organisms

**Ecotoxicological effects:**

#### Aquatic toxicity:

<table>
<thead>
<tr>
<th>141-53-7 sodium formate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EC0</td>
<td>&gt; 1000 mg/l (daphnia)</td>
</tr>
<tr>
<td>EC10/18 h</td>
<td>10600 mg/l (bacteria)</td>
</tr>
<tr>
<td>EC50/48 h</td>
<td>790 mg/l (alga)</td>
</tr>
<tr>
<td>LC50/96 h</td>
<td>&gt; 1000 mg/l (fish)</td>
</tr>
</tbody>
</table>

**Remark:** Harmless to fish up to the tested concentration
MATERIAL SAFETY DATA SHEET
SODIUM FORMATE

Section XIII : Disposal consideration

Recommendation: Disposal must be made according to official regulations.

Section XIV : Transport information

Land transport ADR/RID (cross-border)
ADR/RID class: -

Maritime transport IMDG:
IMDG Class: -

Air transport ICAO-TI and IATA-DGR:
ICAO/IATA Class: -

DOT regulations (United States):
Hazard class: -

Transport/additional information: Not dangerous according to above specifications.
MATERIAL SAFETY DATA SHEET
SODIUM FORMATE

Section XV : Regulatory information

HMIS

<table>
<thead>
<tr>
<th>HMIS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Personal Protection</td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

NATIONAL FIRE PROTECTION ASSOCIATION (estimated):

<table>
<thead>
<tr>
<th>HMIS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Specific Hazard</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Labelling according to EU guidelines:
The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials.

Observe the general safety regulations when handling chemicals.

National regulations:

Registrations: TSCA (USA) Yes
               DSL (Canada) Yes
               ENCL (Japan) Yes
               ECL (Korea) Yes
               AICS (Australia) Yes

Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.
# MATERIAL SAFETY DATA SHEET
## SODIUM FORMATE

### Section XVI : Other information

**References:** Not available.

**Other Special considerations:** Not available.

Information contact: Technical services Department.

For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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SECTION I : IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name : SPECIAL PENTA ORGANICS

Application of the substance / the preparation:
Chemical intermediate.

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia

Website: www.chemanol.com

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION 11: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization

Chemical components:

| CAS: 68442-60-4 | EINECS: 270-480-6 | Poly alcohols | > 65% |

Additional information: For the wording of the listed risk phrases refer to section 15/16.

SECTION III : HA ZARD IDENTIFICATION

Hazard description: Not applicable.

Information concerning particular hazards for human and environment:
The product does not have to be labeled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.
### SECTION IV: FIRST-AID MEASURES

**General information:** Remove any clothing soiled by the product.
**After inhalation:** Supply fresh air; consult doctor in case of complaints.
**After skin contact:** Wash with water and soap and rinse thoroughly.
**After eye contact:** Rinse opened eye under running water.
**After swallowing:** If you feel unwell consult doctor.

### SECTION V: FIRE-FIGHTING MEASURES

**Suitable extinguishing agents:**
Use fire extinguishing methods suitable to surrounding conditions.
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
**Protective equipment:** Wear self-contained respiratory protective device.

### SECTION VI: ACCIDENTAL RELEASE MEASURES

**Person-related safety precautions:** Use respiratory protective device against the effects of fumes/dust/aerosol.
**Measures for environmental protection:** Do not allow to enter sewers/surface or ground water.
**Measures for cleaning/collecting:** Absorb with liquid-binding material (sand, diatomite, acid binders, and universal binders).
**Additional information:** No dangerous substances are released.

### SECTION VII: HANDLING AND STORAGE

**Information for safe handling:** Ensure good ventilation/exhaustion at the workplace.
**Information about fire - and explosion protection:** No special measures required.
**Storage:**
**Information about storage in one common storage facility:** Not required.
## SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Additional information about design of technical facilities:** No further data; see item 7.

**Ingredients with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists valid during the making were used as basis.

**Personal protective equipment:**

**General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals.

**Respiratory protection:** Suitable respiratory protective device recommended.

### Protection of hands:

- **Protective gloves**

  **Material of gloves**
  - Neoprene gloves
  - Nitrile rubber, NBR

  **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

### Eye protection:

- **Tightly sealed goggles**
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>General Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form: Fluid</td>
</tr>
<tr>
<td>Colour: Brown</td>
</tr>
<tr>
<td>Odour: Characteristics</td>
</tr>
</tbody>
</table>

| Change in condition |
| Boiling point/boiling range: > 300 ºC |

| Flash Point: > 200 ºC |

| Self-igniting: Product is not self-igniting |

| Danger of explosion: Product does not present an explosion hazard |

| Density at 20 ºC: 1180 kg/m³ |

| Solubility in/miscibility with water: Soluble |

| Partition coefficient (n-octanol/water): <1 log POW |

| Viscosity: Dynamic at 23 ºC: 25 mPas |

SECTION X : STABILITY AND REACTIVITY

Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.

Dangerous reactions: No dangerous reactions known.

Dangerous decomposition products: No dangerous decomposition products known.

SECTION XI : TOXICOLOGICAL INFORMATION

Acute toxicity:

LD/LC50 values relevant for classification:

<table>
<thead>
<tr>
<th>68442-60-4 Poly alcohols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral: LD50</td>
</tr>
</tbody>
</table>

Primary irritant effect:

On the skin: No irritating effect.
On the eye: No irritating effect.
Sensitization: No sensitizing effects known.

Other information (about experimental toxicology): Ames test: Negative (Not a mutagen)
Additional toxicological information:
The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.
When used and handled according to specifications, the product does not have any harmful effects to our experience and the information provided to us.

SECTION XII : ECOLOGICAL INFORMATION

Information about elimination (persistence and degradability):
68442-60-4 Poly alcohols

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD28</td>
<td>100 mg/g (02)</td>
</tr>
<tr>
<td>COD</td>
<td>1470 mg/g (02)</td>
</tr>
</tbody>
</table>

Other information: The product is biodegradable.

General notes:
Water hazard class 1 (German Regulation): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or Sewage system.

SECTION XIII : DISPOSAL CONSIDERATIONS

European waste catalogue

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 00 00</td>
<td>WASTES FROM ORGANIC CHEMICAL PROCESSES</td>
</tr>
<tr>
<td>07 01 00</td>
<td>wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals</td>
</tr>
<tr>
<td>07 01 99</td>
<td>wastes not otherwise specified</td>
</tr>
</tbody>
</table>

Recommendation: Disposal must be made according to official regulations.

SECTION XIV : TRANSPORT INFORMATION

Land transport ADR/RID (cross-border)
ADR/RID class:

Maritime transport IMDG:
IMDG Class:

Air transport ICAO – TI and IATA-DGR:
ICAO/IATA Class:
Transport/Additional information: Not dangerous goods according to the above specifications.
SECTION XV : REGULATORY INFORMATION

Labeling according to EU guidelines:
Observe the general safety regulations when handling chemicals.
The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials.
National regulations:
Water hazard class: Water hazard class 1 (German regulation): slightly hazardous for water.

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET
TRIMETHYLAMINE ANHYDROUS

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: TRIMETHYLAMINE ANHYDROUS
Synonym: N- Methylmethanamine
Molecular Formula: C3H9N
UN No: 1083
CAS#: 75-50-3
EINECS#: 200-875-0
Hazchem Code: 2PE

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com

Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
<td>99.5 % min</td>
</tr>
<tr>
<td>Monomethylamine</td>
<td>74 – 89 - 5</td>
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</tr>
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<td>Dimethylamine</td>
<td>124-40-3</td>
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<tr>
<td>Ammonia</td>
<td>7664-41-7</td>
<td>0.05 % max</td>
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<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>0.4 % max</td>
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</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Toxic gas under pressure. Highly flammable. Irritant to eyes, skin and mucous membranes. Inhalation may result in chemical pneumonitis & pulmonary edema.

