SAFETY DATA SHEET

STAPA IL HYDROLAN S 418 Aluminium Paste

SECTION 1. IDENTIFICATION

Product name : STAPA IL HYDROLAN S 418 Aluminium Paste
Product code : 022887GD0

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

Flammable solids : Category 1
Eye irritation : Category 2A
Skin sensitization : Category 1
Specific target organ systemic toxicity - single exposure : Category 3 (Central nervous system)

GHS label elements
Hazard pictograms:

Signal Word: Danger

Hazard Statements:
- H228 Flammable solid.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H336 May cause drowsiness or dizziness.

Precautionary Statements:

Prevention:
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264 Wash skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing must not be allowed out of the workplace.
- P280 Wear protective gloves/eye protection/face protection.

Response:
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- P305 + P351 + P338 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.
- P337 + P313 If eye irritation persists: Get medical advice/attention.
- P363 Wash contaminated clothing before reuse.
- P370 + P378 In case of fire: Use for extinction: Special powder for metal fires.
- P370 + P378 In case of fire: Use for extinction: Dry sand.
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Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:
P501 Dispose of contents/container to an approved waste disposal plant.

Hazardous ingredients which must be listed on the label:
2-Propanol
1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous 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>2-Propanol</td>
<td>67-63-0</td>
<td>&gt;= 30 - &lt; 50</td>
</tr>
<tr>
<td>Silica</td>
<td>7631-86-9</td>
<td>&gt;= 1 - &lt; 5</td>
</tr>
<tr>
<td>1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]</td>
<td>1760-24-3</td>
<td>&gt;= 0.1 - &lt; 1</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General advice:
Take the victim into fresh air.
Do not leave the victim unattended.
Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.

If inhaled:
Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.

In case of skin contact:
Wash off immediately with soap and plenty of water.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact:
Immediately flush eye(s) with plenty of water.
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Immediately flush eye(s) with plenty of water. Remove contact lenses. Keep eye wide open while rinsing. 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: May cause an allergic skin reaction. Causes serious eye irritation. May cause drowsiness or dizziness.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry sand
Special powder against metal fire

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

Further information: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for fire-fighters: Use personal protective equipment.
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. Avoid dust formation. Remove all sources of ignition.

Environmental precautions:
Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
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).
Do not flush with water.
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion
Earthing of containers and apparatuses is essential.
Take measures to prevent the build up of electrostatic charge.
Use explosion-proof equipment.
Avoid dust formation.
Keep away from open flames, hot surfaces and sources of ignition.

Advice on safe handling
Keep away from heat and sources of ignition.
Avoid dust formation.
Ensure adequate ventilation.
Avoid formation of respirable particles.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

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.
No smoking.
Keep container tightly closed in a dry and well-ventilated place.
Electrical installations / working materials must comply with
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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>
</tr>
<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></td>
<td></td>
<td>TWA (Respirable fraction)</td>
<td>5 mg/m³ (Aluminum)</td>
<td>OSHA P0</td>
</tr>
<tr>
<td>Substance</td>
<td>Limit Type</td>
<td>Value</td>
<td>Source</td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------</td>
<td>------------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>2-Propanol</td>
<td>STEL</td>
<td>400 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
<td>ACGIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>400 ppm</td>
<td>NIOSH REL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST</td>
<td>500 ppm</td>
<td>NIOSH REL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>400 ppm 980 mg/m³</td>
<td>OSHA Z-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>400 ppm 980 mg/m³</td>
<td>OSHA P0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>500 ppm 1,225 mg/m³</td>
<td>OSHA P0</td>
<td></td>
</tr>
<tr>
<td>Silica</td>
<td>TWA</td>
<td>6 mg/m³</td>
<td>NIOSH REL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA (Dust)</td>
<td>20 Million particles per cubic foot</td>
<td>OSHA Z-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA (Dust)</td>
<td>80 mg/m³ / %SiO₂</td>
<td>OSHA Z-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA (Dust)</td>
<td>20 Million particles per cubic foot (Silica)</td>
<td>OSHA Z-3</td>
<td></td>
</tr>
</tbody>
</table>
### Hazardous components without workplace control parameters

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-</td>
<td>1760-24-3</td>
</tr>
</tbody>
</table>

### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Biological specimen</th>
<th>Sampling time</th>
<th>Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Propanol</td>
<td>67-63-0</td>
<td>Acetone</td>
<td>Urine</td>
<td>End of shift at end of workweek</td>
<td>40 mg/l</td>
<td>ACGIH BEI</td>
</tr>
</tbody>
</table>

### Personal protective equipment

**Respiratory protection**

Use suitable breathing protection if workplace concentration requires.

In the case of dust or aerosol formation use respirator with an approved filter.

