SAFETY DATA SHEET

STAPA METALLIC 701 Aluminium Paste

SECTION 1. IDENTIFICATION

Product name : STAPA METALLIC 701 Aluminium Paste
Product code : 057304G60M1

Manufacturer or supplier's details
Company name of supplier : ECKART GmbH
Address : Guentersthal 4
Hartenstein 91235
Telephone : +499152770
Telefax : +499152777008
Emergency telephone : CHEMTREC: 800-424-9300
CHEMTREC: 1-703-527-3387 (International)

GBK Gefahrgut Buero GmbH, Ingelheim, Germany:
From outside US: (001) 352-323-3500
(First call in English, response in your language is possible)
US & Canada (toll free): 1-800-5355-053

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200
Not a hazardous substance or mixture.

GHS label elements
Not a hazardous substance or mixture.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>&gt;= 50 - &lt; 70</td>
</tr>
<tr>
<td>Naphtha (petroleum), hydrotreated heavy</td>
<td>64742-48-9</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
<tr>
<td>Solvent naphtha (petroleum), light arom.</td>
<td>64742-95-6</td>
<td>&gt;= 10 - &lt; 20</td>
</tr>
</tbody>
</table>
SECTION 4. FIRST AID MEASURES

General advice : Take the victim into fresh air. Do not leave the victim unattended. No hazards which require special first aid measures.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : Wash off immediately with soap and plenty of water.

In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : None known.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Dry sand
Special powder against metal fire

Unsuitable extinguishing media : Water
Foam
ABC powder
Carbon dioxide (CO2)

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment : Use personal protective equipment.
for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Evacuate personnel to safe areas.
- Use personal protective equipment.
- Remove all sources of ignition.
- Avoid dust formation.

Environmental precautions:
- Prevent product from entering drains.
- If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up:
- Use mechanical handling equipment.
- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
- Sweep up and shovel.
- Do not flush with water.
- Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion:
- Keep away from open flames, hot surfaces and sources of ignition.
- Earthing of containers and apparatuses is essential.
- Normal measures for preventive fire protection.

Advice on safe handling:
- Keep away from heat and sources of ignition.
- Avoid dust formation.
- Ensure adequate ventilation.
- For personal protection see section 8.
- Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage:
- Store in original container.
- Keep containers tightly closed in a cool, well-ventilated place.
- Keep container closed when not in use.
Keep away from sources of ignition - No smoking.

Electrical installations / working materials must comply with the technological safety standards.

Technical measures/Precautions:
- Protect from humidity and water.
- Do not allow to dry.

Materials to avoid:
- Do not store together with oxidizing and self-igniting products.
- Never allow product to get in contact with water during storage.
- Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

Further information on storage stability:
- No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>TWA (total dust)</td>
<td>50 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Respirable)</td>
<td>5 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (total dust)</td>
<td>15 mg/m3</td>
<td>OSHA Z-3</td>
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<tr>
<td></td>
<td></td>
<td>TWA (total)</td>
<td>10 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (respirable fraction)</td>
<td>5 mg/m3</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (respirable fraction)</td>
<td>15 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Respirable fraction)</td>
<td>1 mg/m3</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>5 mg/m3 (Aluminum)</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Total)</td>
<td>15 mg/m3 (Aluminum)</td>
<td>OSHA P0</td>
</tr>
<tr>
<td>Substance</td>
<td>TWA (Respirable fraction)</td>
<td>Concentration</td>
<td>Standard</td>
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</tr>
<tr>
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<tr>
<td>Aluminum</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
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<tr>
<td>Naphtha (petroleum), hydrotreated heavy</td>
<td>500 ppm 2,000 mg/m³</td>
<td>OSHA Z-1</td>
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<td></td>
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<tr>
<td>Solvent naphtha (petroleum), light arom.</td>
<td>200 ppm 1,600 mg/m³</td>
<td>ACGIH</td>
<td></td>
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</tr>
<tr>
<td>Aluminum</td>
<td>50 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
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<tr>
<td>TWA (Respirable)</td>
<td>5 mg/m³</td>
<td>NIOSH REL</td>
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<td></td>
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<tr>
<td>TWA (total dust)</td>
<td>15 mg/m³ (Aluminum)</td>
<td>OSHA Z-1</td>
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<td></td>
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<tr>
<td>TWA (total dust)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA Z-1</td>
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<tr>
<td>TWA (total)</td>
<td>15 mg/m³</td>
<td>OSHA Z-3</td>
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<td></td>
</tr>
<tr>
<td>TWA (total)</td>
<td>10 mg/m³</td>
<td>NIOSH REL</td>
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<td></td>
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<tr>
<td>TWA (respirable)</td>
<td>5 mg/m³</td>
<td>OSHA Z-3</td>
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<td></td>
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<tr>
<td>Substance/Activity</td>
<td>TWA (respirable fraction)</td>
<td>Concentration</td>
<td>Source</td>
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<tr>
<td>TWA (Respirable fraction)</td>
<td>15 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
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<tr>
<td>TWA (Respirable fraction)</td>
<td>1 mg/m³</td>
<td>ACGIH</td>
<td></td>
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</tr>
<tr>
<td>TWA (Total dust)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>NIOSH REL</td>
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<tr>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
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<tr>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
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</tr>
<tr>
<td>TWA (Total dust)</td>
<td>15 mg/m³ (Aluminum)</td>
<td>OSHA Z-1</td>
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</tr>
<tr>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA Z-1</td>
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</tr>
<tr>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
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<td></td>
</tr>
<tr>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
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<tr>
<td>TWA (welding fumes)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>NIOSH REL</td>
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<tr>
<td>TWA (pyro powders)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>NIOSH REL</td>
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<tr>
<td>TWA (Respirable fraction)</td>
<td>1 mg/m³ (Aluminum)</td>
<td>ACGIH</td>
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<td></td>
</tr>
<tr>
<td>TWA (Fumes)</td>
<td>5 mg/m³</td>
<td>OSHA P0</td>
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<td></td>
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<tr>
<td>Naphtha (petroleum), hydrotreated heavy</td>
<td>64742-48-9</td>
<td>TWA 500 ppm 2,000 mg/m³</td>
<td>OSHA Z-1</td>
<td></td>
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<tr>
<td>TWA</td>
<td>400 ppm 1,600 mg/m³</td>
<td>OSHA P0</td>
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</tr>
<tr>
<td>Solvent naphtha (petroleum), light arom.</td>
<td>64742-95-6</td>
<td>TWA 500 ppm 2,000 mg/m³</td>
<td>OSHA Z-1</td>
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</tr>
<tr>
<td>TWA</td>
<td>200 mg/m³ (total hydrocarbon vapor)</td>
<td>ACGIH</td>
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</tr>
<tr>
<td>TWA</td>
<td>400 ppm</td>
<td>OSHA P0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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1,600 mg/m3