F+, Xn, Xi; R12-20-37/38-41
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Vapor may travel considerable distance to source of ignition & flash back. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: Flammable gas Explosion
Limits, Lower: 2.0 % Explosion Limits,
Upper: 11.6 %
NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature : 190 Deg C
Explosion sensitivity to static electricity : Not Available
Hazardous combustion product: Toxic fumes of NOx & Carbon Monoxide.
Extinguishing Media: Carbon dioxide, dry chemical powder, water.

Special firefighting procedure: Shut off supply. If not possible & no risk of surroundings, let the fire burn itself out. Use water spray to cool fire exposed container. Wear SCBA and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Reduce vapor with water spray. Be careful that the product is not present at a concentration level above TLV. Absorb spilled material with activated carbon & collect using mechanical equipment.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO Gas Tank Containers – Type T 50 (IMO 5)

Handling: Wear appropriate NIOSH / MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/trap in the discharge line to prevent hazardous back flow.

Storage: Carbon Steel, Stainless Steel & Monel are acceptable for use with Trimethylamine. Most other metals are not compatible particularly Silver, Copper & its alloys, Tin, Nickel, Zinc & its alloys. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit. Subject to storage regulation: US OSHA 29 CFR 1910.101

SECTION VIII : EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation. Ventilation equipment should be explosion-resistant.

EXPOSURE LIMITS: ACGIH TLV-TWA 5 ppm TLV-STEEL 15 ppm

NIOSH TWA 10 ppm, 10 hours STEL 15 ppm

OSHA TWA 10 ppm STEL 15 ppm

OEL- UK TWA 10 ppm(25 mg/m3) STEL 15 ppm (37 mg/m3)

EH 40 Jan 2000

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield
Skin: Butyl rubber, PVC or polyethylene.
Respirators: Wear appropriate NIOSH / OSHA approved respirator Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Compressed liquefied colorless gas
Odor: Fishy odour
Vapor Density (Air=1) : 2
Vapor Pressure: 220 kPa @ 20 Deg C
Relative Density (water=1): 0.7
Freezing point: -178.8 deg F Solubility in water at 25 C: Very good Boiling Point: 3 Deg C
Melting point : -117 Deg C

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat.
Incompatibilities with Other Materials: Copper, mercury, Silver, Tin, Zinc, Oxidizing compound, Brass, Magnesium & Acid. Contact with mercury may produce explosive compounds. Reacts violently when mixed with oxidizing agents such as nitrates, per chlorates, permanganates, chromates, nitric acid halogens and peroxides.
Hazardous reaction Product: Carbon Monoxide, Carbon dioxide, Nitrogen Oxides, Ammonia.

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: PA0350000
Routes of Entry: Skin contact, eye contact, inhalation, ingestion
Toxicity to Animals:
Oral LD50 = 500 mg/Kg(rat) ACGIH,2001
Inhalation LC 50 =3519 ppm (rat) IUCLID,2000
Acute Health Effects
Toxic: Inhalation, Ingestion
Skin: Causes severe irritation & ulceration / burns.
Eyes: Causes severe irritation & burns. Contact may cause conjunctival ulceration & hemorrhages, corneal ulceration, edema and opacities.
Inhalation: May result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis & pulmonary edema.

Ingestion. Harmful if swallowed. May cause severe gastrointestinal tract irritation & possible burns. May affect behavior / nervous system, cardiovascular system.

Toxicity to Human (chronic effect)

Carcinogenicity:
OSHA: Not classified
NTP: Not classified
IARC: Not classified

Mutagenicity: No information available.
Teratogenicity: No information available
Reproductive effects: No information available

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information

Toxicity to fish
LC50/48h/Oryzias Latipes=1000,000 µg/L

Mobility
Soluble in water

Persistence and Degradability

According to the result of tests on biodegradability this product is considered as being readily biodegradable.

Bioaccumulative Potential

Bio concentration Factor(BCF)=0.15 (estimated from KOW)

SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
SECTION XIV : TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product shipping Name</th>
<th>U.S DOT</th>
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SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 3
Fire Hazard: 4
Reactivity: 0
Personal Protection: H

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health: 3
Flammability: 4
Reactivity: 0
Specific Hazard:

Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
<th>ENCS (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives

Hazard symbol

F+: Extremely Flammable
Xn: Harmful

Risk Statements:
12 – 20 – 37/38 - 41

Safety Statements:
2 -16-26-39

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET

TRIMETHYLAMINE AQUEOUS SOLUTION

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: TRIMETHYLAMINE AQUEOUS SOLUTION
Synonym: N- Methylmethanamine
Molecular Formula: C₃H₉N
UN No: 1297
CAS#: 75-50-3
EINECS#: 200-875-0
Hazchem Code: 2WE

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
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<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
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</thead>
<tbody>
<tr>
<td>Trimethylamine</td>
<td>75 – 50 - 3</td>
<td>30 % min</td>
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<tr>
<td>Monomethylamine</td>
<td>74 – 89 - 5</td>
<td>0.03 % max</td>
</tr>
<tr>
<td>Dimethylamine</td>
<td>124-40-3</td>
<td>0.04 % max</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>70 % max</td>
</tr>
</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Toxic gas under pressure. Highly flammable. Irritant to eyes, skin and mucous membranes. Inhalation may result in chemical pneumonitis & pulmonary edema.

F+, Xn, C; R12-20/22-34
SECTION IV : FIRST AID MEASURES

Eyes: Immediately flush eyes with plenty of running water for at least 15 minutes. Remove contact lenses if possible. Ensure adequate flushing by separating the eyelids with fingers.

Skin: Flush skin and hair with running water & non-abrasive soap. A weak (1-2%) acetic acid solution or vinegar may be used to counteract.

Ingestion: Wash out mouth with water provided person is conscious. Do not induce vomiting. Loosen tight clothing. Give water to drink.

Inhalation: Prompt medical attention is mandatory in case of overexposures. Remove victim to fresh air. Rest in half upright position. If breathing is difficult, give oxygen.

SECTION V : FIRE AND EXPLOSION DATA

General Information: Flammable gas. Vapor may travel considerable distance to source of ignition & flash back. Emit toxic fumes under fire conditions. Forms explosive mixtures in air. Container explosion may occur under fire conditions.

Flash Point: 3 Deg C (CC) Explosion
Limits, Lower: 2.0 % Explosion
Limits, Upper: 11.6 %
NFPA Rating (estimated) : Health: 3; Flammable: 4; Reactivity: 0
Auto ignition temperature : 189 Deg C
Explosion sensitivity to static electricity : Not Available
Hazardous combustion product: Toxic fumes of NOx & Carbon Monoxide.
Extinguishing Media: Carbon dioxide, dry chemical powder, water.

Special firefighting procedure: Shut off supply. If not possible & no risk of surroundings, let the fire burn itself out. Use water spray to cool fire exposed container. Wear SCBA and protective clothing.

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Wear self contained breathing apparatus, rubber boots and heavy rubber gloves.

Leak / Spills: Evacuate all personnel from affected area. Shut off all ignition sources. Use non sparking tools. If the leak is in user’s equipment, be certain to purge piping with an inert gas prior to attempting repairs. Reduce vapor with water spray. Be careful that the product is not present at a concentration level above TLV. Absorb spilled material with activated carbon & collect using mechanical equipment.
SECTION VII : HANDLING AND STORAGE

Storage containers: ISO Gas Tank Containers – Type T 11 (IMO 1)

Handling: Wear appropriate NIOSH / MSHA approved respirator, chemical resistant gloves, safety goggles & other protective clothing. Do not breathe vapor. Do not get in eyes, on skin, on clothing. Keep away from heat, sparks and open flame. Use a pressure reducing regulator when connecting container to a lower pressure piping or system. Do not heat container to increase discharge rate. Use check valve/trap in the discharge line to prevent hazardous back flow.

