شركة عمان للفورمالدهايد الكيميائية ش.م.م
Oman Formaldehyde Chemical Company L.L.C.

MATERIAL SAFETY DATA SHEET

AQUEOUS FORMALDEHYDE (AF-37)

1. *CHEMICAL PRODUCT and COMPANY IDENTIFICATION*

Product Name : AQUEOUS FORMALDEHYDE (AF-37)

HS Code: : 2912.11.00

Company Details : Oman Formaldehyde Chemical Company LLC,
Plot No. : - 31 & 32
Sohar Industrial Port Area, Mina Sohar
P.O.Box No: 94, Postal Code: 327
Sultanate of Oman

Emergency Phone Number : +968 – 92881210 (Control Room)
+968 – 92827040 (Deputy General Manager)

2. *COMPOSITION / INFORMATION on INGREDIENTS*

COMPONENT	CAS NUMBER	
FORMALDEHYDE	50 – 00 – 0	37-38%
METHNOL	67-56-1	Max. 8%
WATER	7732-18-5	48-53 %

3. *HAZARDS IDENTIFICATION*

The physiological properties of AF-37 concentrate have not been fully investigated, but the high formaldehyde content naturally results in toxicity. The toxicity of formaldehyde being the dominant factor in AF-37 concentrate, inhalation of fumes and prolonged contact with AF-37 concentrate can produce irritation of the skin, eyes and respiratory passages.

4. *FIRST AID MEASURES*

First Aid INHALATION:

Remove from exposure area to fresh air immediately, if breathing has stopped, gives artificial respiration. Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and at rest. Treat symptomatically and

supportively. Administration of oxygen should be performed by qualified personnel. Get medical attention immediately.

First Aid SKIN CONTACT:

Remove contaminated clothing and shoes immediately. Wash affected area with soap or mold detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). In case of chemical burns, cover area with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention immediately.

First Aid EYE CONTACT:

Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Continue irrigating with normal saline until the pH has returned to normal (30-60 minutes). Cover with sterile bandages. Get medical attention immediately.

First Aid INGESTION:

Dilute, inactivate, or absorb ingested formaldehyde by giving milk, activated charcoal, or tap water. Do not use gastric lavage or emetics. Any organic material will inactivate formaldehyde (Dreisbach, Handbook of Poisoning, 12th ed). Get medical attention immediately. Treatment should be administered by qualified medical personnel.
Antidote: No specific antidote. Treat systematically and supportively.

5. FIRE FIGHTING MEASURES

Moderately flammable as a 37% solution. Moderate fire hazard when exposed to heat or flame. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor-air mixtures are flammable. Toxic vapors are generated during decomposition in fire (formic acid).

Extinguishing Media: CO2, dry chemical, water spray or regular foam

For larger fires, use water spray, fog or regular foam

Special fire fighting procedures: Move containers from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Extinguish only if flow can be stopped; use flooding amounts of water as a fog, solid streams may be ineffective. Cool containers with flooding amounts of water. Apply from as far a distance as possible. Avoid breathing vapors, keep upwind.

6. ACCIDENTAL RELEASE MEASURES

Spilled material should be collected by raking, sweeping or vacuuming and be placed in a container. Do not wash into any public water system.

7. *HANDLING and STORAGE*

Observe all Federal, State and local regulations when storing and disposing of this substance. For assistance, contact the district director of the Environmental Protection Agency.

Substances with low electro conductivity, which may be ignited by electrostatic sparks, should be stored in containers which meet the bonding and grounding guidelines specified in NFPA77-1983, recommended practice on static electricity.

Store Away from Incompatible Substances:

Store in well ventilated place, keep away from sources of ignition and direct sunlight. Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid overheating of containers; containers may violently rupture in heat of fire. Avoid contamination of water sources.

General Handling:

Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing mist or vapor. Use only with adequate ventilation. Wash thoroughly after handling.

8. *EXPOSURE CONTROLS / PERSONAL PROTECTION*

Ventilation: Provide local exhaust or process enclosure ventilation to meet the published exposure limits. Ventilation equipment must be explosion proof. Formaldehyde: Ventilation should meet the requirements in 29 CFR 1910.1048 (f).

