

N,N-DIMETHYL ACETAMIDE

GHS Safety Data Sheet

Version No:3

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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

N,N-DIMETHYLACETAMIDE

OTHER NAMES

C4-H9-N-O, C4-H9-N-O, CH₃CON(CH₃)₂, "dimethyl acetamide", DMA, DMAC, "acetic acid, dimethylamide", acetdimethylamide, "dimethylacetone amide", "dimethylamide acetate", acetyldimethylamide

PRODUCT USE

Solvent for organic reactions (reaction medium, catalyst, crystallization and purification). Solvent for industrial applications such as manufacture of plastics, resins, gums, synthetic fibres and electrolytes. Used in paint removers. Also used as parental drug vehicle and as an anti-tumour agent.

SUPPLIER

Company: S D FINE- CHEM LIMITED

Address:

315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.

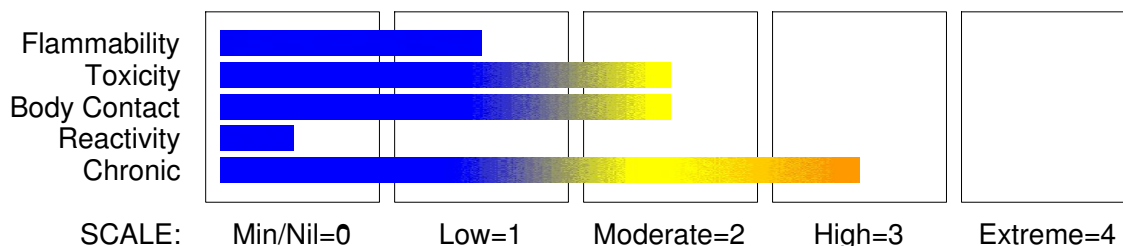
technical@sdfine.com

Telephone: 91- 22- 24959898

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HAZARD RATINGS



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Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Dermal) Category 4
Acute Toxicity (Inhalation) Category 3
Acute Toxicity (Oral) Category 5
Eye Irritation Category 2A
Flammable Liquid Category 4
Reproductive Toxicity Category 1B
Skin Corrosion/Irritation Category 3



EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H227 H331 H312 H303 H316 H319 H360
Combustible Liquid
Toxic if inhaled
Harmful in contact with skin
May be harmful if swallowed
Causes mild skin irritation
Causes serious eye irritation
May damage the unborn child

PRECAUTIONARY STATEMENTS

Prevention

Wash hands thoroughly after handling.
Obtain special instructions before use.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wear protective gloves/clothing
Avoid breathing dust/fume/gas/mist/vapours/spray.
Use explosion-proof electrical/ventilating/lighting/equipment
Use only outdoors or in a well ventilated area.
Use personal protective equipment as required.
Keep away from flames and hot surfaces.
Do not handle until all safety precautions have been read and understood.

Response

Keep container tightly closed.
Wash contaminated clothing before reuse.
If eye irritation persists, get medical advice/attention.
If exposed or concerned: Get medical attention advice.

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Section 2 - HAZARDS IDENTIFICATION

Wear eye/face protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If skin irritation occurs, seek medical advice/attention.

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

In case of fire, use alcohol-type foam for extinction.

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

In case of fire, use dry agent for extinction.

Specific treatment: refer to Label or MSDS.

IF ON SKIN: Gently wash with plenty of soap and water.

Immediately call a POISON CENTER or doctor/physician.

Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store locked up.

Store away from other materials

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
N, N- dimethylacetamide	127-19-5	>95

Section 4 - FIRST AID MEASURES

SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

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Section 4 - FIRST AID MEASURES

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Alcohol stable foam.
- Carbon dioxide.
- Dry chemical powder.
- Water spray or fog.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.

Cool fire exposed containers with water spray from a protected location.

If safe to do so, remove containers from path of fire.

Vapour may travel a considerable distance to source of ignition.

Water spray or fog may be used to disperse vapour.

FIRE/EXPLOSION HAZARD

- Combustible liquid.
 - Slight fire hazard when exposed to heat or flame.
 - Heating may cause expansion or decomposition leading to violent rupture of containers.
- Vapour may travel a considerable distance to source of ignition.