Storage: Carbon Steel, Stainless Steel & Monel are acceptable for use with Trimethylamine. Most other metals are not compatible particularly Silver, Copper & its alloys, Tin, Nickel, Zinc & its alloys. Keep container tightly closed. Post no smoking or open flame signs in the storage or use area. Use in a cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked area & emergency exit. Subject to storage regulation: US OSHA 29 CFR 1910.101

SECTION VIII : EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS: Hood with forced ventilation. Use local ventilation. Ventilation equipment should be explosion-resistant.

EXPOSURE LIMITS:

<table>
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<tr>
<th></th>
<th>ACGIH</th>
<th>TLV-TWA</th>
<th>TLV-STEL</th>
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<tr>
<td></td>
<td></td>
<td>5 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>NIOSH</td>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 ppm, 10 hours</td>
<td>15 ppm</td>
</tr>
<tr>
<td>OSHA</td>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 ppm</td>
<td>15 ppm</td>
</tr>
<tr>
<td>OEL- UK</td>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 ppm(25 mg/m3)</td>
<td>15 ppm (37 mg/m3)</td>
</tr>
</tbody>
</table>

EH 40 Jan 2000

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Safety goggles, Face shield
Skin: Butyl rubber, PVC or polyethylene.
Respirators: Wear appropriate NIOSH / OSHA approved respirator Other/General Protection: Safety glass, Apron, Hand gloves, Safety shower, Eye bath
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Colorless Liquid
Odor: Ammonical odour
Vapor Density (Air=1) : 2.04
Vapor Pressure: 58 kPa @ 20 Deg C
Relative Density (water=1): 0.87
Solubility in water at 25 C: Very good
Boiling Point: 31 Deg C
Melting point : -50 Deg C

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperature & pressure.
Conditions to Avoid: Containers should not be exposed to sudden shock or sources of heat.

Incompatibilities with Other Materials: Copper, mercury, Silver, Tin, Zinc, Oxidizing compound, Brass, Magnesium & Acid. Contact with mercury may produce explosive compounds. Reacts violently when mixed with oxidizing agents such as nitrates, per chlorates, permanganates, chromates, nitric acid halogens and peroxides.

Hazardous reaction Product: Carbon Monoxide, Carbon dioxide, Nitrogen Oxides, Ammonia.

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: PA0350000

Routes of Entry: Skin contact, eye contact, inhalation, ingestion

Toxicity to Animals:

Oral LD50 = 500 mg/Kg(rat) ACGIH,2001
Inhalation LC 50 = 3519 ppm (rat) IUCLID,2000

Acute Health Effects

Toxic: Inhalation, Ingestion

Skin: Causes severe irritation & ulceration / burns.

Eyes: Causes severe irritation & burns. Contact may cause conjunctival ulceration & hemorrhages, corneal ulceration, edema and opacities.

Inhalation: May result in spasm, inflammation and edema of the larynx and bronchi,
chemical pneumonitis & pulmonary edema.

Ingestion. Harmful if swallowed. May cause severe gastrointestinal tract irritation & possible burns. May affect behavior / nervous system, cardiovascular system.

Toxicity to Human (chronic effect)

Carcinogenicity:

OSHA: Not classified
NTP: Not classified
IARC: Not classified

Mutagenicity: No information available.

Teratogenicity: No information available

Reproductive effects: No information available

SECTION XII: ECOLOGICAL INFORMATION

Ecological Information

Toxicity to fish

LC50/48h/Oryzias Latipes=1000,000 µg/L

Mobility

Soluble in water

Persistence and Degradability

According to the result of tests on biodegradability this product is considered as being readily biodegradable.

Bioaccumulative Potential

Bio concentration Factor(BCF)=0.15 (estimated from KOW)

SECTION XIII : DISPOSAL CONSIDERATION

Dispose in accordance with local applicable regulation. Subject to disposal regulation: US EPA 40 CFR 261 / 262
SECTION XIV : TRANSPORT INFORMATION

<table>
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<tr>
<th>Sr. No</th>
<th>U.S DOT</th>
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<td>UN1297</td>
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SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 3
Fire Hazard: 4
Reactivity: 0
Personal Protection: H

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health: 3
Flammability: 4
Reactivity: 0
Specific Hazard:

Global Chemical Inventory status

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Product name and Components</th>
<th>CAS no.</th>
<th>DSL (Canada)</th>
<th>TSCA (US)</th>
<th>EINECS (EU)</th>
<th>AICS (Australia)</th>
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<tbody>
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<td>1</td>
<td>Trimethylamine</td>
<td>75-50-3</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
<td>listed</td>
</tr>
</tbody>
</table>

European Labeling in Accordance with EC Directives

Hazard symbol

F+: Extremely Flammable
C: Corrosive

Risk Statements:
12 – 20 / 22 – 34

Safety Statements:
1/2 -3-16-26-29-36/37/39-45

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET.

UREA FORMALDEHYDE CONCENTRATE

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Urea Formaldehyde Concentrate
Synonym: UF-85
Empirical Formula: CH₂O Viscous solution
          NH₂CONHCH₂OH
UN No: 2209
CAS#: UREA 57.13.6 25%
       FORMALDEHYDE 50.00.0 60%
RTECS: Not available
Hazchem Code: 1Z

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

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<th>Name</th>
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<td>Urea Formaldehyde</td>
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<td>60 % HCHO and 25 %</td>
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SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Flash Point: 79 deg C. Solutions of Formaldehyde in water are considered combustible as the flammable vapors escape and form explosive mixtures with air over a wide range. Harmful if inhaled. May cause allergic skin reaction. May be harmful if swallowed. Target Organs: Respiratory system, eyes and skin.

POTENTIAL HEALTH EFFECTS

Eye: Irritation of eyes, conjunctivitis, swelling of eye lids.
Skin: May cause dermatitis and skin sensitization
Ingestion: High formaldehyde content naturally results in toxicity similar to that of 50% formaldehyde solutions. Urea itself is not considered toxic, but large amounts taken internally have been known to be dangerous. The toxicity of formaldehyde being the dominant factor in UF-85 Concentrate
Inhalation: Irritation of nose and throat, coughing dyspnea and vomiting
SECTION IV : FIRST AID MEASURES

**Eyes:** Flush eyes with water. Don’t rub the eyes.

**Skin:** Get under shower. Remove contaminated clothing and shoes.

**Ingestion:** If victim is unconscious and having convulsions do nothing except turn him on his side. If victim conscious give water to rinse mouth.

**Inhalation:** Remove patient from exposure and move to fresh air. If breathing has stopped give artificial respiration.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** Solutions of Formaldehyde in water are considered combustible as the flammable vapors escape and form explosive mixtures with air over a wide range.

**Auto ignition Temperature:** 430 deg C  
**Flash Point:** 79 deg C (closed cup)  
**Flammable Limits, Lower:** 7.00 vol. %  
**Flammable Limits, Upper:** 73.00 vol. %  
**NFPA Rating (estimated):** Health: 3; Flammable: 2; Instability: 0

**Extinguishing Media:** For large fires, use water spray, fog or alcohol resistance foam. For small fires, use dry chemical, carbon dioxide.

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Isolate the line. Cut off Ignition sources. Use water to cool and disperse vapor to protect personnel. Approach release from upwind. Soak large spill into sand and flush down spill site with large quantity of water. Report any release. It may dangerous if it enters water intake. Do not walk through the spilled product.

