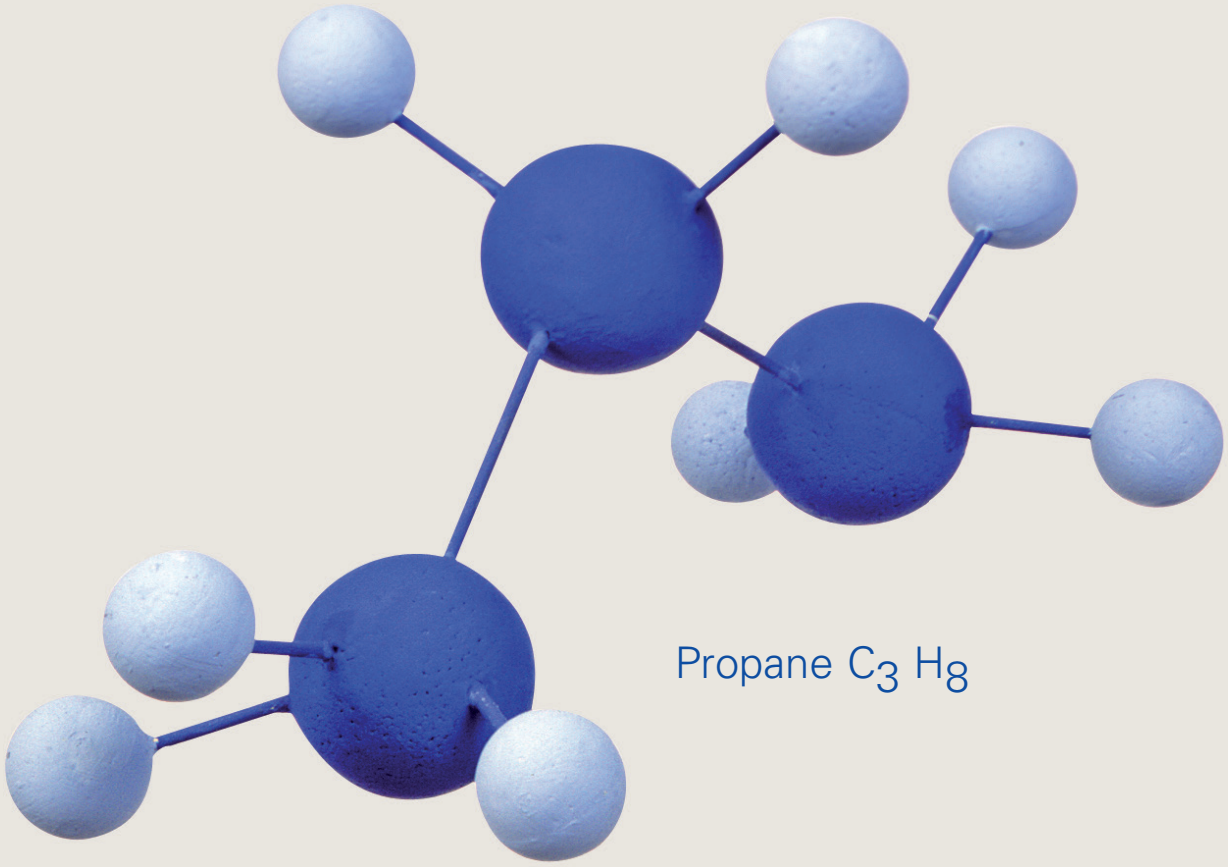
January 2013

Propane DIN 51 622 and DIN EN 589

Safety Data Sheet



Propane $C_3 H_8$

TRADING & SUPPLY

1. Identification of the substance/ mixture and of the company/undertaking

1.1 Product identifier:
PROPANE DIN 51 622 AND DIN EN 589
EU number: 200-827-9
CAS number: 74-98-6
Product name: Propane, Liquid gas, LPG, MOTOGAS

Commercial name:
- Liquid gas according to DIN 51 622 for fuel purpose
- Propellant (MOTOGAS®) according to DIN 51 622 for use of engines
- Autogas according to DIN EN 589

Other denominations: camping gas, LPG or GPL for autogas, forklift gas, fuel for hot air balloons.