Personal Protective Equipment

Breathing apparatus.
Chemical splash suit.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

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Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

Clean up all spills immediately.
Shut off all possible sources of ignition and increase ventilation.
Avoid breathing vapours and contact with skin and eyes.
Wear impervious gloves and safety glasses.
Allow small quantities to evaporate.
Wipe up and absorb small quantities with vermiculite or other absorbent material.
Place in suitable containers for disposal.
Wash spill area with large quantities of water.

MAJOR SPILLS

Clear area of personnel.
Shut off all possible sources of ignition and increase ventilation.
Avoid breathing vapours and contact with skin and eyes.
· May be violently or explosively reactive.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water courses.
Contain and absorb spill with sand, earth, inert material or vermiculite.
Water spray or fog may be used to disperse vapour.
Collect and seal in labelled drums for disposal.
Wash spill area with large quantities of water.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

N,N-dimethylacetamide 300 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

N,N-dimethylacetamide 50 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:

N,N-dimethylacetamide 30 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:

N,N-dimethylacetamide 10 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	$\geq 0.1\%$	Toxic (T)	$\geq 3.0\%$
R50	$\geq 0.25\%$	Corrosive (C)	$\geq 5.0\%$
R51	$\geq 2.5\%$		
else	$\geq 10\%$		

where percentage is percentage of ingredient found in the mixture

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X



X



+



X



X



+

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Section 6 - ACCIDENTAL RELEASE MEASURES

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Avoid breathing vapours and contact with skin and eyes.
Use in a well-ventilated area.
Avoid contact with incompatible materials.
Avoid sources of heat.
Avoid smoking, naked lights or ignition sources.
Vapour may travel a considerable distance to source of ignition.
until atmosphere has been checked.
Wear personal protective equipment when handling.
When handling, DO NOT eat, drink or smoke.
Keep containers securely sealed when not in use.
Wash hands with soap and water after handling.
Work clothes should be laundered separately: NOT at home.

SUITABLE CONTAINER

· Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Avoid storage with oxidizing agents and halogenated compounds (eg. CCl₄, benzene hexochloride), particularly in the presence of iron.

STORAGE REQUIREMENTS

Store away from sources of heat or ignition / naked lights.
DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
Store in a cool area and away from sunlight.
Store in a well-ventilated area.
Store away from incompatible materials.
Store away from foodstuff containers.
Keep containers securely sealed.
Check regularly for spills and leaks.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

• N, N- dimethylacetamide: CAS:127- 19- 5

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)
N, N- dimethylacetamide	

Revised IDLH Value (ppm)
300

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ODOUR SAFETY FACTOR (OSF)

$OSF = 0.21$ ("N,N-DIMETHYL ACETAMIDE")

Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.

The Odour Safety Factor (OSF) is defined as:

$OSF = \text{Exposure Standard (TWA) ppm} / \text{Odour Threshold Value (OTV) ppm}$

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

MATERIAL DATA

Recognition Threshold: 100% Test Panel = 46.8 ppm,

50% Test Panel = 21.4 ppm.

NOTE: Detector tubes for dimethylacetamide, measuring in excess of 10 ppm, are commercially available.

PERSONAL PROTECTION



EYE

- Full face shield.
- Chemical goggles.

DO NOT wear contact lenses.

OTHER

- Impervious protective clothing.
- Ensure there is ready access to a safety shower.

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

" Forsberg Clothing Performance Index" .

The effect(s) of the following substance(s) are taken into account in the computer- generated selection: N, N- dimethylacetamide

Protective Material CPI *.

BUTYL	A
SARANEX- 23	B
PVA	C
NATURAL+NEOPRENE	C
NATURAL RUBBER	C

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	A- AUS	-
1000	50	-	A- AUS
5000	50	Airline *	-
5000	100	-	A- 2
10000	100	-	A- 3
	100+		Airline**

* - Continuous Flow

** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult
your

Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area. Air contaminants

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:
solvent, vapours, degreasing etc., evaporating from tank (in still air).
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).

Air Speed:
0.25- 0.5 m/s (50- 100 f/min.)

0.5- 1 m/s (100- 200 f/min.)

1- 2.5 m/s (200- 500 f/min.)

2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

1: Room air currents minimal or favourable to capture

2: Contaminants of low toxicity or of nuisance value only.