SECTION VIII : HANDLING AND STORAGE

**Storage containers:** Steel tanks, HDPE drums (30,250 kgs) Road Tankers. Stainless steel (304, 316, and 405) or stainless clad steel is generally preferred for tanks.

**Handling:** Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Wear suitable respiratory equipment in case of insufficient ventilation. Minimize dust generation and accumulation. Do not get on skin or in eyes. Do not ingest or inhale. UF-85 Concentrate should be handled with all the safety precautions normally taken with formaldehyde solutions.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids, alkalis, amines and oxidizing agents. UF-85 is stable for at least six months under recommended storage conditions. At 55° C (131° F) viscosity will increase rapidly upon storage, for this reason, storage tanks should not be Exposed to direct summer sunlight & should be shielded from the direct rays of sun. Cars and tanks containing UF-85 should be electrically grounded. Smoking is strictly prohibited in storage area.
SECTION VII: EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Reasonable care in handling this formaldehyde containing material is more effective in preventing dermatitis than. Protective creams, which cannot be solely depended upon. Skin exposed to Concentrate should be washed as soon as possible. Tanks should be cleaned from the outside whenever possible. Complete protective suits and safety goggles, face shields, airline respirators or gas masks should be worn When needed. Only experienced, reliable personnel should be given the responsibility of handling UF-85.

EXPOSURE LIMITS:

Ceiling limit : 0.1 ppm   NIOSH
TLV : 0.3 ppm   ACGIH

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Use of approved respiratory, goggles,
Skin: Suitable protective clothing and gloves is recommended. Use safety shoes when handling drums. UF-85 Concentrate should be handled with all the safety precautions normally taken with formaldehyde solutions. Gloves and aprons made of resistant materials should be worn by personnel handling UF-85, and adequate ventilation should be provided.
Respirators: Wear formaldehyde or organic vapor cartridge mask or self contained breathing apparatus.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Water clear viscous solution
Odor: Pungent. (Slight.)
Taste: Not available.
Color: Water clear
pH of solution: 6-8
Boiling Point: About 100 deg C (212 deg F)
Viscosity: (300-500) C.P.S.
Specific Gravity/Density: 1.32 at 25 deg C (77 deg F)
Vapor Pressure: 10 mm Hg @ 25 deg C (77 deg F)
Evaporation rate: Negligible
Odor Threshold: 0.2 ppm
Solubility: soluble in water, methanol, ethanol

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable, more than 6 month after that viscosity will increase.
Conditions to Avoid: Keep away from ignition sources, strong acids oxidizing materials halogens, alkalis and amines.
Incompatibilities with Other Materials: May react with hydrochloric acid or other chloride ion to form bis chloro methyl ether (BCE). Reacts violently with oxidizing agents.
Hazardous Decomposition Products: Emits toxic vapors of formaldehyde when heated.
SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: Not available.
Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxic Effects:

SKIN: Causes severe skin irritation and possible burns. Repeated or prolonged skin contact may cause sensitization dermatitis.

EYE: Causes severe eye irritation and burns. May result in corneal injury.

INHALATION: Harmful if inhaled. May affect respiration (dyspnea), cause severe irritation of the upper respiratory tract with pain, burns, and inflammation of the lining of the nose, throat and lungs. May cause loss of smell, pulmonary edema and bronchopneumonia. Repeated or prolonged inhalation may cause asthma.

INGESTION: May be harmful if swallowed. May cause severe digestive tract irritation with inflammation of the mouth, throat and stomach, abdominal pain, nausea, vomiting, and diarrhea. Prolonged ingestion may affect the kidneys.

Available data indicate that formaldehyde do not produces mutagenic, teratogenic, embryo toxic or carcinogenic effects in man at concentrations which humans are exposed to or can tolerate. Moreover, UF-85 is completely non toxic.

Toxicity to Animals:

Acute oral toxicity (LD50): 42 mg/kg [Mouse]. (Formaldehyde)
Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. (Methyl alcohol).
Draize test, rabbit, skin: 2 mg/24H Severe; (Formaldehyde)
Inhalation, mouse (LC50): 505 mg/m3/2H; (Formaldehyde)

Epidemiological studies and case reports indicate an excess occurrence of a number of cancers in rat, but evidence for involvement for formaldehyde is strongest for nasal and nasopharyngeal cancer.

Toxicity to Human (Chronic Effects):

Neurotoxicity: No information available.
Mutagenicity: Exposure to Formaldehyde may affect genetic material.
Carcinogenicity:
ACGIH: A2 - Suspected Human Carcinogen
NTP: Suspect carcinoegen
IARC: Group 2A (probable )

Epidemiology: Epidemiological studies demonstrate effects of occupational formaldehyde exposure on human.

Teratogenicity: Classified Possible for human [Formaldehyde].

Reproductive effects: (Formaldehyde): Studies produced a weak association (limited evidence) between adverse human female reproductive effects and occupational exposure.

Other Studies: (For Gaseous formaldehyde)
Irritation threshold in eyes, nose or throat 0.2 - 1.6 ppm
Stronger irritation of upper respiratory tract, coughing, 3-6 ppm
lacrimation, extreme discomfort
Immediate dyspnea, burning in nose and throat, heavy
coughing and lacrimation 10 – 20 ppm
Necrosis of mucous membranes, laryngospasm, pulmonary edema > 50 ppm
## SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:**


## SECTION XIII: DISPOSAL CONSIDERATION

Waste must be disposed of in accordance with local environmental control regulations or USEPA guidelines using a registered waste disposal contractor.

## SECTION XIV: TRANSPORT INFORMATION

**Shipping Name:** Urea Formaldehyde (UF-85),
**Hazard Class:** 8, Corrosive Liquid
**UN Number:** 2209
**Packing Group:** III

**SPECIAL PROVISIONS FOR TRANSPORT:** Not available

## SECTION XV: REGULATORY INFORMATION

### HMIS
Health Hazard: 3
Fire Hazard: 2
Reactivity: 0
Personal Protection: G

### NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):

- **Health:** 3
- **Flammability:** 2
- **Reactivity:** U

**Specific Hazard:**

### Protective Equipment:

- Gloves.
- Synthetic apron.
- Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- Wear appropriate respirator when ventilation is inadequate.
- Splash goggles.

### TSCA

<table>
<thead>
<tr>
<th>CAS#</th>
<th>UREA</th>
<th>57.13.6</th>
<th>25 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORMALDEHYDE</td>
<td>50.0.0</td>
<td>60 %</td>
<td></td>
</tr>
</tbody>
</table>

### Health & Safety Reporting List

None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rules Section 12 b. or listed under TSCA section 12 b

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.

SARA
CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)
Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act.
Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA , 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
Hazard Symbols: C
Risk Phrases:
R 7 - May cause fire.
R 8 - Contact with combustible material may cause fire.
R: 36/37/39 - Irritating to eyes Respiratory system and skin.
R 52 - Harmful to aquatic organisms.