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Fuel, propellant. Uses: air balloons, natural gas vehicles.

1.3 Details of the supplier of the safety data sheet:
Tyczka Trading & Supply GmbH & Co. KG
Blumenstraße 5
82538 Geretsried
Fon +49 (0)8171 627-600
Fax +49 (0)8171 627-100
info@tyczka.de

1.4 Emergency telephone number:
Tyczka Trading & Supply – Technical Emergency Service
Tel.: Fon 08171 627-466 (24 h access)

Poison emergency call Berlin:
Tel.: +49 (0)30 30686790 (24 h access)

2. Hazards identification

2.1 Classification of the substance:

Classification according to CLP regulation:

Flam. gas. 1
Press. gas

Classification according to Regulation 1999/45/EC:

F+
Extremely flammable

R phrases:
R 12 - Extremely flammable.

2.2 Label elements:

EU number: 200-827-9
CAS number: 74-98-6

GHS02 GHS04

Danger

H statements:
H220 – Extremely flammable gas.

P statements:
P102 – Keep out of reach of children.
P210 – Keep away from heat/sparks/open flames/hot surfaces – no smoking.
P377 – Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 – Eliminate all ignition sources, if safe do so.
P403 – Store in a well-ventilated place.

2.3 Other hazards:

The product meets the requirements of DIN 51 622 and DIN EN 598.
In case of unintended use, it may cause frostbite or asphyxiation.

3. Composition/Information on Ingredients

Propane:

CAS-number.: 74-98-6
EU-number: 200-827-9
REACH-Reg.-nr: n.a.
Conc. (%) > 95

Classification				
REACH		CLP		
Hazard symbol	R phrase	Hazard pict.	Hazard cat.	H phrase
F+	12	GHS02	Flam. gas 1	H220
		GHS04	Press. gas	
		Dgr.		

The product contains less than 0,1 % 1,3-Butadiene. Mixture of at least 95% by weight of propane and propene, the propane content predominates. The remainder may consist of ethane, ethene, butane and butene isomers.

4. First aid measures

4.1 Description of first aid measures:
General: liquid gas is heavier than air. The spillage of the liquid phase product takes approximately -42 ° C immediately and can lead to frostbite.

In case of ingestion:
Measures:
- Ingestion is unlikely.
- In case of ingestion obtain immediate medical attention.

In case of inhalation:
Measures:
- Take the victim into fresh air and keep quiet.
- If breathing and unconscious, place into recovery position.
- If necessary, administer artificial respiration!
- Obtain immediate medical attention.

In case of skin contact:
Measures:
- In case of skin contact, flush with warm water.
- Immediately remove contaminated clothing.
- Pieces of clothing that are frost to the skin should be defrosted with lukewarm water before removal.
- Slowly warm the affected area.
- The frozen body parts should be covered with sterile gauze and obtain medical help.

In case of eye contact:
Measures:
- Immediately rinse under flowing water and obtain medical help.

4.2 Most important symptoms and effects, both acute and delayed:
Avoid the spilled liquid phase product due to danger of frostbite. Since liquid gas is heavier than air, there is a danger of suffocation in holes and basements. Avoid sources of ignition.
Symptoms: frostbite, fainting, shortness of breath, dizziness. Dangers: circulatory collapse, respiratory disorders.

4.3 Indication of any immediate medical attention and special treatment needed:
Treatment: treat symptomatically. If necessary, give oxygen. Frozen body parts should be treated adequately. Monitor circulation, it is possible to use shock therapy. First-aiders should take care of self-protection. In case of medical treatment is needed check the safety data sheet.

5. Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:
Foam, powder, carbon dioxide, sand or earth, water spray.

