

Safety Data Sheet dated 2/3/2021, version 2.0 This version cancels and substitutes any previous version

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Mixture identification:

Trade name: ACID ULTRA

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use:

Condenser deoxidiser

1.3. Details of the supplier of the safety data sheet

Company:

ERRECOM SPA

Via Industriale, 14

Corzano (BS) Italy

Tel. +39 030/9719096

Competent person responsible for the safety data sheet:

lab@errecom.it

1.4. Emergency telephone number

+39 02-6610-1029 Poison Control Center Niguarda Ca' Granda - Milano - ITALY

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP)

- Warning, Flam. Liq. 3, Flammable liquid and vapour.
- Warning, Acute Tox. 4, Harmful if swallowed.
- Danger, Skin Corr. 1B, Causes severe skin burns and eye damage.
- Danger, Eye Dam. 1, Causes serious eye damage.
- Warning, STOT SE 3, May cause respiratory irritation.

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

Hazard pictograms:



Danger

Hazard statements:

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

Precautionary statements:



P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P352 Wash with plenty of water.

Special Provisions:

None

Contains

ammonium bifluoride

butan-1-ol

ethoxylated fatty alcohols

hydrochloric acid

Special provisions according to Annex XVII of REACH and subsequent amendments:

None

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration >= 0.1%

Other Hazards:

No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Number		Classification
>= 15% - < 20%	butan-1-ol	Index number: CAS: EC: REACH No.:	603-004-00-6 71-36-3 200-751-6 01-21194846 30-38-XXXX	 2.6/3 Flam. Liq. 3 H226 3.1/4/Oral Acute Tox. 4 H302 3.2/2 Skin Irrit. 2 H315 3.3/1 Eye Dam. 1 H318 3.8/3 STOT SE 3 H335 3.8/3 STOT SE 3 H336
>= 12.5% - < 15%	hydrochloric acid	Index number: CAS: EC: REACH No.:	017-002-01-X 7647-01-0 231-595-7 01-21194848 62-27-XXXX	•
>= 7% - < 10%	ethoxylated fatty alcohols	CAS:	24938-91-8	3.1/4/Oral Acute Tox. 4 H302 3.3/1 Eye Dam. 1 H318 4.1/C3 Aquatic Chronic 3 H412
>= 2.5% - < 5%	ammonium bifluoride	Index number: CAS: EC: REACH No.:	009-009-00-4 1341-49-7 215-676-4 01-21194891	3.1/3/Oral Acute Tox. 3 H301 3.2/1B Skin Corr. 1B H314 3.3/1 Eye Dam. 1 H318 Specific Concentration Limits:



			80-38-XXXX	C >= 1%: Skin Corr. 1B H314 0,1% <= C < 1%: Skin Irrit. 2 H315 0,1% <= C < 1%: Eye Irrit. 2 H319
>= 1% - < 2.5%	2-(2-butoxyethoxy)etha nol	Index number: CAS: EC: REACH No.:	603-096-00-8 112-34-5 203-961-6 01-21194751 04-44-XXXX	3.3/2 Eye Irrit. 2 H319
>= 0.1% - < 0.25%	ammonium fluoride	Index number: CAS: EC: REACH No.:	009-006-00-8 12125-01-8 235-185-9 01-21199741 47-30-XXXX	3.1/3/Oral Acute Tox. 3 H301 3.1/3/Dermal Acute Tox. 3 H311 3.1/3/Inhal Acute Tox. 3 H331

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap. OBTAIN IMMEDIATE MEDICAL ATTENTION.

Wash thoroughly the body (shower or bath).

After contact with skin, wash immediately with soap and plenty of water.

Wash contaminated clothing before using them.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an opthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do NOT induce vomiting.

Call a doctor immediately. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person and if indicated by the doctor.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

In case of inhalation, consult a doctor immediately and show him packing or label.

4.2. Most important symptoms and effects, both acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment:

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray.

CO2 or Dry chemical fire extinguisher.

Alcohol resistant foam fire extinguisher.

Extinguishing media which must not be used for safety reasons:



High pressure water jet.