Safety Phrases:
S24 Avoid contact with skin.
S 26 In case of contact with eyes rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S61 Avoid release to the environment. Refer to special instructions/ safety data sheet

SECTION XVI: OTHER INFORMATION

References: ACGIH, TSCA, SARA, OSHA, NIOSH, NFPA, HMIS, EC Directives and available best information
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET

UREA FORMALDEHYDE RESIN 201P

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: UFORES 201P
Synonym: Urea Formaldehyde Resin
UN No: Not available.
CAS#: 9011-05-6
RTECS: Not listed
Hazchem Code: None

Contact Information:
Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: www.chemanol.com
Tel. No’s: 00966-13-343-8320
Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UREA FORMALDEHYDE RESIN</td>
<td>9011-05-6</td>
<td>&gt;95</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 2</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>3</td>
</tr>
</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS
Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.
SECTION IV : FIRST AID MEASURES

Eyes: Flush the eye continuously with running water. Continue flushing for at least 15 minutes. Seek medical attention.
Skin: Flush skin and hair with running water. Seek medical attention in event of irritation.
Ingestion: Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.
Inhalation: Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

General Information: The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes. Not considered to be a significant fire risk.
Auto Ignition Temperature: Not Applicable
Flash Point: Not Applicable
Flammable Limits, Lower: Not Applicable
Flammable Limits, Upper: Not Applicable
NFPA Rating (estimated): Health: 1; Flammable: 0; Instability: 0
Extinguishing Media: Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
The dust explosion limit data of UF/ORES 201P: 135g/m³

SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: May create slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII : HANDLING AND STORAGE

Storage containers: Paper bags of 25 kg capacity with poly ethylene liner.
Handling: The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.
Storage: Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.
EXPOSURE LIMITS: UF Resin (Dust) 10 mg/m³, Formaldehyde (vapor) : 0.3 ppm
PERSONAL PROTECTIVE EQUIPMENT:
Eyes: Use of approved Safety goggles.
Skin: Barrier cream and Neoprene rubber gloves. Overalls.
Respirators: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.
SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: White free flowing powder
Odor: Slight.
Color: white free flowing powder
pH of solution: 8-9
Boiling Point: Not applicable
Melting point: Approx. 125 deg C
Viscosity of 2:1 solution: 2000-6000 CP
Bulk Density: 0.4-0.6 g/cc
Solubility: soluble in water

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable,
Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.
Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.
Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.

SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
EYE: May be irritating to eyes
INHALATION: Dust may be irritating to respiratory system.
INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.
Toxicity to Human (Chronic Effects):
No data available

Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity:
ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)
NTP: Not listed
IARC: Group 2A (probable) (Formaldehyde)
Epidemiology: No information available.
Reproductive effects: No information available.
SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. However, avoid contaminating waterways.

SECTION XIII: DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

SECTION XIV: TRANSPORT INFORMATION

Shipping Name: Urea Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.): None.
SPECIAL PROVISIONS FOR TRANSPORT: None

SECTION XV: REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health: 1
Flammability: u
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

Health & Safety Reporting List
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

Chemical Test Rules
None of the chemicals in this product are under Chemical Test Rules
Section 12 b. None of the chemicals are listed under TSCA section 12 b

TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA: Hazardous substances & corresponding RQs
100 (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA , 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 9011-05-6 No information available.

GHS pictogram

Signal word WARNING

Hazard Statements

H317: May cause an allergic skin reaction

Precautionary Statements

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235: Store in well ventilated place. Keep cool
P501: Dispose of contents/container in accordance with local/regional/national International regulation.
SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET.

UREA FORMALDEHYDE RESIN 301P

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>UFORES 301P</th>
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<tr>
<td>Synonym:</td>
<td>Urea Formaldehyde Resin</td>
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<td>UN No:</td>
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<tr>
<td>CAS#:</td>
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<tr>
<td>RTECS:</td>
<td>Not listed</td>
</tr>
<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
</tbody>
</table>

Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II : COMPOSITION AND INFORMATION ON INGREDIENTS

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
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<tr>
<td>UREA FORMALDEHYDE RESIN</td>
<td>9011-05-6</td>
<td>&gt;95</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>WATER</td>
<td>7732-18-5</td>
<td>3</td>
</tr>
</tbody>
</table>

SECTION III : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.
SECTION IV : FIRST AID MEASURES

**Eyes:** Flush the eye continuously with running water. Continue flushing For at least 15 minutes. Seek medical attention.

**Skin:** Flush skin and hair with running water Seek medical attention in event of irritation.

**Ingestion:** Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.

**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.

**Auto ignition Temperature:** Not Applicable

**Flash Point:** Not Applicable

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated) :** Health: 1; Flammable: 0; Instability: 0

**Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

**The dust explosion limit data of UF301P – 135g/m³**

SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with poly ethylene liner.

**Handling:** The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII : EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m³, Formaldehyde (vapor) : 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eyes:** Use of approved Safety goggles.

**Skin:** Barrier cream and Neoprene rubber gloves. Overalls.

**Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.
### SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

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<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Physical state and appearance</td>
<td>White free flowing powder</td>
</tr>
<tr>
<td>Odor</td>
<td>slight</td>
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<td>Color</td>
<td>white free flowing powder</td>
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<tr>
<td>pH of solution</td>
<td>8-9</td>
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<td>Boiling Point</td>
<td>Not applicable</td>
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<tr>
<td>Melting point</td>
<td>Approx. 110 deg C</td>
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<td>Viscosity of 2:1 solution</td>
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<tr>
<td>Bulk Density</td>
<td>0.4-0.6 g/cc</td>
</tr>
<tr>
<td>Solubility</td>
<td>soluble in water</td>
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</tbody>
</table>

### SECTION X : STABILITY AND REACTIVITY

- **Chemical Stability**: Stable.
- **Conditions to Avoid**: Keep away from strong acids oxidizing materials, heat and naked flame.
- **Incompatibilities with Other Materials**: Product is considered stable. Hazardous polymerization will not occur.
- **Hazardous Decomposition Products**: Emits toxic fumes of NOX on burning.

### SECTION XI : TOXICOLOGICAL INFORMATION

- **RTECS**: Not listed
- **Routes of Entry**: Eye/Skin contact. Inhalation. Ingestion.
- **Toxic Effects**:
  - **ACUTE HEALTH EFFECTS**
    - **SKIN**: May be irritating to skin.
    - **EYE**: May be irritating to eyes
    - **INHALATION**: Dust may be irritating to respiratory system.
    - **INGESTION**: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.
  - **CHRONIC HEALTH EFFECTS**
    Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

- **Toxicity to Animals**:
  No information available.

- **Toxicity to Human (Chronic Effects)**:
  No data available

  - **Neurotoxicity**: No information available.
  - **Mutagenicity**: No information available.
  - **Carcinogenicity**:
    - ACGIH: A2 - Suspected Human Carcinogen (Formaldehyde)
    - NTP: Not listed
    - IARC: Group 2A (probable) (Formaldehyde)
  - **Epidemiology**: No information available.
  - **Reproductive effects**: No information available.
### SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:**
No Information available. However, avoid contaminating waterways.

### SECTION XIII: DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

### SECTION XIV: TRANSPORT INFORMATION

**Shipping Name:** Urea Formaldehyde Resin  
**Hazard Class:** None  
**UN Number:** None  
**Packing Group:** None  
**IMDG Code (Page No.):** None  
**SPECIAL PROVISIONS FOR TRANSPORT:** None

### SECTION XV: REGULATORY INFORMATION

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<th>HMIS</th>
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<td>Fire Hazard:</td>
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<td>Reactivity:</td>
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<tr>
<td>Personal Protection:</td>
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</table>

**NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.):**  
(Estimated)  
**Health:** 1  
**Fire:** 0  
**Reactivity:** 0  
**Specific Hazard:**

**Protective Equipment:**
Chemical Gloves.  
Safety goggles.  
Dust Mask respirator.

**TSCA**  
Not listed.

**Health & Safety Reporting List**  
None of the chemicals are on Health & Safety Reporting List under sec. 716.120 under US EPA

**Chemical Test Rules**  
None of the chemicals in this products are under a Chemical Test Rules  
Section 12 b. None of the chemicals are listed under TSCA section 12 b

**TSCA Significant New Use Rule**  
None of the chemicals in this material have a SNUR under TSCA.
CERCLA : Hazardous substances & corresponding RQs
100  (As Formaldehyde solution)
SARA Section 302 Extremely Hazardous Substances
500 (As Formaldehyde solution)
SARA Section 313
X (As Formaldehyde solution)
RCRA
U122 (As Formaldehyde solution)

Clean Air Act:
CAS# 50.0.0 Formaldehyde Mentioned as Hazardous Air pollutants under Clean Air Act sec 112 (r)

Clean Water Act:
CAS# 50.0.0 Formaldehyde is not listed as a Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
CAS# 50.0.0 Formaldehyde considered highly hazardous by OSHA , 29 CFR 1910.119 App A

European Labeling in Accordance with EC Directives
CAS# 9011-05-6 No information available.

