

Safety Data Sheet



GF2N - READY TO USE FLASH PLATING BATH 0.8G/L GOLD 2N COLOR

Safety Data Sheet dated 7/24/2024 version 4

Compliant with regulation (CE) n. 1907/2006 REACH, Annex II, and subsequent amendments introduced by Commission Regulation (EU) no. 2020/878

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

1.1. Product identifier

Mixture identification:

Trade name: GF2N - READY TO USE FLASH PLATING BATH 0.8G/L GOLD 2N COLOR

Trade code: GF2N

Product type and use: Ready to use flash plating bath

Registration Number N/A

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

Recommended use: For electroplating industry

Uses advised against: N.A.

1.3. Details of the supplier of the safety data sheet

Company: LEGOR GROUP S.p.A.

Via del Lavoro, 1

36050 Bressanvido (VI)

Italy

Tel.: +39.0444.467911

Fax.: +39.0444. 660677

Competent person responsible for the safety data sheet: info@legor.com

1.4. Emergency telephone number

CENTRO ANTIVELENO: "Ospedale Pediatrico Bambino Gesù" – Roma

Tel. (+39) 06.6859.3726

CENTRO ANTIVELENO: "Azienda Ospedaliera Università di Foggia" – Foggia

Tel. 800.183.459

CENTRO ANTIVELENO: "Azienda Ospedaliera A. Cardarelli" – Napoli

Tel. (+39) 081.545.3333

CENTRO ANTIVELENO: Policlinico "Umberto I" – Roma

Tel. (+39) 06.4997.8000

CENTRO ANTIVELENO: Policlinico "A. Gemelli" – Roma

Tel. (+39) 06.305.4343

CENTRO ANTIVELENO: Azienda Ospedaliera "Careggi" U.O. Tossicologia Medica – Firenze

Tel. (+39) 055.794.7819

CENTRO ANTIVELENO: Centro Nazionale di Informazione Tossicologica – Pavia

Tel. (+39) 0382.24.444

CENTRO ANTIVELENO: Ospedale Niguarda – Milano

Tel. (+39) 02.66.1010.29

CENTRO ANTIVELENO: Azienda Ospedaliera Papa Giovanni XXIII – Bergamo

Tel. 800.88.33.00

CENTRO ANTIVELENO Centro Antiveneni Veneto – Verona

Tel. 800.011.858

SECTION 2: Hazards identification



2.1. Classification of the substance or mixture

Regulation (EC) n. 1272/2008 (CLP)

Acute Tox. 4 Harmful if swallowed.
Aquatic Chronic 3 Harmful to aquatic life with long lasting effects.
Adverse physicochemical, human health and environmental effects:
No other hazards

2.2. Label elements

Regulation (EC) No 1272/2008 (CLP):

Pictograms and Signal Words



Warning

Hazard statements

H302 Harmful if swallowed.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P301+P312 IF SWALLOWED: Call a doctor if you feel unwell.
P330 Rinse mouth.
P501 Dispose of contents and container in accordance with applicable regulations.

Contains

Potassium cyanide
Potassium dicyanoaurate (I)
Potassium dicyanoaurate (I) May produce an allergic reaction.

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 $\geq 0.1\%$
Other Hazards: No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.

3.2. Mixtures

Mixture identification: GF2N - READY TO USE FLASH PLATING BATH 0.8G/L GOLD 2N COLOR

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

Qty	Name	Ident. Numb.	Classification	Registration Number
$\geq 0.1 - < 1\%$	Potassium cyanide	CAS:151-50-8 EC:205-792-3	Met. Corr. 1, H290; Acute Tox. 1, H310; Acute Tox. 1, H330; Acute Tox. 1, H300; STOT RE 1, H372; Aquatic Acute 1, H400; Aquatic Chronic 1, H410, M-Chronic:1, M:10, EUH032	01-2119486407-29-xxxx
$\geq 0.1 - < 1\%$	Potassium dicyanoaurate (I)	CAS:13967-50-5 EC:237-748-4	Met. Corr. 1, H290; Eye Dam. 1, H318; Skin Irrit. 2, H315; Aquatic Chronic 1, H410; Acute Tox. 2, H300; Acute Tox. 2, H330; Skin Sens. 1, H317; Aquatic Acute 1, H400, M-Acute:1, M-Chronic:1,	01-2120130777-52-0005