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

5.3. Advice for firefighters

Use suitable breathing apparatus.

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove all sources of ignition.

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Provide adequate ventilation.

Use appropriate respiratory protection.

See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities

Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up

Wash with plenty of water.

6.4. Reference to other sections

See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.

Use localized ventilation system.

Don't use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.

Advice on general occupational hygiene:

Contamined clothing should be changed before entering eating areas.

Do not eat or drink while working.

See also section 8 for recommended protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed. To maintain product quality, do not store in heat or direct sunlight. Keep in a dry, cool and well-ventilated place.

Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Keep away from food, drink and feed.

Incompatible materials:

See subsection 10.5

Store containers away from any incompatible materials, checking section 10.

Instructions as regards storage premises:

Cool and adequately ventilated.

7.3. Specific end use(s)

Information not available.



SECTION 8: Exposure controls/personal protection

8.1. Control parameters

butan-1-ol - CAS: 71-36-3

ACGIH - TWA(8h): 20 ppm - Notes: Eye and URT irr

hydrochloric acid - CAS: 7647-01-0

EU - TWA(8h): 8 mg/m3, 5 ppm - STEL: 15 mg/m3, 10 ppm

ACGIH - STEL: Ceiling 2 ppm - Notes: A4 - URT irr

ammonium bifluoride - CAS: 1341-49-7

TLV TWA - 2,5 mg/m3

2-(2-butoxyethoxy)ethanol - CAS: 112-34-5

EU - TWA(8h): 67.5 mg/m3, 10 ppm - STEL: 101.2 mg/m3, 15 ppm

ACGIH - TWA(8h): 10 ppm - Notes: (IFV) - Hematologic, liver and kidney eff

ammonium fluoride - CAS: 12125-01-8

TLV - TWA(8h): 2.5 mg/m3

MAK - TWA(8h): 3 ppm

DNEL Exposure Limit Values

butan-1-ol - CAS: 71-36-3

Worker Professional: 310 mg/m 3 - Consumer: 55 mg/m 3 - Exposure: Human Inhalation

- Frequency: Long Term (repeated)

Consumer: 3125 mg/kg - Exposure: Human Oral - Frequency: Long Term (repeated)

hydrochloric acid - CAS: 7647-01-0

Worker Professional: 15 mg/m³ - Exposure: Human Inhalation - Frequency: Short Term

(acute)

Worker Professional: 8 mg/m³ - Exposure: Human Inhalation - Frequency: Long Term

(repeated)

ammonium bifluoride - CAS: 1341-49-7

Worker Professional: 3.8 mg/m³ - Exposure: Human Inhalation - Frequency: Short

Term, local effects

Worker Professional: 2.3 mg/m³ - Consumer: 0.045 mg/m³ - Exposure: Human

Inhalation - Frequency: Long Term, systemic effects

Consumer: 0.015 mg/m³ - Exposure: Human Oral - Frequency: Long Term, systemic

effects

Consumer: 0.015 mg/m³ - Exposure: Human Oral - Frequency: Short Term, systemic

effects

PNEC Exposure Limit Values

butan-1-ol - CAS: 71-36-3

Target: Fresh Water - Value: 0.08 mg/l

Target: Aquatic, periodic release - Value: 2.25 mg/l

Target: Marine water - Value: 0.008 mg/l

Target: Freshwater sediments - Value: 0.324 mg/kg

Target: Microorganisms in sewage treatments - Value: 2476 mg/l

Target: Marine water sediments - Value: 0.032 mg/kg

Target: Soil (agricultural) - Value: 0.01 mg/kg

hydrochloric acid - CAS: 7647-01-0

Target: Fresh Water - Value: 36 µg/l

Target: Aquatic, periodic release - Value: 45 µg/l

Target: Marine water - Value: 36 µg/l

Target: Microorganisms in sewage treatments - Value: 36 µg/l

ammonium bifluoride - CAS: 1341-49-7

Target: Fresh Water - Value: 1.3 mg/l

Target: Soil (agricultural) - Value: 22 mg/kg

Target: Microorganisms in sewage treatments - Value: 76 mg/l

8.2. Exposure controls

Eye protection:

Use close safety visors, don't use eye lens.



Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

work gloves resistant to penetration (ref. standard EN 374).

Suitable material: NBR (nitrile rubber).

Material thickness: 0.7 mm minimum.

Break through time: > 480 min

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).

Respiratory protection:

In the case of vapour formation use a respirator with an approved filter.

Combination filtering device (DIN EN 141).

full face mask with combined filter type ABEK (EN 14387).

Thermal Hazards:

None

Environmental exposure controls:

None

Appropriate engineering controls:

None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid		
Colour:	blue		
Odour:	characteristic		
Melting point/freezing point:	N.A.		
Boiling point or initial boiling point and boiling range:	N.A.		
Flammability:	Flam. Liq. 3, H226		
Lower and upper explosion limit:	N.A.		
Flash point:	53 ° C	ASTM-D 93	
Auto-ignition temperature:	N.A.		
Decomposition temperature:	N.A.		
pH:	1		
Kinematic viscosity:	N.A.		
Solubility in water:	N.A.		
Solubility in oil:	N.A.		
Partition coefficient	N.A.		
n-octanol/water (log value):			
Vapour pressure:	N.A.		
Density and/or relative density:	1 g/mL (+20°C/+68°F)		
Relative vapour density:	N.A.		

Particle characteristics:



Particle size:	N.A.		
----------------	------	--	--

9.2. Other information

No other relevant information

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

None

10.4. Conditions to avoid

Avoid overheating, electrostatic discharge and all sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents.

Bases, amines, alkali metals, permanganates.

10.6. Hazardous decomposition products

No data available

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008 Toxicological information of the product:

a) acute toxicity

The product is classified: Acute Tox. 4 H302

b) skin corrosion/irritation

The product is classified: Skin Corr. 1B H314

c) serious eye damage/irritation

The product is classified: Eye Dam. 1 H318

d) respiratory or skin sensitisation

Not classified

Based on available data, the classification criteria are not met

e) germ cell mutagenicity

Not classified

Based on available data, the classification criteria are not met

f) carcinogenicity

Not classified

Based on available data, the classification criteria are not met

g) reproductive toxicity

Not classified

Based on available data, the classification criteria are not met

h) STOT-single exposure

The product is classified: STOT SE 3 H335

i) STOT-repeated exposure

Not classified

Based on available data, the classification criteria are not met

j) aspiration hazard

Not classified

Based on available data, the classification criteria are not met Toxicological information of the main substances found in the product:

butan-1-ol - CAS: 71-36-3

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat 2292 mg/kg



Test: LD50 - Route: Skin - Species: Rabbit 3430 mg/kg

Test: LC0 - Route: Inhalation - Species: Rat > 17.76 mg/l - Duration: 4h Test: NOAEL - Route: Oral - Species: Rat 125 mg/kg - Notes: bw/day

b) skin corrosion/irritation:

Test: Skin Irritant Positive

c) serious eye damage/irritation:

Test: Eye Irritant Positive

e) germ cell mutagenicity:

Test: Ames test Negative

Test: chromosomal aberration test Negative

g) reproductive toxicity:

Test: NOAEL - Route: Oral - Species: Rat 1454 mg/kg - Notes: bw/day

h) STOT-single exposure:

Test: Respiratory Tract Irritant Positive

hydrochloric acid - CAS: 7647-01-0

a) acute toxicity:

Test: LC50 - Route: Inhalation - Species: Rat = 45.6 mg/l - Duration: 5 min

Test: NOAEL - Route: Inhalation - Species: Rat 20 ppm

b) skin corrosion/irritation:

Test: Skin Corrosive - Route: Skin - Species: Rabbit Positive - Source: OECD 404

c) serious eye damage/irritation:

Test: Eye Corrosive - Route: Skin - Species: Rabbit Positive - Source: OECD 405

ethoxylated fatty alcohols - CAS: 24938-91-8

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat 300-2000 mg/kg

ammonium bifluoride - CAS: 1341-49-7

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat 130 mg/kg - Source: OECD Test Guideline 401

b) skin corrosion/irritation:

Test: Skin Corrosive Positive

c) serious eye damage/irritation:

Test: Eye Irritant Positive

d) respiratory or skin sensitisation:

Test: Skin Sensitization Negative
Test: Respiratory Sensitization Negative

e) germ cell mutagenicity:

Test: Mutagenesis - Species: Salmonella Typhimurium Negative - Source: OECD Test

Guideline 471

Test: Mutagenesis - Species: mammalian cells Positive - Source: OECD Test Guideline

476

f) carcinogenicity:

Test: Carcinogenicity Negative

g) reproductive toxicity:

Test: Reproductive Toxicity Negative

2-(2-butoxyethoxy)ethanol - CAS: 112-34-5

LD50 (RAT) ORAL: 6560 MG/KG LD50 (RABBIT) SKIN: 4120 MG/KG

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration >= 0.1%

SECTION 12: Ecological information



12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Not classified for environmental hazards

Based on available data, the classification criteria are not met

butan-1-ol

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish = 1376 mg/l - Duration h: 96 - Notes: Species:

Pimephales promelas

Endpoint: EC50 - Species: Daphnia = 1328 mg/l - Duration h: 48 - Notes: Species:

Daphnia magna

Endpoint: EC50 - Species: Algae = 225 mg/l - Duration h: 96 - Notes: Species:

Selenastrum capricornutum

hydrochloric acid

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish 3.25 pH - Duration h: 96

Endpoint: EC50 - Species: Daphnia 4.92 pH - Duration h: 72 - Notes: Species: Daphnia

magna

Endpoint: EC50 - Species: Algae 4.7 pH - Duration h: 72 - Notes: Species: Chlorella

vulgaris

ethoxylated fatty alcohols

a) Aquatic acute toxicity:

Endpoint: NOEC - Species: Fish > 0.1-1 mg/l Endpoint: NOEC - Species: Daphnia > 0.1-1 mg/l

Endpoint: NOEC - Species: Algae > 0.1-1 mg/l

ammonium bifluoride

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish > 100 mg/l Endpoint: EC50 - Species: Daphnia > 100 mg/l Endpoint: EC50 - Species: Algae > 100 mg/l

b) Aquatic chronic toxicity:

Species: Algae > 1 mg/l Species: Fish > 1 mg/l Species: Daphnia > 1 mg/l

12.2. Persistence and degradability

ethoxylated fatty alcohols - CAS: 24938-91-8

Biodegradability: Readily biodegradable - Test: OECD 301 - Notes: (>70%) OECD 301 F

12.3. Bioaccumulative potential

N.A.

12.4. Mobility in soil

N.A.

12.5. Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6. Endocrine disrupting properties

No endocrine disruptor substances present in concentration >= 0.1%

12.7. Other adverse effects

None

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information

ACID ULTRA/2.0

Page n. 9 of 13



14.1. UN number or ID number

ADR-UN Number: 2920 IATA-UN Number: 2920 IMDG-UN Number: 2920

14.2. UN proper shipping name

ADR-Shipping Name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (hydrochloric

acid. butan-1-ol)

IATA-Shipping Name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (hydrochloric

acid, butan-1-ol)

IMDG-Shipping Name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (hydrochloric

acid, butan-1-ol)

14.3. Transport hazard class(es)

ADR-Class: 8

ADR - Hazard identification number: 83

IATA-Class: 8
IATA-Label: 8 + 3
IMDG-Class: 8

14.4. Packing group

ADR-Packing Group: II
IATA-Packing group: II
IMDG-Packing group: II

14.5. Environmental hazards

ADR-Enviromental Pollutant: No IMDG-Marine pollutant: No

IMDG-EmS: F-E , S-C

14.6. Special precautions for user

ADR-Subsidiary hazards: 3 ADR-S.P.: 274

ADR-Transport category (Tunnel restriction code): 2 (D/E)

IATA-Passenger Aircraft: 851
IATA-Subsidiary hazards: 3
IATA-Cargo Aircraft: 855
IATA-S.P.: IATA-ERG: 8F
IMDG-Subsidiary hazards: 3