GHS pictogram

Signal word          WARNING

Hazard Statements
H317 : May cause an allergic skin reaction

Precautionary Statements
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235 : Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.
SECTON XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>UFORES 401P</th>
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<tbody>
<tr>
<td>Synonym:</td>
<td>Urea Formaldehyde One Shot Resin</td>
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<td>UN No:</td>
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<td>CAS#:</td>
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<td>RTECS:</td>
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<tr>
<td>Hazchem Code:</td>
<td>None</td>
</tr>
</tbody>
</table>

Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)
Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

Hazard Classification: Skin Sensitization
GHS pictogram

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FORM#MKT/F10E-401P REV.02
Issue Date 01/08/ 2014: Supersedes 01/08/ 2011
Signal word

**WARNING**

**Hazard Statements**
H317 : May cause an allergic skin reaction

**Precautionary Statements**
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235: Store in well ventilated place. Keep cool
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.

**SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS**

**Composition:**

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UREA FORMLDEHYDE RESIN</td>
<td>9011-05-6</td>
<td>70 - 90</td>
</tr>
<tr>
<td>FORMALDEHYDE</td>
<td>50-00-0</td>
<td>&lt; 1.8</td>
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<td>ORGANIC FILLER</td>
<td>-</td>
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<tr>
<td>HARDENER (AMMONIUM SALT)</td>
<td>-</td>
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**SECTION IV : FIRST AID MEASURES**

**Eyes:** Flush the eye continuously with running water. Continue flushing For at least 15 minutes. Seek medical attention.

**Skin:** Flush skin and hair with running water Seek medical attention in event of irritation.

**Ingestion:** Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.

**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

**SECTION V : FIRE AND EXPLOSION DATA**

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.

**Auto ignition Temperature:** Not Applicable

**Flash Point:** Not Applicable

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated)**: Health: 1; Flammable: 0; Instability: 0

**Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.

**The dust explosion limit data of UFORES 401P– 75g/m^{3}**
SECTION VI : ACCIDENTAL RELEASE MEASURE

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VIII : HANDLING AND STORAGE

Storage containers: Paper bags of 25 kg capacity with poly ethylene liner.
Handling: The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.
Storage: Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VII : EXPOSURE CONTROL /PERSONAL PROTECTION

ENGINEERING CONTROLS: Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.
EXPOSURE LIMITS: UF Resin (Dust) 10 mg/m3 , Formaldehyde (vapor) : 0.3 ppm

PERSONAL PROTECTIVE EQUIPMENT:
Eyes: Use of approved Safety goggles.
Skin: Barrier cream and Neoprene rubber gloves. Overalls.
Respirators: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Free flowing powder
Odor: Slight.
Color: white to slightly creamish
Boiling Point: Not applicable
Melting point : Approx. 110 deg C
Viscosity of 2:1 solution: 3000 - 6500 CP
Bulk Density: 0.4-0.6 g/cc
Solubility: soluble in water

SECTION X : STABILITY AND REACTIVITY

Chemical Stability: Stable,
Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.
Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.
Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.
SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
EYE: May be irritating to eyes
INHALATION: Dust may be Irritating to respiratory system.
INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.

Toxicity to Human (Chronic Effects):
No data available

Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: No information available.
Epidemiology: No information available.
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No information available. How ever , avoid contaminating waterways.

SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Urea Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.) : None.
SPECIAL PROVISIONS FOR TRANSPORT : None
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.): (Estimated)
Health: 1
Flammability: 0
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.

Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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# MATERIAL SAFETY DATA SHEET.

## UREA FORMALDEHYDE RESIN 402P

## SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
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<tr>
<th><strong>Product Name:</strong></th>
<th>UFORES 402 P</th>
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<tbody>
<tr>
<td><strong>Synonym:</strong></td>
<td>Urea Formaldehyde One Shot Resin</td>
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<tr>
<td><strong>Methanol Chemicals Company (CHEMANOL)</strong></td>
</tr>
<tr>
<td>P.O. Box 2101</td>
</tr>
<tr>
<td>Jubail Industrial City, 31951</td>
</tr>
<tr>
<td>Kingdom of Saudi Arabia</td>
</tr>
<tr>
<td>Website: <a href="http://www.chemanol.com">www.chemanol.com</a></td>
</tr>
<tr>
<td><strong>Tel. No:</strong></td>
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<td><strong>Emergency Contact No:</strong></td>
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## SECTION II : HAZARD IDENTIFICATION

### EMERGENCY OVERVIEW

Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

### POTENTIAL HEALTH EFFECTS

**Eye:** May be an eye irritant.

**Skin:** May be irritating to skin.

**Ingestion:** Ingestion may result in abdominal discomfort.

**Inhalation:** Dust May be Irritating to respiratory system.

**Hazard Classification:** Skin Sensitization

**GHS pictogram**
Signal word: WARNING

Hazard Statements
H317 : May cause an allergic skin reaction

Precautionary Statements
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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Inhalation: Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

SECTION V : FIRE AND EXPLOSION DATA

General Information: The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.
Auto ignition Temperature: Not Applicable
Flash Point: Not Applicable
Flammable Limits, Lower: Not Applicable
Flammable Limits, Upper: Not Applicable
NFPA Rating (estimated) : Health: 1; Flammable: 0; Instability: 0
Extinguishing Media: Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
### SECTION VI: ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

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**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m3, Formaldehyde (vapor) : 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT:**

- **Eyes:** Use of approved Safety goggles.
- **Skin:** Barrier cream and Neoprene rubber gloves. Overalls.
- **Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

### SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

**Physical state and appearance:** Free flowing powder

- **Odor:** Slight.
- **Color:** white to slightly creamish
- **Boiling Point:** Not applicable
- **Melting point:** Approx. 110 deg C
- **Viscosity of 2:1 solution:** 3000 - 6500 CP
- **Bulk Density:** 0.4-0.6 g/cc
- **Solubility:** soluble in water

### SECTION X: STABILITY AND REACTIVITY

**Chemical Stability:** Stable,

**Conditions to Avoid:** Keep away from strong acids oxidizing materials, heat and naked flame.

**Incompatibilities with Other Materials:** Product is considered stable. Hazardous polymerization will not occur.

**Hazardous Decomposition Products:** Emits toxic fumes of NOx on burning.
### SECTION XI : TOXICOLOGICAL INFORMATION

**RTCEC:** Not listed  
**Routes of Entry:** Eye/Skin contact. Inhalation. Ingestion.  
**Toxic Effects:**

**ACUTE HEALTH EFFECTS**  
**SKIN:** May be irritating to skin.  
**EYE:** May be irritating to eyes  
**INHALATION:** Dust may be irritating to respiratory system.  
**INGESTION:** Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

**CHRONIC HEALTH EFFECTS**  
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

**Toxicity to Animals:**  
No information available.

**Toxicity to Human (Chronic Effects):**  
No data available

- **Neurotoxicity:** No information available.  
- **Mutagenicity:** No information available.  
- **Carcinogenicity:** No information available.  
- **Epidemiology:** No information available.  
- **Reproductive effects:** No information available.