5.1.2 Unsuitable extinguishing media:
Do not use strong jet of water.

5.2 Special hazards arising from the substance or mixture:
The evaporated product is heavier than air, therefore it spreads along the level of the floor. Even distant ignition sources can be dangerous.
Hazardous combustion products: in case of uncontrolled fire, complex gas-aerosol mixtures can be formed. These mixtures contain: carbon monoxide, nitrogen oxides, sooth, sulphur dioxide and organic compounds.

5.3 Advice for firefighters:
In case of dense smoke or fume, use respiratory protection. Use self-contained breathing apparatus in case of confined spaces. Chemical protective suits are not required, provided that no other toxic substance is involved in the fire. Remove the ignition sources at the place of the spillage, immediately evacuate the workplace. Close the low lying areas. Isolate the hazard area from downwind. Cool endangered containers with water spray. The explosive gas/air mixture should be reduced under the explosion limit with the help of water spray or with explosion-proof ventilation equipment. Do not extinguish from the point of exit because uncontrolled backfire may occur.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel:
Keep unprotected people away, allow only well trained experts wearing suitable protective clothing to abide in the field of accident.

6.1.2 For emergency responders:
Shut off the gas spillage. Send staff to safe place. Ventilate thoroughly. The evaporated product is heavier than air and spreads along the level of the floor. Remove all ignition sources from the surrounding area. Avoid contact with skin. Evacuate the non-emergency personnel or instruct them to stay on the windward side. Wear personal protective clothes (flame retardant and antistatic), antistatic footwear and self-contained breathing apparatus. In case of vapour/gas formation, use self-contained breathing apparatus. Use only non-sparking tools and equipments. Approach the accident from downwind. Regularly measure the concentrations. If there is a danger of suffocation, take the victim into fresh air and lay down on the ground. Vehichles with leaking liquid gas equipments should be taken as far as possible from the exposure to outside. Do not switch on the ignition, do not start the engine. The vehicle can not be degased near to any sewer covers or any other floor openings. Inform the Police or the Fire Department.

6.2 Enviromental precautions:
Do not enter into drains. Extraction from coolant and industrial water has to be performed with caution. The liquid gas in liquid phase evaporates without leaving any residues, but in gas phase it remains in drains, shafts, vents.

6.3 Methods and material for containment and cleaning up:
Allow to evaporate. Use exhaust ventilation at the level of the ground. Ventilate the area. For the degasing of the drains, shafts and vents use only explosion-proof fans and antistatic shoes.

6.4 Reference to other sections:
For further and detailed information see:
Section 8 for exposure limits and
Section 13 for disposal considerations.

7. Handling and storage

7.1 Precautions for safe handling:
Observe conventional hygiene precautions.
Do not eat, drink or take drugs during the handling of the liquid gas and when the gas is released for operational reasons: e.g. changing cylinders.

Technical measures:
Based on the experiences, formation of aerosol or dust is not possible.
No environmental measures are required. The liquid gas is not hazardous for the water.
Precautions against fire and explosion: Keep away from sources of ignition.
No smoking!
Vapours may form explosive mixtures with air.
There is an explosion hazard when the liquid enters to drains.
Take measures against electrostatic charging.
Use explosion-proof equipments.

7.2 Conditions for safe storage, including any incompatibilities:
Technical measures and storage condition:
Keep out of direct sunlight.

The storage temperatures must not exceed 50°C.
The heating of the container will cause pressure rise with a risk of bursting.

Follow all instructions on the label.
For the gas evacuation inside buildings as well as channels, manholes, openings only use explosion-proof air-blower with antistatic hoses.

Ensure adequate ventilation in rooms even at the level of the ground (vapours are heavier than air).
Handle and refill the product only in closed systems.
Keep containers tightly closed.

Regularly check the tightness of the piping and the connections of equipments.

Protect cylinders from falling.

Incompatible materials: do not store together with strong oxidants (e.g.: oxygen). Keep safe distance from other chemicals.