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Colourless liquid with a faint ,ammonia-like odour. Miscible in water. Mildly hygroscopic. Viscosity: 0.92 mPa sec @ 25 C.

PHYSICAL PROPERTIES

Liquid.

Mixes with water.

Molecular Weight: 87.12

Boiling Range (°C): 164- 166

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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Melting Range (°C): - 20
Solubility in water (g/L): Miscible
pH (1% solution): Not available
Volatile Component (%vol): 100
Relative Vapour Density (air=1): 3.0
Lower Explosive Limit (%): 1.8 @ 100 C
Autoignition Temp (°C): 490
State: Liquid

Specific Gravity (water=1): 0.95 @ 20 C
pH (as supplied): Not applicable
Vapour Pressure (kPa): 0.266 @ 25 C
Evaporation Rate: Not available
Flash Point (°C): 70
Upper Explosive Limit (%): 11.5 @ 160 C
Decomposition Temp (°C): 350
Viscosity: Not available

log Kow (Sangster 1997): - 0.77
log Kow: -0.77

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

No data for this material.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual. Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis.

EYE

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur. The vapour and liquid both produce eye discomfort. Tearing and reddening of the eyes are symptomatic of overexposure. Higher levels of vapour are generated with increased temperature and engineering controls should be introduced when any discomfort is experienced following exposure to mists or vapour. The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

Skin contact with the material may be harmful; systemic effects may result following absorption. Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct

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Section 11 - TOXICOLOGICAL INFORMATION

contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. Toxic effects may result from skin absorption.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

The material presents a hazard from repeated exposures.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

INHALED

The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

The material presents a hazard from repeated exposures.

CHRONIC HEALTH EFFECTS

There is sufficient evidence to provide a strong presumption that human exposure to the material may result in developmental toxicity, generally on the basis of:

- clear results in appropriate animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.

The material may accumulate in the human body and progressively cause tissue damage.

The primary routes of exposure are by skin absorption and inhalation.

Repeated exposure of 20 to 25 ppm (due to appreciable skin absorption) has caused jaundice in workers; evidence of liver damage and hepatic disfunction is clear.

Chronic exposure can result in cumulative liver and kidney damage.

(Repeated dermal application of the liquid to dogs caused severe fatty infiltration of the liver; repeated exposure of rats to the vapour resulted in focal necrosis of the liver.)

When given to humans in daily doses (400 mg/kg for 3 days - route(?)), depression, lethargy, confusion and disorientation ensued. In some patients there were visual and auditory hallucinations, perceptual distortions, delusions, emotional detachment and effective blunting, all reminiscent of the reactions induced by mescaline and by lysergic acid derivatives.

Some evidence exists that a demethylation metabolite, acetamide, is a rat liver carcinogen.

TOXICITY AND IRRITATION

TOXICITY

Oral (rat) LD50: 5000 mg/kg

Oral (human) LDLo: 500 mg/kg

IRRITATION

Skin (rabbit):10 mg/24h(open)- Mild

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Section 11 - TOXICOLOGICAL INFORMATION

Inhalation (human) TCLo: 20 ppm

Inhalation (mammal) LCLo: 406 ppm

Dermal (rabbit) LD50: 2240 mg/kg

Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

WARNING: Avoid the exposure of pregnant women to this substance. Females of child-bearing potential should avoid airborne exposure above the TLV and avoid skin contact. Animal experiments indicate embryotoxic and teratogenic (congenital malformation of the fetus) effects. The potential toxic properties of any amide should be carefully considered before use or exposure commences.

Section 12 - ECOLOGICAL INFORMATION

log Kow (Sangster 1997): - 0.77

log Pow (Verschueren 1983): - 0.77

log Kow: -0.77

Toxicity Fish: LC50(96)22.3-1140ug/L

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible.

Bury or incinerate residue at an approved site.

Consult State Land Waste Management Authority for disposal.

DO NOT discharge into sewer or waterways.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

REGULATIONS

N,N-dimethylacetamide (CAS: 127-19-5) is found on the following regulatory lists;
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
OECD Representative List of High Production Volume (HPV) Chemicals

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Section 16 - OTHER INFORMATION

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 20-Jul-2017