### SECTION XII: ECOLOGICAL INFORMATION

**Ecotoxicity:**  
No Information available. However, avoid contaminating waterways.

### SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

### SECTION XIV : TRANSPORT INFORMATION

**Shipping Name:** Urea Formaldehyde Resin  
**Hazard Class:** None  
**UN Number:** None  
**Packing Group:** None  
**IMDG Code (Page No.):** None  
**SPECIAL PROVISIONS FOR TRANSPORT:** None
SECTION XV : REGULATORY INFORMATION

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<td>Reactivity: 0</td>
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<tr>
<td>(Estimated)</td>
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<td>Health: 1</td>
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<td>Flammability: 0</td>
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**References**: Not available.

**Other Special considerations**: Not available.

Information contact: Technical services Department.

For any enquiry/comment regarding this Material safety Data sheet,

Kindly contact: drkhan@chemanol.com

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UREA FORMALDEHYDE RESIN 403P

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Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

Hazard Classification: Skin Sensitization

GHS pictogram

![Safety Hazard Symbol](image-url)
Signal word

**WARNING**

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H317: May cause an allergic skin reaction

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P102: Keep out of reach of children.
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**Flash Point:** Not Applicable
**Flammable Limits, Lower:** Not Applicable
**Flammable Limits, Upper:** Not Applicable
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**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m³

**PERSONAL PROTECTIVE EQUIPMENT:**

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**Skin:** Barrier cream and Neoprene rubber gloves. Overalls.

**Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

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**Color:** white to slightly creamish

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**Melting point:** Approx. 110 deg C

**Viscosity of 2:1 solution:** 3000 - 6500 CP

**Bulk Density:** 0.4-0.6 g/cc

**Solubility:** soluble in water

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Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.  
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No information available.  
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No data available  

Neurotoxicity: No information available.  
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Carcinogenicity: No information available.  
Epidemiology: No information available.  
Reproductive effects: No information available.

### SECTION XII : ECOLOGICAL INFORMATION

Ecotoxicity:  
No Information available. How ever, avoid contaminating waterways.

### SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

### SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Urea Formaldehyde Resin  
Hazard Class: None  
UN Number: None  
Packing Group: None  
IMDG Code (Page No.): None.  
SPECIAL PROVISIONS FOR TRANSPORT: None
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 1
Flammability: 0
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

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Not listed.

SECTION XVI : OTHER INFORMATION

References: Not available.
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<td>RTECS:</td>
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<tr>
<td>Hazchem Code:</td>
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</tr>
</tbody>
</table>

Contact Information:

Methanol Chemicals Company (CHEMANOL)
P.O. Box 2101
Jubail Industrial City, 31951
Kingdom of Saudi Arabia
Website: [www.chemanol.com](http://www.chemanol.com)

Tel. No: 00966-13-343-8320

Emergency Contact No: 00966-13-343-8999

SECTION II : HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW**

Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

**POTENTIAL HEALTH EFFECTS**

**Eye:** May be an eye irritant.

**Skin:** May be irritating to skin.

**Ingestion:** Ingestion may result in abdominal discomfort.

**Inhalation:** Dust May be Irritating to respiratory system.

**Hazard Classification:** Skin Sensitization

GHS pictogram

![GHS pictogram](image)
WARNING

Hazard Statements
H317: May cause an allergic skin reaction

Precautionary Statements
P102: Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403 +P235: Store in well ventilated place. Keep cool
P501: Dispose of contents/container in accordance with local/regional/national International regulation.

SECTION III: COMPOSITION AND INFORMATION ON INGREDIENTS

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<tr>
<th>Name</th>
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<td>HARDENER (AMMONIUM SALT)</td>
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SECTION IV: FIRST AID MEASURES

Eyes: Flush the eye continuously with running water. Continue flushing For at least 15 minutes. Seek medical attention.
Skin: Flush skin and hair with running water Seek medical attention in event of irritation.
Ingestion: Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.
Inhalation: Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practitioner, either at site or at the nearest hospital.

SECTION V: FIRE AND EXPLOSION DATA

General Information: The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.
Auto ignition Temperature: Not Applicable
Flash Point: Not Applicable
Flammable Limits, Lower: Not Applicable
Flammable Limits, Upper: Not Applicable
NFPA Rating (estimated): Health: 1; Flammable: 0; Instability: 0
Extinguishing Media: Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
The dust explosion limit data of UFORES 404P = 75g/m³
SECTION VI: ACCIDENTAL RELEASE MEASURE

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

SECTION VII: HANDLING AND STORAGE

Storage containers: Paper bags of 25 kg capacity with poly ethylene liner.

Handling: The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.

Storage: Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

SECTION VIII: EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

EXPOSURE LIMITS: UF Resin (Dust) 10 mg/m3

PERSONAL PROTECTIVE EQUIPMENT:

Eyes: Use of approved Safety goggles.

Skin: Barrier cream and Neoprene rubber gloves. Overalls.

Respirators: Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Free flowing powder

Odor: Slight.

Color: white to slightly creamish

Boiling Point: Not applicable

Melting point: Approx. 110 deg C

Viscosity of 2:1 solution: 3000 - 6500 CP

Bulk Density: 0.4-0.6 g/cc

Solubility: soluble in water

SECTION X: STABILITY AND REACTIVITY

Chemical Stability: Stable,

Conditions to Avoid: Keep away from strong acids oxidizing materials, heat and naked flame.

Incompatibilities with Other Materials: Product is considered stable. Hazardous polymerization will not occur.

Hazardous Decomposition Products: Emits toxic fumes of NOX on burning.
SECTION XI : TOXICOLOGICAL INFORMATION

RTECS: Not listed
Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

ACUTE HEALTH EFFECTS
SKIN: May be irritating to skin.
EYE: May be irritating to eyes
INHALATION: Dust may be Irritating to respiratory system.
INGESTION: Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

Toxicity to Animals:
No information available.

Toxicity to Human (Chronic Effects):
No data available

Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: No information available.
Epidemiology: No information available.
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No Information available. How ever , avoid contaminating waterways.

SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Urea Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.) : None.
SPECIAL PROVISIONS FOR TRANSPORT : None
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 1
Flammability: U
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall CHEMANOL be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if CHEMANOL has been advised of the possibility of such damages.
MATERIAL SAFETY DATA SHEET.

UREA FORMALDEHYDE RESIN 405P

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>UFORES 405P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonym:</td>
<td>Urea Formaldehyde One Shot Resin</td>
</tr>
<tr>
<td>UN No:</td>
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</tr>
<tr>
<td>CAS#:</td>
<td>Not available.</td>
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<td>RTECS:</td>
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<td>Emergency Contact No:</td>
<td>00966-13-343-8999</td>
</tr>
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SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
Skin: May be irritating to skin.
Ingestion: Ingestion may result in abdominal discomfort.
Inhalation: Dust May be Irritating to respiratory system.

Hazard Classification: Skin Sensitization

GHS pictogram

FORM#MKT/F10E-405P REV.02
Issue Date 01/08/ 2014: Supersedes 01/08/ 2011
**Signal word**  
**WARNING**

**Hazard Statements**  
H317 : May cause an allergic skin reaction

**Precautionary Statements**  
P102 : Keep out of reach of children.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P403 +P235: Store in well ventilated place. Keep cool  
P501 : Dispose of contents/container in accordance with local/regional/national International regulation.

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**SECTION III : COMPOSITION AND INFORMATION ON INGREDIENTS**

**Composition:**

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**SECTION IV : FIRST AID MEASURES**

**Eyes:** Flush the eye continuously with running water. Continue flushing For at least 15 minutes. Seek medical attention  
**Skin:** Flush skin and hair with running water Seek medical attention in event of irritation.  
**Ingestion:** Rinse mouth with water. Give water to drink. If abdominal discomfort occurs seek medical attention.  
**Inhalation:** Remove victim from the area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remain clothing. Allow patient to assume most comfortable position and keep warm. Rest until fully recovered. Consult a medical practioner, either at site or at the nearest hospital.