Respirator:
The following respirators are the minimum legal requirements as set forth by OSHA found in 29 CFR 1910, subpart z.
Up to 10 ppm - Full face piece with cartridges or canisters specifically approved for protection against formaldehyde. A half mask respirator with cartridges specifically approved for protection against formaldehyde can be substituted for the full face piece respirator providing that effective gas-proof goggles are provided and used in combination with the half mask respirator.
Up to 100 ppm - Full face mask, chest or back mounted type with industrial size canister specifically approved for protection against formaldehyde. Type C supplied air respirator, demand type, with full face piece, hood, or helmet.
Above 100 ppm or Unknown:
Emergencies:
Self contained breathing apparatus with positive pressure full face piece. Combination supplied air full face piece positive pressure respirator with auxiliary self contained air supply.
For Fire Fighting and other Immediately Dangerous to Life and Health Conditions: Any self contained breathing apparatus that has a full face piece and is operated in a pressure demand or other positive pressure mode. Any supplied air respirator that has a full face piece and is operated in a pressure demand or other positive pressure mode in combination with an auxiliary self contained breathing apparatus operated in pressure demand or other positive pressure mode.
Escape:

Self contained breathing apparatus in demand or pressure demand mode. Full face mask, front or back mounted type with industrial size canister specifically approved for protection against formaldehyde.
Clothing: Employee must wear appropriate protective (impervious) clothing and equipment to prevent any possibility of skin contact with this substance.
Gloves: Employee must wear appropriate protective gloves to prevent contact with this substance.

Eye Protection:

Employee must wear splash proof or dust resistant safety goggles and a face shield to prevent contact with this substance.
Emergency Wash Facilities: Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance; the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

9. PHYSICAL and CHEMICAL PROPERTIES

Appearance	Clear liquid
Odor	Pungent
Specific Gravity	1.0749 - 1.2020
Boiling Point	205° - 214°F / 91° - 101°C
Vapor Pressure	67 - 88 mm Hg @ 20°C
	23-26 mm Hg at 25°C
Flash Point	65 ^{0}C
Solubility in Water	Complete
TLV	2 ppm

10. STABILITY and REACTIVITY

Formaldehyde solutions are stable in closed containers under normal temperatures and pressures; may oxidize slowly on exposure to air.

INCOMPATIBILITIES - FORMALDEHYDE:

Acids (inorganic)	:	Formaldehyde solutions react.
Alkalies (strong)	:	Formaldehyde solutions react.
Ammonia	:	Incompatible.
Anhydrides	:	Formaldehyde solutions react.
Analine + Perchloric Acid	:	Analine treated with perchloric acid, then with formaldehyde, gives a resinous product which burns with explosive violence.
Bisulfides	:	Incompatible.
Copper	:	Formaldehyde solutions may be corrosive.

Copper Salts/Alloys	:	Formaldehyde solutions may be corrosive.
Iodine	:	Incompatible
Iron Preparations	:	Incompatible.
Isocyanates	:	Formaldehyde solutions react.
Hydrochloric Acid	:	Forms highly toxic bis(chloromethyl) ether.
Hydrogen Peroxide	:	Violent reaction.
Nitrogen Dioxide	:	Slow reaction becomes explosive around 180°C.
Nitromethane	:	Forms explosive compound in the presence of alkalies
Oxides	:	Formaldehyde solutions react.
Oxidizers (strong)	:	Fire and explosion hazard.
Peroxyformic Acid (Conc)	:	Violent oxidation reaction.
Phenol	:	Polymerization reaction with sudden pressure development.
Potassium Permanganate	:	Incompatible.
Silver Salts	:	Incompatible.
Steel	:	Formaldehyde solutions may be corrosive.
UREA	:	Formaldehyde solutions react.

INCOMPATIBILITIES - METHYL ALCOHOL (Methanol):

Acetyl Bromide	:	Violent reaction with formation of hydrogen bromide.
Alkylaluminum solutions	:	Violent reaction.
Aluminum	:	Corrodes.
Barium Perchlorate	:	Distillation yields highly explosive alkyl perchlorate.
Beryllium Hydride	:	Violent reaction, even at -196°C.
Bromine	:	Vigorously exothermic reaction.
Calcium Carbide	:	Violent reaction
Chlorine	:	Possible ignition and explosion hazard.
Chloroform & Sodium Hydroxide	:	Explosive reaction.
Chromium Trioxide	:	Possible ignition.
Cyanuric Chloride	:	Violent reaction.
Dichloromethane	:	Possible ignition and explosion.
Diethyl Zinc	:	Possible ignition and explosion.

Hydrogen Peroxide + Water:		Explosion hazard.
Iodine + Ethanol +		
Mercuric Oxide	:	Explosion hazard.
Lead	:	Corrodes.
Lead Perchlorate	:	Explosion hazard
Magnesium	:	Violent Reaction.
Magnesium (Powdered)	:	Mixtures are capable of detonation.
Metals	:	Incompatible
Nickel	:	Possible ignition in the presence of nickel catalyst.
Nitric Acid (concentrated)	:	Mixtures of >25% acid may decompose violently.
Oxidizers (strong)	:	Fire and explosion hazard.
Perchloric Acid	:	Explosion hazard
Phosphorous Trioxide	:	Possible violent reaction and ignition.
Plastics, Rubber, Coatings	:	May be attacked.
Potassium	:	Possible dangerous reaction.
Potassium Hydroxide +		
Chloroform	:	Exothermic reaction.
Potassium Tert-Butoxide	:	Fire and explosion hazard.
Sodium + Chloroform	:	Possible explosion.
Sodium Hypochlorite	:	Explosion hazard.
Sodium Methoxide	:	Violent reaction.
Sulfuric Acid	:	Fire and explosion hazard.
Zinc	:	Explosion hazard.
Decomposition	:	Thermal decomposition products may include unburned formaldehyde and other toxic products of organic substance.