**Hand protection**

Material: Solvent-resistant gloves (butyl-rubber)

**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 : Wear face-shield and protective suit for abnormal processing problems.

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 : When using do not eat or drink.
                   When using do not smoke.
                   Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Pasty solid
Color : silver
Odor : solvent
Odor Threshold : No data available
pH : No data available
Melting point/freezing point : No data available
Boiling point/boiling range : 82 °C
Flash point : 13 °C
Evaporation rate : No data available
Flammability (solid, gas) : The substance or mixture is a flammable solid with the category 1.
Auto-flammability : not auto-flammable
                    not auto-flammable
                    not auto-flammable
                    not auto-flammable
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- : No data available
octanol/water
Autoignition temperature : No data available
Decomposition temperature : No data available
Viscosity : No data available
Explosive properties : Not explosive Vapors may form explosive mixture with air.
                       Not explosive Vapors may form explosive mixture with air.
                       Not explosive Vapors may form explosive mixture with air.
                       Not explosive Vapors may form explosive mixture with air.

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.
                                   Vapors may form explosive mixture with air.
                                   Stable under recommended storage conditions.

Conditions to avoid : Do not allow to dry.
                     Heat, flames and sparks.

Incompatible materials : Acids
                       Bases
                       Oxidizing agents
                       Highly halogenated compounds

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity
Not classified based on available information.

Ingredients:

2-Propanol:
Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Silica:
Acute oral toxicity : LD50 (Rat): 5,000 mg/kg
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(Mouse): 15,000 mg/kg

Acute inhalation toxicity: (Rat): 0.139 mg/l
Exposure time: 4 h

Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-:

Acute oral toxicity: LD50 (Rat): ca. 2,400 mg/kg

Acute inhalation toxicity: LC50: 1.49 - 2.44 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg

Skin corrosion/irritation
Not classified based on available information.

Serious eye damage/eye irritation
Causes serious eye irritation.

Respiratory or skin sensitization

Skin sensitization
May cause an allergic skin reaction.

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
May cause drowsiness or dizziness.

STOT-repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

Further information

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Ingredients:
Silica:
Toxicity to daphnia and other aquatic invertebrates: (Daphnia): 7,600 mg/l
Toxicity to algae: (Chlorella pyrenoidosa): 440 mg/l

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
In accordance with local and national regulations.

Contaminated packaging: Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
In accordance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
UN/ID No. : UN 1325
Proper shipping name : Flammable solid, organic, n.o.s.
                      (Aluminium pigment paste)
Class : 4.1
Packing group : II
Labels : Flammable Solid
Packing instruction (cargo aircraft) : 448
Packing instruction (passenger aircraft) : 445

IMDG-Code
UN number : UN 1325
Proper shipping name : FLAMMABLE SOLID, ORGANIC, N.O.S.
                      (Aluminium pigment paste)
Class : 4.1
Packing group : II
Labels : 4.1
EmS Code : F-A, S-G
Marine pollutant : no
Remarks : IMDG Code segregation group 15 - Powdered metals

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

Domestic regulation

49 CFR
UN/ID/NA number : UN 1325
Proper shipping name : Flammable solids, organic, n.o.s.
                      (Aluminum pigment paste)
Class : 4.1
Packing group : II
Labels : FLAMMABLE SOLID
ERG Code : 133
Marine pollutant : no
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.

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: Flammable (gases, aerosols, liquids, or solids)
Serious eye damage or eye irritation
Respiratory or skin sensitization
Specific target organ toxicity (single or repeated exposure)

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

- Aluminum 7429-90-5 >= 50 - < 70 %
- 2-Propanol 67-63-0 >= 30 - < 50 %

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).
The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):
- 2-Propanol 67-63-0 40 %

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
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
2-Propanol 67-63-0
Fatty acids, C14-18 and C16-18-unsatd. 67701-06-8
Silica 7631-86-9
Cristobalite (SiO2) 14464-46-1

Pennsylvania Right To Know
Aluminum 7429-90-5
2-Propanol 67-63-0
Fatty acids, C14-18 and C16-18-unsatd. 67701-06-8
Silica 7631-86-9

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.

WARNING: This product can expose you to chemicals including Cristobalite (SiO2), which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances
Aluminum 7429-90-5
2-Propanol 67-63-0
Silica 7631-86-9

California Permissible Exposure Limits for Chemical Contaminants
Aluminum 7429-90-5
2-Propanol 67-63-0
Silica 7631-86-9
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)

ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)

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 Dusts

ACGIH / TWA : 8-hour, time-weighted average

ACGIH / STEL : Short-term exposure limit

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek

NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday

OSHA P0 / TWA : 8-hour time weighted average

OSHA P0 / STEL : Short-term exposure limit

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
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