---

**SECTION V : FIRE AND EXPLOSION DATA**

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.  
**Auto Ignition Temperature:** Not Applicable  
**Flash Point:** Not Applicable  
**Flammable Limits, Lower:** Not Applicable  
**Flammable Limits, Upper:** Not Applicable  
**NFPA Rating (estimated) :** Health: 1; Flammable: 0; Instability: 0  
**Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
## SECTION VI : ACCIDENTAL RELEASE MEASURE

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** May create Slippery conditions. Minor hazard. Contact by using protective equipment as required. Prevent spillage from entering drains or water ways. Collect recoverable product into labeled containers for recycling.

## SECTION VII : HANDLING AND STORAGE

**Storage containers:** Paper bags of 25 kg capacity with poly ethylene liner.

**Handling:** The bags of UF Resin powder should be stored in well ventilated areas away from sources of heat, flame or sparks and direct sunlight. Avoid smoking in storage or working areas.

**Storage:** Store in cool and dry well ventilated area. Keep away from acids and oxidizing agents. As the material is hygroscopic keep containers sealed. Store in dry cooled & well ventilated area. Keep away from any ignition sources.

## SECTION VIII: EXPOSURE CONTROL /PERSONAL PROTECTION

**ENGINEERING CONTROLS:** Use in a well-ventilated area. Use local exhaust ventilation to remove air borne emissions below the applicable exposure limits and guidelines.

**EXPOSURE LIMITS:** UF Resin (Dust) 10 mg/m3, Formaldehyde (vapor) : 0.3 ppm

**PERSONAL PROTECTIVE EQUIPMENT:**
- **Eyes:** Use of approved Safety goggles.
- **Skin:** Barrier cream and Neoprene rubber gloves. Overalls.
- **Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

## SECTION IX : PHYSICAL AND CHEMICAL PROPERTIES

- **Physical state and appearance:** Free flowing powder
- **Odor:** Slight.
- **Color:** white to slightly creamish
- **Boiling Point:** Not applicable
- **Melting point:** Approx. 110 deg C
- **Viscosity of 2:1 solution:** 3000 - 6500 CP
- **Bulk Density:** 0.4-0.6 g/cc
- **Solubility:** soluble in water

## SECTION X : STABILITY AND REACTIVITY

- **Chemical Stability:** Stable,
- **Conditions to Avoid:** Keep away from strong acids oxidizing materials, heat and naked flame.
- **Incompatibilities with Other Materials:** Product is considered stable. Hazardous polymerization will not occur.
- **Hazardous Decomposition Products:** Emits toxic fumes of NOX on burning.
**SECTION XI : TOXICOLOGICAL INFORMATION**

<table>
<thead>
<tr>
<th>RTECS:</th>
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<tr>
<td>Routes of Entry:</td>
<td>Eye/Skin contact. Inhalation. Ingestion.</td>
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<td>Toxic Effects:</td>
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</table>

**ACUTE HEALTH EFFECTS**

**SKIN:** May be irritating to skin.

**EYE:** May be irritating to eyes

**INHALATION:** Dust may be Irritating to respiratory system.

**INGESTION:** Considered an unlikely route of entry in commercial/industrial environments. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

**CHRONIC HEALTH EFFECTS**

Principal routes of exposure are by accidental skin and eye contact and by inhalation of Vapors especially at higher temperatures.

**Toxicity to Animals:**

No information available.

**Toxicity to Human (Chronic Effects):**

No data available

**Neurotoxicity:** No information available.

**Mutagenicity:** No information available.

**Carcinogenicity:** No information available.

**Epidemiology:** No information available.

**Reproductive effects:** No information available.

**SECTION XII: ECOLOGICAL INFORMATION**

**Ecotoxicity:**

No Information available. How ever , avoid contaminating waterways.

**SECTION XIII : DISPOSAL CONSIDERATION**

Recycle wherever possible or dispose of in an authorized landfill.

**SECTION XIV : TRANSPORT INFORMATION**

**Shipping Name:** Urea Formaldehyde Resin

**Hazard Class:** None

**UN Number:** None

**Packing Group:** None

**IMDG Code (Page No.):** None

**SPECIAL PROVISIONS FOR TRANSPORT:** None
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A):
(Estimated)
Health : 1
Flammability: 0
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
Information contact: Technical services Department.
For any enquiry/comment regarding this Material safety Data sheet,
Kindly contact: drkhan@chemanol.com

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MATERIAL SAFETY DATA SHEET.

UREA FORMALDEHYDE RESIN 406P

SECTION I : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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<td>Synonym:</td>
<td>Urea Formaldehyde One Shot Resin</td>
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SECTION II : HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Material is non flammable under emergency conditions would offer no hazardous beyond that of ordinary combustible materials.

POTENTIAL HEALTH EFFECTS

Eye: May be an eye irritant.
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Hazard Classification: Skin Sensitization

GHS pictogram

![GHS pictogram image]
Signal word                  WARNING

**Hazard Statements**
H317 : May cause an allergic skin reaction

**Precautionary Statements**
P102 : Keep out of reach of children.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P358: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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**Eyes:** Flush the eye continuously with running water. Continue flushing For at least 15 minutes. Seek medical attention.

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**SECTION V : FIRE AND EXPLOSION DATA**

**General Information:** The material is not readily combustible under normal conditions. Decomposes on heating emitting toxic fumes Not considered to be a significant fire risk.

**Auto ignition Temperature:** Not Applicable

**Flash Point:** Not Applicable

**Flammable Limits, Lower:** Not Applicable

**Flammable Limits, Upper:** Not Applicable

**NFPA Rating (estimated):** Health: 1; Flammable: 0; Instability: 0

**Extinguishing Media:** Water, Carbon dioxide, Foam or dry chemical agents, fire extinguishers. For large fires, use water spray.
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- **Respirators:** Wear dust mask. Selection of the Class and Type of respirator will depend upon the level of Breathing zone contaminant and the chemical nature of the contaminant.

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**Physical state and appearance:** Free flowing powder

- **Odor:** Slight.
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- **Boiling Point:** Not applicable
- **Melting point:** Approx. 110 deg C
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SECTION X : STABILITY AND REACTIVITY

**Chemical Stability:** Stable,

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Routes of Entry: Eye/Skin contact. Inhalation. Ingestion.
Toxic Effects:

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Toxicity to Animals:
No information available.
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No data available

Neurotoxicity: No information available.
Mutagenicity: No information available.
Carcinogenicity: No information available.
Epidemiology: No information available.
Reproductive effects: No information available.

SECTION XII: ECOLOGICAL INFORMATION

Ecotoxicity:
No information available. How ever , avoid contaminating waterways.

SECTION XIII : DISPOSAL CONSIDERATION

Recycle wherever possible or dispose of in an authorized landfill.

SECTION XIV : TRANSPORT INFORMATION

Shipping Name: Urea Formaldehyde Resin
Hazard Class: None
UN Number: None
Packing Group: None
IMDG Code (Page No.): None.
SPECIAL PROVISIONS FOR TRANSPORT : None
SECTION XV : REGULATORY INFORMATION

HMIS
Health Hazard: 1
Fire Hazard: 0
Reactivity: 0
Personal Protection: E

NATIONAL FIRE PROTECTION ASSOCIATION (U.S.A.):
(Estimated)
Health: 1
Flammability: 0
Reactivity: 0
Specific Hazard:

Protective Equipment:
Chemical Gloves.
Safety goggles.
Dust Mask respirator.

TSCA
Not listed.

SECTION XVI : OTHER INFORMATION

References: Not available.
Other Special considerations: Not available.
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