≥0.1 - <1 %	potassium hydroxide; caustic potash	CAS:1310-58-3 EC:215-181-3 Index:019-002-00-8	Acute Tox. 4, H302 Skin Corr. 1A, 01-2119487136-33 H314 Met. Corr. 1, H290
			Specific Concentration Limits: 0.5% ≤ C < 5%: Eye Irrit. 2 H319 C ≥ 5%: Skin Corr. 1A H314 2% ≤ C < 5%: Skin Corr. 1B H314 0.5% ≤ C < 2%: Skin Irrit. 2 H315

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.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

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

In case of eyes contact:

Wash immediately with water.

In case of Ingestion:

Give nothing to eat or drink.

In case of Inhalation:

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

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

N.A.

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).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water.

Carbon dioxide (CO₂).

Extinguishing media which must not be used for safety reasons:

None in particular.

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

For non emergency personnel:

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

For emergency responders:

Wear personal protection equipment.

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

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

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Adequately ventilated premises.

7.3. Specific end use(s)

Recommendation(s)

None in particular

Industrial sector specific solutions:

None in particular

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Community Occupational Exposure Limits (OEL)

	OEL Type	Country	Occupational Exposure Limit
Potassium cyanide CAS: 151-50-8	EU		Long Term: 1 mg/m ³ ; Short Term: 5 mg/m ³ Skin
	ACGIH		Ceiling - Short Term: 5 mg/m ³ Skin - URT irr, headache, nausea, thyroid eff
	TLV	ITALY	Long Term: 1 mg/m ³ ; Short Term: 5 mg/m ³
Potassium dicyanoaurate (I) CAS: 13967-50-5	EU		Long Term: 1 mg/m ³ - 0.9 ppm; Short Term: 5 mg/m ³ - 4.5 ppm Skin, related to cyanide in HCN - EU (Dir 2017/164)
potassium hydroxide; caustic potash CAS: 1310-58-3	VLA	SPAIN	Long Term: 1 mg/m ³ ; Short Term: 2 mg/m ³ Breath
	NATIONAL	FRANCE	Short Term: 2 mg/m ³
	WEL	UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	Short Term: 2 mg/m ³
	NATIONAL	GREECE	Short Term: 2 mg/m ³
	NATIONAL	POLAND	Long Term: 0.5 mg/m ³ ; Short Term: 1 mg/m ³
	EU		Ceiling - Long Term: 2 mg/m ³

Predicted No Effect Concentration (PNEC) values

Potassium cyanide
CAS: 151-50-8

Exposure Route: Fresh Water; PNEC Limit: 0.001 mg/l

Exposure Route: Marine water; PNEC Limit: 0.001 mg/l

Exposure Route: Intermittent release; PNEC Limit: 0.005 mg/l

Exposure Route: Microorganisms in sewage treatments; PNEC Limit: 0.05 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 0.004 mg/kg

Remark: (dry weight)

Exposure Route: Marine water sediments; PNEC Limit: 0.004 mg/kg
Remark: (dry weight)

Exposure Route: Soil; PNEC Limit: 0.007 mg/kg
Remark: (dry weight)

Potassium dicyanoaurate (I)
CAS: 13967-50-5

Exposure Route: Intermittent releases (fresh water); PNEC Limit: 0.002 mg/l

Exposure Route: Marine water; PNEC Limit: 0.00002 mg/l

Exposure Route: STP; PNEC Limit: 6 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 0.33 mg/kg

Exposure Route: Marine water sediments; PNEC Limit: 0.033 mg/kg

Exposure Route: Terrestrial compartment; PNEC Limit: 0.067 mg/kg

Derived No Effect Level (DNEL) values

Potassium cyanide
CAS: 151-50-8

Exposure Route: Human Dermal; Exposure Frequency: Acute systemic
Worker Industry: 4.03 mg/kg
Remark: Acute toxicity