IMDG-Stowage and handling: Category C SW1 SW2

IMDG-Segregation: -

14.7. Maritime transport in bulk according to IMO instruments

N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture Dir. 98/24/EC (Risks related to chemical agents at work)

Dir. 2000/39/EC (Occupational exposure limit values)

Regulation (EC) n. 1907/2006 (REACH) Regulation (EC) n. 1272/2008 (CLP)

Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013

Regulation (EU) n. 2020/878

Regulation (EU) n. 286/2011 (ATP 2 CLP) Regulation (EU) n. 618/2012 (ATP 3 CLP) Regulation (EU) n. 487/2013 (ATP 4 CLP)



Regulation (EU) n. 944/2013 (ATP 5 CLP) Regulation (EU) n. 605/2014 (ATP 6 CLP) Regulation (EU) n. 2015/1221 (ATP 7 CLP) Regulation (EU) n. 2016/918 (ATP 8 CLP) Regulation (EU) n. 2016/1179 (ATP 9 CLP) Regulation (EU) n. 2017/776 (ATP 10 CLP) Regulation (EU) n. 2018/669 (ATP 11 CLP) Regulation (EU) n. 2018/1480 (ATP 13 CLP)

Regulation (EU) n. 2019/521 (ATP 12 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

Restriction 3

Restriction 40

Restrictions related to the substances contained:

Restriction 55

Where applicable, refer to the following regulatory provisions:

Directive 2012/18/EU (Seveso III)

Regulation (EC) nr 648/2004 (detergents).

Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1

Product belongs to category: P5c

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

SECTION 16: Other information

Full text of phrases referred to in Section 3:

H226 Flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H319 Causes serious eye irritation.

H412 Harmful to aquatic life with long lasting effects.

H301 Toxic if swallowed.

H311 Toxic in contact with skin.

H331 Toxic if inhaled.

Hazard class and hazard category	Code	Description
Met. Corr. 1	2.16/1	Substance or mixture corrosive to metals, Category 1
Flam. Liq. 3	2.6/3	Flammable liquid, Category 3
Acute Tox. 3	3.1/3/Dermal	Acute toxicity (dermal), Category 3
Acute Tox. 3	3.1/3/Inhal	Acute toxicity (inhalation), Category 3
Acute Tox. 3	3.1/3/Oral	Acute toxicity (oral), Category 3
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4



Skin Corr. 1B	3.2/1B	Skin corrosion, Category 1B
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
STOT SE 3	3.8/3	Specific target organ toxicity - single exposure, Category 3
Aquatic Chronic 3	4.1/C3	Chronic (long term) aquatic hazard, category 3

This safety data sheet has been completely updated in compliance to Regulation 2020/878. Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Flam. Liq. 3, H226	On basis of test data
Acute Tox. 4, H302	Calculation method
Skin Corr. 1B, H314	On basis of test data (pH)
Eye Dam. 1, H318	On basis of test data (pH)
STOT SE 3, H335	Calculation method

This document was prepared by a competent person who has received appropriate training. Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of

Dangerous Goods by Road.

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

CAS: Chemical Abstracts Service (division of the American Chemical

Society).

CLP: Classification, Labeling, Packaging.

DNEL: Derived No Effect Level.

EINECS: European Inventory of Existing Commercial Chemical Substances.

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of

Chemicals.

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport

Association" (IATA).

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization"

(ICAO).

IMDG: International Maritime Code for Dangerous Goods.INCI: International Nomenclature of Cosmetic Ingredients.

KSt: Explosion coefficient.

LC50: Lethal concentration, for 50 percent of test population.



LD50: Lethal dose, for 50 percent of test population.

PNEC: Predicted No Effect Concentration.

RID: Regulation Concerning the International Transport of Dangerous Goods

by Rail.

STEL: Short Term Exposure limit.
STOT: Specific Target Organ Toxicity.
TLV: Threshold Limiting Value.
TWA: Time-weighted average
WGK: German Water Hazard Class.