Packaging material: use containers which are designed exclusively for the product. Use liquid gas containers made of steel or aluminium. Use only approved properly labeled containers.

7.3 Specific end use(s):
Recommendations: use only for fuel or propellant.
Industrial use: can be used as propellant in spray cans.

8. Exposure controls/Personal protection

8.1 Control parameters:

Exposure limit values: -

material identity	limits		exposure limits		remarks
product name	EG-Nr. CAS-Nr	ml/m³ (ppm)	mg/m³		
Propane	200827974-98-6	1000	1800	4 (II)	DFG
Butane	2034487 106-97-8	1000	2400	4 (II)	DFG

8.2 Exposure controls:

In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.

8.2.1 Appropriate engineering controls:

In those places, where free gas is constantly present due to the operations (e.g. filling in cans), continuously monitor the gas concentration by gas detection equipment.
Mechanical ventilation can be useful in rooms where higher gas concentrations can be measured.
Consumer exposure is normally not expected, because the product is stored, transported and consumed in closed systems and supplied into combustion or motor processes without leaking into the environment.

8.2.2 Individual protection measures, such as personal protective equipment:

1. Eye/face protection: if working with liquid phase product, use appropriate protective goggles.
2. Skin protection:
   a. Hand protection: if working with liquid phase product, use appropriate gloves protecting from cold according to DIN EN 511. When working with containers, use protective gloves made of leather. In case of long term use of protective gloves, use appropriate skin protecting agents.
   b. Other: use antistatic footwear and antistatic and flame retardant protective clothes.
3. Respiratory protection: in case of insufficient ventilation, wear suitable respiratory equipment. Use AX gas filters for components with low boiling point, group 2 according EN 371 from 0,1 V % and 60 minutes till 0,5 V % and max. 20 minutes use. The AX filters can be used in supplied conditions or can be reused within one work shift. For higher concentration, unknown circumstances or in case of confined spaces, use self-contained breathing apparatus. Monitor the breathing air with Auer PR FG test tubes, or with Dräger hydrocarbons 0,1%/b.
4. Thermal hazard: during the explosion of the liquid gas – air mixture, a brief but very strong heat action can occur on the body. Frostbite is possible during the contact of the liquid phase product.

8.2.3 Environmental exposure controls:

Environmental exposure is normally not expected, because the product is stored, transported and consumed in closed systems and supplied into combustion or motor processes without leaking into the environment.

The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions an expert's advice should be sought out before deciding upon further protective measures.

9. Physical and chemical properties:

9.1 Information on basic physical and chemical properties:

01. Appearance: colourless, compressed, liquified gas
02. Odour: Perceptible

Initial boiling point: Parameters: Test Method:	- 48 bis - 1 °C at 1.013 mbar DIN 51 618
Flashpoint:	app. - 104 °C
Ignition Temperature: Test Method:	430 - 510 °C DIN 51 794
Explosive Limits lower: upper: Test Method:	(Vol.-%) app. 2,1 app. 9,5 DIN 51 649
Vapour Pressure (40 °C): Test Method:	< 15500 hPa DIN 51 640
Vapour Pressure (70 °C): Test Method:	< 31000 hPa DIN 51 640
Density (0 °C): Test Method:	2 kg/m3 (gas phase) DIN 51 618
Density (50 °C): Test Method:	500 kg/m3 (liquid phase) DIN 51 618
Solubility in water (20 °C):	 65 mg/l
Distribution Coefficient n-Octanol/water log POW: pH-value:	 2,36 n.d.
Other information: Rel. Density (Air = 1):	 1,55

10. Stability and reactivity

10.1 Reactivity:
The product can react violently with oxidants.

10.2 Chemical stability:
Stable under normal storage conditions.

10.3 Possibility of hazardous reactions:
Formation of explosive gas mixtures with air. Reacts with oxidants.
The increase in vapour pressure due to heating may cause the exhaust of safety valves or the bursting of the container.

10.4 Conditions to avoid:
Do not allow to escape the liquid gas in unburned form because it can form explosive gas air mixtures.