Exposure Route: Human Inhalation; Exposure Frequency: Acute systemic
Worker Industry: 12.5 mg/m³
Remark: Acute toxicity

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects
Worker Industry: 0.14 mg/kg
Remark: Repeated dose toxicity

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects
Worker Industry: 0.94 mg/m³
Remark: Repeated dose toxicity

Potassium dicyanoaurate (I)
CAS: 13967-50-5

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects
Worker Professional: 0.071 mg/m³

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects
Worker Professional: 100 µg/kg bw/day

potassium hydroxide;
caustic potash
CAS: 1310-58-3

Exposure Route: Human Inhalation; Exposure Frequency: Chronic Systemic
Worker Industry: 1 mg/m³; Consumer: 1 mg/m³

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, local effects
Worker Industry: 1 mg/m³; Consumer: 1 mg/m³

8.2. Exposure controls

Eye protection:

Not needed for normal use. Anyway, operate according good working practices.

Protection for skin:

No special precaution must be adopted for normal use.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

N.A.

Thermal Hazards:

N.A.

Environmental exposure controls:

N.A.

Hygienic and Technical measures

N.A.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid

Color: Colourless

Odour: Typical

Odour threshold: N.A.

pH: 10,50
Kinematic viscosity: N.A.
Melting point / freezing point: N.A.
Initial boiling point and boiling range: N.A.
Flash point: > 93°C
Upper/lower flammability or explosive limits: N.A.
Vapour density: n/a
Vapour pressure: N.A.
Relative density: 1,02 kg/l
Solubility in water: Total
Solubility in oil: N.A.
Partition coefficient (n-octanol/water): N.A.
Nanofoms dispersion stability: N.A.
Auto-ignition temperature: N.A.
Decomposition temperature: N.A.
Flammability: N.A.

Particle characteristics:

Particle size: N.A.

9.2. Other information

VOC: N.A.

Miscibility: N.A.

Conductivity: N.A.

Explosive properties: n/a

Evaporation rate: N.A.

Oxidizing properties: n/a

No other relevant information

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions

10.2. Chemical stability

Data not available.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

Stable under normal conditions.

10.5. Incompatible materials

None in particular.

10.6. Hazardous decomposition products

None.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Toxicological Information of the Preparation

a) acute toxicity	The product is classified: Acute Tox. 4(H302) ATEmix - Oral : 385.743 mg/kg bw
b) skin corrosion/irritation	Not classified Based on available data, the classification criteria are not met
c) serious eye damage/irritation	Not classified Based on available data, the classification criteria are not met
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	Not classified
	Based on available data, the classification criteria are not met
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 on main components of the mixture:

Potassium cyanide	a) acute toxicity	LD50 Oral Rat = 7.49 mg/kg LC50 Inhalation Rat = 63 Ppm 1h LD50 Skin Rabbit = 33 mg/kg LD50 Oral Dog = 1.4 mg/kg LC50 Inhalation = 0.103 mg/l 4h
	i) STOT-repeated exposure	No Observed Adverse Effect Level Oral Rat drinking-water study = 31.28 mg/kg 13 weeks
Potassium dicyanoaurate (I)	a) acute toxicity	LD50 Oral Rat = 29.2 mg/kg bw LD50 Skin Rat > 2000 mg/kg bw
potassium hydroxide; caustic potash	a) acute toxicity	LD50 Oral Rat = 365 mg/kg ATE Oral = 1585.71 mg/kg

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration $\geq 0.1\%$

SECTION 12: Ecological information

12.1. Toxicity

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

Eco-Toxicological Information:

Harmful to aquatic life with long lasting effects.