Personal protective equipment

Respiratory protection : Use suitable breathing protection if workplace concentration requires.

Hand protection

Material : Solvent-resistant gloves

Remarks : Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The exact break through time can be obtained from the protective glove producer and this has to be observed. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Recommended preventive skin protection Skin should be washed after contact. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Safety glasses

Skin and body protection

: Long sleeved clothing

Safety shoes

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Pasty solid

Color : silver

Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Boiling point/boiling range : 162 °C

Flash point : No data available

Evaporation rate : No data available
Flammability (solid, gas) : Combustible Solids
Auto-flammability : not auto-flammable
Burning number : 1
Upper explosion limit / Upper flammability limit : No data available
Lower explosion limit / Lower flammability limit : No data available
Vapor pressure : No data available
Relative density : No data available
Density : 1.3 - 2.0 g/cm³

Solubility(ies)
Water solubility : insoluble
Partition coefficient: n-octanol/water : No data available
Autoignition temperature : No data available
Decomposition temperature : No data available
Viscosity : No data available
Explosive properties : Not explosive

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.
Chemical stability : No decomposition if stored and applied as directed.
Possibility of hazardous reactions : Reacts with alkalis, acids, halogenes and oxidizing agents.
Contact with acids and alkalis may release hydrogen.
Mixture reacts slowly with water resulting in evolution of hydrogen.
Vapor/air-mixtures are explosive at intense warming.
Stable under recommended storage conditions.

Conditions to avoid : Do not allow to dry.

Incompatible materials : Acids
Bases
Oxidizing agents
Highly halogenated compounds
SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Not classified based on available information.

Ingredients:

Naphtha (petroleum), hydrotreated heavy:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity : LC50 (Rat): Test atmosphere: vapor Remarks: An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.
Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Solvent naphtha (petroleum), light arom.:
Acute oral toxicity : LD50 (Rat): 3,492 mg/kg
Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Serious eye damage/eye irritation
Not classified based on available information.

Respiratory or skin sensitization

Skin sensitization
Not classified based on available information.

Respiratory sensitization
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No component of this product present at levels greater than or
equal to 0.1% is on OSHA’s list of regulated carcinogens.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity
Not classified based on available information.

STOT-single exposure
Not classified based on available information.

Ingredients:
Solvent naphtha (petroleum), light arom.:
Assessment: May cause respiratory irritation., May cause drowsiness or dizziness.

STOT-repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

Ingredients:
Solvent naphtha (petroleum), light arom.:
May be fatal if swallowed and enters airways.

Further information
Ingredients:
Naphtha (petroleum), hydrotreated heavy:
Remarks: Solvents may degrease the skin.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:
Solvent naphtha (petroleum), light arom.:
Ecotoxicology Assessment
Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.
Persistence and degradability
No data available

Bioaccumulative potential
No data available

Other adverse effects
No data available

Ingredients:
Naphtha (petroleum), hydrotreated heavy:

Additional ecological information: No data available

SECTION 13. DISPOSAL CONSIDERATIONS
Disposal methods
Waste from residues: The product should not be allowed to enter drains, water courses or the soil.
In accordance with local and national regulations.

Contaminated packaging: In accordance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION
International Regulations
Remarks: Not classified as dangerous in the meaning of transport regulations.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.
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SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Aluminum 7429-90-5 >= 50 - < 70 %

Clean Air Act
This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations
Massachusetts Right To Know
Aluminum 7429-90-5
Solvent naphtha (petroleum), light arom. 64742-95-6
Fatty acids, C14-18 and C16-18-unsatd. 67701-06-8

Pennsylvania Right To Know
Aluminum 7429-90-5
Naphtha (petroleum), hydrotreated heavy 64742-48-9
Solvent naphtha (petroleum), light arom. 64742-95-6

California Prop. 65
WARNING: This product can expose you to chemicals including lead and cadmium, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances
Aluminum 7429-90-5

California Permissible Exposure Limits for Chemical Contaminants
Aluminum 7429-90-5

The ingredients of this product are reported in the following inventories:
DSL : All components of this product are on the Canadian DSL
TSCA : On TSCA Inventory

TSCA list
No substances are subject to a Significant New Use Rule.
No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA P0 : USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3 : USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dirts
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA : 8-hour time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average
OSHA Z-3 / TWA : 8-hour time weighted average
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic
Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; Elx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 03/21/2018

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8