11. TOXICOLOGICAL INFORMATION

Irritation Data:

150 ug/3 days intermittent skin-human mild; 2 mg/24 hours skin-rabbit severe; 540 mg open skin-rabbit mild; 50 mg/24 hours skin-rabbit moderate; 4 ppm/5 minutes eye-human; 1 ppm/6 minutes nonstandard exposure eye-human mild; 750 ug/24 hour eye-rabbit severe; 750 ug eye-rabbit severe; 10 mg eye-rabbit severe.

Toxicity Data:

17 mg/m3/30 minutes inhalation-human TCLO; 300 ug/m3 inhalation-man TCLO; 203 mg/m3 inhalation-rat LC50; 400mg/m3/2hours inhalation -mouse LC50; 400

mg/m3/2 hours inhalation-cat LCLO; 92 mg/m3 inhalation-mammal LC50; 270 mg/kg skin-rabbit LD50; 108 mg/kg oral-woman LDLO; 100 mg/kg oral-rat LD50; 42 mg/kg oral-mouse LD50; 260 mg/kg oral-guinea pig LD50; 420 mg/kg subcutaneous-rat LD50; 300 mg/kg subcutaneous-mouse LD50; 350 mg/kg subcutaneous-dog LDLO; 240 mg/kg subcutaneous-rabbit LDLO; 87mg/kg intravenous-rat LD50; 48 mg/kg intravenous-rabbit LDLO; 30 mg/kg intravenous-cat LDLO; 70 mg/kg intravenous-dog LDLO; 16 mg/kg intraperitoneal-mouse LDLO; 477 mg/kg unreported-man LDLO; 800 mg/kg parenteral-frog LDLO; mutagenic data (RTECS); reproductive effects data (RETCS); tumorigenic data (RTECS).

Carcinogenic Status:

OSHA carcinogen; anticipated human carcinogen (NTP); human limited evidence, animal sufficient evidence (IARC group-2A). Epidemiological studies and case reports indicate an excess occurrence of a number of cancers, but evidence for involvement for formaldehyde is strongest for nasal and nasopharyngeal cancer. A significant incidence of squamous cell carcinoma of the nasal cavity was induced in rats exposed in formaldehyde gas.
Local Effects:
Corrosive - inhalation, skin , eye, ingestion.

Acute Toxicity Level: Highly toxic by inhalation, toxic by dermal absorption and ingestion.

12. ECOLOGICAL INFORMATION

It is harmful to aquatic life in very low concentrations. It may be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

Aquatic Toxicity	:	25 mg/1/96 hours channel catfish TLM in fresh H2O
Waterfowl Toxicity	:	Data not available.
Biological Oxygen Demand (BOD)	:	37% 5 days, 47 (thero) 5 days.
Food Change Concentrations Potential	:	None.

13. DISPOSAL CONSIDERATIONS

The waste material should be treated and/or disposed of at site authorized to handle hazardous chemical waste. Appropriate local regulatory authorities should be contacted before discharge, treatment of or disposal of waste material.

14. TRANSPORT INFORMATION

Shipping Name	:	Aqueous Formaldehyde
Hazard class	:	8- Corrosive
U N no.	:	2209
Packing Group	:	III

15. REGULATOR INFORMATION

SARA TITLE lll (Superfund Amendment & Reauthorization Act):
Section 302 & 304 - Extremely Hazardous Substance List (40 CFR 355) - Listed
Section 311 - Hazardous Categorization (40 CFR) 370) - acute, Chronic & Fire
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
Section 101(14) - Reportable Quantity - 1,000 lbs

RCRA (Resource Conservation & Recovery Act):
40 CFR 261.33 Hazardous Waste Number - U122

NJ-RTK (New Jersey State Right To Know:
Environmental Hazardous Substance List - Listed, Substance #0946

Other Regulatory Information:
500 pounds SARA Section 302 Threshold Planning Quantity
1000 pounds SARA Section 304 Reportable Quantity
100 pounds CERCLA Section 103 Reportable Quantity
Subject to SARA Section 313 Annual Toxic Chemical Release Reporting.

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