List of Eco-Toxicological properties of the product

The product is classified: Aquatic Chronic 3(H412)

List of Eco-Toxicological properties of the components

Component	Ident. Numb.	Ecotox Data
Potassium cyanide	CAS: 151-50-8 - EINECS: 205-792-3	a) Aquatic acute toxicity : LC50 Fish = 0.045 mg/l 96h a) Aquatic acute toxicity : EC50 Daphnia = 0.083 mg/l 48h a) Aquatic acute toxicity : EC10 Algae = 0.158 mg/l 72h a) Aquatic acute toxicity : EC50 Algae = 0.331 mg/l 72h a) Aquatic acute toxicity : LC0 Fish Oncorhynchus mykiss = 0.042 mg/l 96h a) Aquatic acute toxicity : EC50 Daphnia magna = 0.041 mg/l 48h a) Aquatic acute toxicity : EC10 Shellfish Moinodaphnia = 0.022 mg/l a) Aquatic acute toxicity : NOEC Fish = 0.006 mg/l
Potassium dicyanoaurate (I)	CAS: 13967-50-5 - EINECS: 237-748-4	a) Aquatic acute toxicity : LC50 Fish = 5.7 mg/l 96h a) Aquatic acute toxicity : EC50 Shellfish Daphnia Magna > 0.2 mg/l 48h a) Aquatic acute toxicity : EC50 Algae = 30 mg/l 72h a) Aquatic acute toxicity : EC10 Algae = 6.4 mg/l 72h
potassium hydroxide; caustic potash	CAS: 1310-58-3 - EINECS: 215-181-3 - INDEX:	a) Aquatic acute toxicity : LC50 Fish Gambusia affinis = 80 mg/l 96h

a) Aquatic acute toxicity : EC50 Daphnia mosquito = 80 mg/l 24h

12.2. Persistence and degradability

Component	Persitence/Degradability Test:	Value	Notes:
Potassium dicyanoaurate (I)	Solubility in water	143000. mg/l 000	
potassium hydroxide; caustic potash	Solubility in water		> 10000 mg/l

12.3. Bioaccumulative potential

Component	Bioaccumulation	Test	Value
Potassium cyanide	BCF	BCF - Bioconcentration factor	0.300

12.4. Mobility in soil

Component	Mobility in soil
Potassium cyanide	Mobile

12.5. Results of PBT and vPvB assessment

No PBT Ingredients are present

12.6. Endocrine disrupting propertiesNo endocrine disruptor substances present in concentration $\geq 0.1\%$ **12.7. Other adverse effects**

N.A.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Recover if possible. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information**14.1. UN number or ID number**

N/A

14.2. UN proper shipping name

ADR-Shipping Name: N/A

IATA-Technical name: N/A

IMDG-Technical name: N/A

14.3. Transport hazard class(es)

ADR-Class: N/A

IATA-Class: N/A

IMDG-Class: N/A

14.4. Packing group

ADR-Packing Group: N/A

IATA-Packing group: N/A

IMDG-Packing group: N/A

14.5. Environmental hazards

Toxic ingredients quantity: 0,00

Very toxic ingredients quantity: 0,00

No

Environmental Pollutant: No

14.6. Special precautions for user

Road and Rail (ADR-RID):

ADR-Label: N/A

ADR - Hazard identification number: N/A

ADR-Special Provisions: N/A

ADR-Transport category (Tunnel restriction code): N/A

Air (IATA):

IATA-Passenger Aircraft: N/A

IATA-Cargo Aircraft: N/A

IATA-Label: N/A
IATA-Subsidiary hazards: N/A
IATA-Erg: N/A
IATA-Special Provisions: N/A

Sea (IMDG):

IMDG-Stowage Code: N/A
IMDG-Stowage Note: N/A
IMDG-Subsidiary hazards: N/A
IMDG-Special Provisions: N/A
IMDG-EMS: N/A
IMDG-MFAG: N/A

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)

Regulation (EU) n. 2020/217 (ATP 14 CLP)

Regulation (EU) n. 2020/1182 (ATP 15 CLP)

Regulation (EU) n. 2021/643 (ATP 16 CLP)

Regulation (EU) n. 2021/849 (ATP 17 CLP)

Regulation (EU) n. 2022/692 (ATP 18 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: 3

Restrictions related to the substances contained: 75

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

N.A.

Regulation (EU) No 649/2012 (PIC regulation)

No substances listed

German Water Hazard Class.

Class 3: extremely hazardous.