10.5 Incompatible materials:
Oxidants, it reacts violently with strong oxidizing agents.

10.6 Hazardous decomposition products:
In case of normal storage, no hazardous decomposition products are formed.
In case of combustion, carbon oxides (CO, CO2) and other combustion gases may be formed.

11. Toxicological Information

11.1 Information on toxicological effects:
Acute toxicity: none known.
Irritation: none known.
Corrosivity: none known.
Sensitisation: none known.
Repeated dose toxicity: none known.
Cancerogenity: The product contains less, than 0,1 % 1,3-Butadiene.
Mutagenicity: none known.
Reproduction toxicity: none known.

11.1.1 For substances subject to registration, brief summaries of the information derived from the test conducted:
No data available.

11.1.2 Relevant toxicological properties of the hazardous substances:
Primary irritation:
The product is not irritant to the skin or eyes.
Not classified as sensitizing.
LC50 (inhalation, rat): > 20 mg/m3 (literature data)

11.1.3 Information on likely routes of exposure:
Gas phase: contact with skin and respiratory tract is possible, distribution in the respiratory tract is possible.
Liquid phase: contact with skin is possible.

11.1.4 Symptoms related to the physical, chemical and toxicological characteristics:
Long term or repeated exposure may cause nausea, dizziness, headache. Not classified as cancerogenic.

11.1.5 Delayed and immediate effects as well as chronic effects from short and long-term exposure:
No data available.

11.1.6 Interactive effects:
No data available.

11.1.7 Absence of specific data:
No information.

11.1.8 Other information:
Specific toxic effect is not known. In high concentrations the gas has narcotic effects and may cause asphyxiation. Symptoms: drowsiness, dizziness, unconsciousness. During the rapid transition to the gaseous state, the air (especially indoors) is displaced (suffocation hazard). In case of contact with the liquid frostbite and eye damage may occur.

12. ECOLOGICAL INFORMATION

12.1 Toxicity:
Do not enter the product in uncontrolled form into the environment.
LC50 (freshwater fish): > 1000 mg/l/96h

12.2 Persistence and degradability:
The product is photochemically oxidized in the environment. In liquid phase the product is lighter than water and evaporates without leaving any residues in the aquatic environment in Germany. The liquid gas is not classified as hazardous for water.

12.3 Bioaccumulation potential:
No data available.
Due to the high volatility, it is unlikely that the product would contaminate permanently the soil and water. The main components are degradable in the environment. The bioaccumulation potential is very low (log pOW = 2.36).

12.4 Mobility in soil:
The liquid gas in the gas phase is heavier than air and therefore can penetrate into the openings of the soil.

12.5 Results of PBT and vPvB assessment:
No data available.

12.6 Other adverse effects:
Ozone depletion and climate impact
Propane: ODP-value: 0,000, GWP-value 3

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:
Disposal according to the local regulations.

13.1.1 Information regarding the disposal of the product:
The liquid gas will not leave any waste in the practice. Do not dispose the unburned liquid gas into the environment.

Germany:
16 05 04* gases in pressure containers (including halons) containing dangerous substances
* hazardous waste.

The above mentioned waste classification represents only a recommendation. The definition of the proper waste code is the responsibility of the waste producer. The specification of the waste classification should therefore be made in consultation with the person responsible for the disposal.

13.1.2 Information regarding the disposal of the packaging:
The containers are always refilled (cans and bottles) or sorted out during filling and reconditioned for professional use.

The empty, uncleaned containers should be closed tightly and have to be sent back to the supplier. The not completely emptied aerosol containers (cans) should also be sealed and have to be sent back to the supplier. Compressed gas containers can not be scrapped. Valves must not be removed. Even seemingly empty containers have to be treated with care, since it may contain gas phase residues. The degasing must be performed by a qualified professional.

