

**STAPA IL HYDROLAN S 412 Aluminium Paste**

Version            Revision Date:            SDS Number:            Date of last issue: -  
1.0                05/10/2018                102000024920            Date of first issue: 05/10/2018

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**SECTION 1. IDENTIFICATION**

Product name                                : STAPA IL HYDROLAN S 412 Aluminium Paste  
Product code                                 : 022577GD0

**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

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**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                        : Category 3 (Central nervous system)  
systemic toxicity - single  
exposure

**GHS label elements**

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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**

Chemical name	CAS-No.	Concentration (% w/w)
Aluminum	7429-90-5	>= 30 - < 50
2-Propanol	67-63-0	>= 30 - < 50
Silica	7631-86-9	>= 10 - < 20
1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-	1760-24-3	>= 0.1 - < 1

**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.

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### SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Dry sand  
Special powder against metal fire

Unsuitable extinguishing media : Water  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
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.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

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

Environmental precautions :

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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.

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### 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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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

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Aluminum	7429-90-5	TWA (total dust)	50 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable)	5 mg/m <sup>3</sup>	NIOSH REL
		TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-3
		TWA (total)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-3
		TWA (respirable fraction)	15 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable fraction)	1 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA (Total)	15 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (Respirable fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA P0

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		TWA (total dust)	15 mg/m <sup>3</sup> (Aluminum)	OSHA Z-1
		TWA (respirable fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA Z-1
		TWA (Total dust)	15 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (respirable dust fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (welding fumes)	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA (pyro powders)	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA (Respirable fraction)	1 mg/m <sup>3</sup> (Aluminum)	ACGIH
		TWA (Fumes)	5 mg/m <sup>3</sup>	OSHA P0
2-Propanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m <sup>3</sup>	NIOSH REL
		ST	500 ppm 1,225 mg/m <sup>3</sup>	NIOSH REL
		TWA	400 ppm 980 mg/m <sup>3</sup>	OSHA Z-1
		TWA	400 ppm 980 mg/m <sup>3</sup>	OSHA P0
		STEL	500 ppm 1,225 mg/m <sup>3</sup>	OSHA P0
Silica	7631-86-9	TWA	6 mg/m <sup>3</sup>	NIOSH REL
		TWA (Dust)	20 Million particles per cubic foot	OSHA Z-3
		TWA (Dust)	80 mg/m <sup>3</sup> / %SiO <sub>2</sub>	OSHA Z-3
		TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3

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		TWA (Dust)	80 mg/m <sup>3</sup> / %SiO <sub>2</sub> (Silica)	OSHA Z-3
		TWA	6 mg/m <sup>3</sup> (Silica)	NIOSH REL
Aluminum	7429-90-5	TWA (total dust)	50 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable)	5 mg/m <sup>3</sup>	NIOSH REL
		TWA (total dust)	15 mg/m <sup>3</sup>	OSHA Z-3
		TWA (total)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (respirable fraction)	5 mg/m <sup>3</sup>	OSHA Z-3
		TWA (respirable fraction)	15 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable fraction)	1 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA (Total)	15 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (Respirable fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (total dust)	15 mg/m <sup>3</sup> (Aluminum)	OSHA Z-1
		TWA (respirable fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA Z-1
		TWA (Total dust)	15 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (respirable dust fraction)	5 mg/m <sup>3</sup> (Aluminum)	OSHA P0
		TWA (welding fumes)	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA (pyro powders)	5 mg/m <sup>3</sup> (Aluminum)	NIOSH REL
		TWA	1 mg/m <sup>3</sup>	ACGIH



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		(Respirable fraction)	(Aluminum)	
		TWA (Fumes)	5 mg/m <sup>3</sup>	OSHA P0
2-Propanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m <sup>3</sup>	NIOSH REL
		ST	500 ppm 1,225 mg/m <sup>3</sup>	NIOSH REL
		TWA	400 ppm 980 mg/m <sup>3</sup>	OSHA Z-1
		TWA	400 ppm 980 mg/m <sup>3</sup>	OSHA P0
		STEL	500 ppm 1,225 mg/m <sup>3</sup>	OSHA P0
Silica	7631-86-9	TWA	6 mg/m <sup>3</sup>	NIOSH REL
		TWA (Dust)	20 Million particles per cubic foot	OSHA Z-3
		TWA (Dust)	80 mg/m <sup>3</sup> / %SiO <sub>2</sub>	OSHA Z-3
		TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m <sup>3</sup> / %SiO <sub>2</sub> (Silica)	OSHA Z-3
		TWA	6 mg/m <sup>3</sup> (Silica)	NIOSH REL

**Hazardous components without workplace control parameters**

Ingredients	CAS-No.
1,2-Ethanediamine, N1-[3-(trimethoxysilyl)propyl]-	1760-24-3

**Biological occupational exposure limits**

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis

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2-Propanol	67-63-0	Acetone	Urine	End of shift at end of workweek	40 mg/l	ACGIH BEI
2-Propanol	67-63-0	Acetone	Urine	End of shift at end of workweek	40 mg/l	ACGIH BEI

**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.

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

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### 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
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/cm <sup>3</sup>
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 Vapors may form explosive mixture with air. Not explosive Vapors may form explosive mixture with air.

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.

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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

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**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  
(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

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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.

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**Further information****Ingredients:****Silica:**

Remarks: No data available

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**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Ingredients:****Silica:**Toxicity to daphnia and other : (Daphnia): 7,600 mg/l  
aquatic invertebrates

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

**Ingredients:****Silica:**Additional ecological : No data available  
information

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**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.

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Do not burn, or use a cutting torch on, the empty drum.  
In accordance with local and national regulations.

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### 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

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### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know

##### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)
Benzoyl chloride	98-88-4	1000

##### 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	>= 30 - < 50 %
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 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

2-Propanol	67-63-0	40 %
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#### Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Benzoyl chloride	98-88-4	0.0005 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:



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Benzoyl chloride	98-88-4	0.0005 %
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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
Silica	7631-86-9

**Pennsylvania Right To Know**

Aluminum	7429-90-5
2-Propanol	67-63-0
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](http://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:

## STAPA IL HYDROLAN S 412 Aluminium Paste

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DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.

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.

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## 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 maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -

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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

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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.

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