SVHC Substances:

No SVHC substances present in concentration $\geq 0.1\%$

15.2. Chemical safety assessment

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

SECTION 16: Other information

Code	Description
EUH032	Contact with acids liberates very toxic gas.
H290	May be corrosive to metals.

H300	Fatal if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H372	Causes damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Code	Hazard class and hazard category	Description
2.16/1	Met. Corr. 1	Substance or mixture corrosive to metals, Category 1
3.1/1/Dermal	Acute Tox. 1	Acute toxicity (dermal), Category 1
3.1/1/Inhal	Acute Tox. 1	Acute toxicity (inhalation), Category 1
3.1/1/Oral	Acute Tox. 1	Acute toxicity (oral), Category 1
3.1/2/Inhal	Acute Tox. 2	Acute toxicity (inhalation), Category 2
3.1/2/Oral	Acute Tox. 2	Acute toxicity (oral), Category 2
3.1/4/Oral	Acute Tox. 4	Acute toxicity (oral), Category 4
3.2/1A	Skin Corr. 1A	Skin corrosion, Category 1A
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/1	Eye Dam. 1	Serious eye damage, Category 1
3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.9/1	STOT RE 1	Specific target organ toxicity — repeated exposure, Category 1
4.1/A1	Aquatic Acute 1	Acute aquatic hazard, category 1
4.1/C1	Aquatic Chronic 1	Chronic (long term) aquatic hazard, category 1
4.1/C3	Aquatic Chronic 3	Chronic (long term) aquatic hazard, category 3

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

3.1/4/Oral	Calculation method
4.1/C3	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.

Legend to abbreviations and acronyms used in the safety data sheet:

- ACGIH: American Conference of Governmental Industrial Hygienists
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
- AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
- ATE: Acute Toxicity Estimate
- ATEmix: Acute toxicity Estimate (Mixtures)
- BCF: Biological Concentration Factor
- BEI: Biological Exposure Index
- BOD: Biochemical Oxygen Demand
- CAS: Chemical Abstracts Service (division of the American Chemical Society).
- CAV: Poison Center
- CE: European Community
- CLP: Classification, Labeling, Packaging.
- CMR: Carcinogenic, Mutagenic and Reprotoxic
- COD: Chemical Oxygen Demand

COV: Volatile Organic Compound
CSA: Chemical Safety Assessment
CSR: Chemical Safety Report
DMEL: Derived Minimal Effect Level
DNEL: Derived No Effect Level.
DPD: Dangerous Preparations Directive
DSD: Dangerous Substances Directive
EC50: Half Maximal Effective Concentration
ECHA: European Chemicals Agency
EINECS: European Inventory of Existing Commercial Chemical Substances.
ES: Exposure Scenario
GefStoffVO: Ordinance on Hazardous Substances, Germany.
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
IC50: half maximal inhibitory concentration
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.
IRCCS: Scientific Institute for Research, Hospitalization and Health Care
KAFH: KAFH
KSt: Explosion coefficient.
LC50: Lethal concentration, for 50 percent of test population.
LD50: Lethal dose, for 50 percent of test population.
LDLo: Leathal Dose Low
N.A.: Not Applicable
N/A: Not Applicable
N/D: Not defined/ Not available
NA: Not available
NIOSH: National Institute for Occupational Safety and Health
NOAEL: No Observed Adverse Effect Level
OSHA: Occupational Safety and Health Administration.
PBT: Persistent, Bioaccumulative and Toxic
PGK: Packaging Instruction
PNEC: Predicted No Effect Concentration.
PSG: Passengers
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.
TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).
vPvB: Very Persistent, Very Bioaccumulative.
WGK: German Water Hazard Class.

Paragraphs modified from the previous revision:

- 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING
- 3. COMPOSITION/INFORMATION ON INGREDIENTS
- 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
- 9. PHYSICAL AND CHEMICAL PROPERTIES
- 11. TOXICOLOGICAL INFORMATION
- 12. ECOLOGICAL INFORMATION
- 15. REGULATORY INFORMATION
- 16. OTHER INFORMATION