13.1.3 Physical/chemical properties that may affect waste treatment options shall be specified:
None known.

13.1.4 Sewage disposal:
None known.

13.1.5 Special precautions for any recommended waste treatment:
No data available.

14. TRANSPORT INFORMATION

14.1 UN Number:
1965

14.2 UN proper shipping name:
HYDROCARBON GAS MIXTURE, LIQUIFIED, N.O.S.

14.3 Transport hazard class(es):

ADR/RID/GGVSE:
Class: 2
Label: 2.1
Hazard identification number: 23
Classification code: 2F
Tunnel restriction code: B/D
Marking of gas cans (Propane):
HYDROCARBON GAS MIXTURE, LIQUIFIED, N.O.S.
(Mixture C)
Propane/Butane mixture: HYDROCARBON GAS MIXTURE, LIQUIFIED, N.O.S. (Mixture A0 or B1)

IMDG/GGVSee-Code:
Class: 2.1
EmS: F-D, S-U
MFAG: 310
Marking of gas cans (Propane):
HYDROCARBON GAS MIXTURE, LIQUIFIED, N.O.S.
(contains Propane)

ICAO/IATA/DGR:
Class: 2.1
Marking of gas cans (Propane):
HYDROCARBON GAS MIXTURE, LIQUIFIED, N.O.S.
(contains Propane)
Note: Transportation in cargo aircraft: quantity limitations. Transportation in passenger aircraft is forbidden.

14.4 Packaging group:
-

14.5 Environmental hazard:
Marine pollutant: no.

14.6 Special precautions for user:
Observe the transportation data sheet. Ensure safe loading. Even the emptied cans should be transported only in closed state.
Important note for gas bottles: observe marking rules in Annex I, 1.3.2. of CLP regulation (1272/2008EC).

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
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15. Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture:

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
COMMISSION REGULATION (EC) No 790/2009 of 10 August 2009 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures

DIRECTIVE 1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2 Chemical safety assessment:
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16. Other Information

16.1 Information regarding the revision of the safety data sheet:

This SDS has been completely revised the last version.

16.2 Full text of the abbreviations in the safety data sheet:
DNEL: Derived no effect level. PNEC: Predicted no effect concentration. CMR effects: Carcinogenity, Mutagenicity and reproduction toxicity. PBT: Persistent, bioaccumulative and toxic. n.d.: not defined. n.a.: Not applicable.

For the explanations of other abbreviations please see the chemical and legal literature.

16.3 Data sources:
Tyczka Totalgaz GmbH, Geretsried.

16.4 Classification of the mixtures and method valuation according regulation (EG) 1207/2008 (CLP):
Product is not classified as mixture but registrated acc. CLP

16.5 Relevant R-Phrases (number and full text) of Section 2 and 3:
R 12 - Extremely flammable.
Relevant H-Phrases (number and full text) of Section 2 and 3: H220 – Extremely flammable gas.

16.6 Training instructions:
Product information for training purposes are available for suppliers at www.tytogaz.de or www.dvfg.de.

16.7 Recommended restrictions on use (non-statutory recommendations by supplier):

This safety data sheet had been prepared on the basis of information provided by the manufacturer. The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information. The SDS shall be used only as a guide for handling the product; in the course of handling and using the product other considerations may arise or be required. Since the conditions or the handling, the storage and the disposal of this product are beyond the control of the manufacturer, the distributor or the preparer of this SDS, no warranty, expressed or implied, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. No responsibility is assumed regarding the accuracy, completeness or suitability of all or any of the information contained herein or the results to be obtained from the use thereof at the time of use. In no way shall the manufacturer, the distributor or the preparer of the product be liable for any claims, losses or damages of third parties, personal injury, property damage, lost profits or any special, direct, indirect, incidental, consequential or exemplary damages resulting from the use of or reliance upon such information. Users are cautioned to determine the appropriateness and applicability of the above information to their particular circumstances and purposes and assume all risk associated with the use of this product. It is the responsibility of the user to fully comply with local, national and international regulations concerning the use of this product.

Information & Service

Important Addresses

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