

Safety Data Sheet

According to Annex II to REACH - Regulation 2020/878 and to Annex II to UK REACH

Section 1 Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name Flexistar

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

Intended use

Rewarded cement. Single-component polymer-cement sheath for the protection of concrete

1.3 Details of the supplier of the safety data sheet

Company name	TORGGLER S.R.L.
Full address	Via Prati Nuovi 9
Town	Marlengo
Postal code	39020
Province	BZ
Country	Italy
Phone number	+39 0473 282400
Fax	+39 0473 282501
e-mail address of the competent person responsible for the Safety Data Sheet	reach@torggler.com

1.4 Emergency telephone number

For urgent inquiries refer to +39 348 662 70 93 (08.00 - 17.30)

Section 2 Hazards identification

2.1 Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification

Skin sensitization, category 1	H317	May cause an allergic skin reaction.
Serious eye damage, category 1	H318	Causes serious eye damage.

2.2 Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms



Signal word

Danger

Hazard statements

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.

Section 2

Precautionary statements

P501	Dispose of contents and container in accordance with local and national regulations.
P102	Keep out of reach of children.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P280	Wear protective gloves / eye protection / face protection.
P101	If medical advice is needed, have product container or label at hand.
P310	Immediately call a poison center/doctor.

Contains

Portland cement clinker, Cr(VI) < 2 ppm
Flue dust

2.3 Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage $\geq$ than 0,1%.
The product does not contain substances with endocrine disrupting properties in concentration $\geq$ 0.1%.

As soon as the dry mixture comes into contact with water or becomes moistened, a strongly alkaline solution is formed. Due to the high alkalinity, wet mortar can cause irritation to the skin and eyes. Especially in case of prolonged contact (e.g. if you remain kneeling in damp mortar for a long time) there is the risk that the alkalinity causes serious skin damage.

The percentage of respirable crystalline silicon oxide is less than 1%. Therefore the product is not subject to identification requirements. However, the use of respiratory protection is advisable.

The dust produced by the dry mixture can irritate the respiratory tract. Repeated inhalation of large quantities of dust increases the risk of lung disease.

The product has been added with a particular reducing agent to ensure compliance with the limit concentration of 0.0002% (2 ppm) of water-soluble hexavalent chromium (relative to the weight of the Portland cement contained). See the information on the packaging.

Section 3 Composition/information on ingredients

Pre-mixed cement based on cement, siliceous and calcareous aggregates and organic and inorganic additives (production site 0102).

3.2 Mixtures
Vinyl acetate-ethylene copolymer, with additives

Concentration	$9 \leq x < 14 \%$
CAS number	24937-78-8
EC number	607-457-0
Substance with a community workplace exposure limit.	

Portland cement clinker, Cr(VI) < 2 ppm

Concentration	$6.2 \leq x < 10 \%$
CAS number	65997-15-1
EC number	266-043-4
Hazard classification	- Skin Irrit. 2; H315 - Skin Sens. 1; H317 - Eye Dam. 1; H318 - STOT SE 3; H335

KAOLIN

Concentration	$0.81 \leq x < 1.26 \%$
CAS number	1332-58-7
EC number	310-194-1
Hazard classification	STOT RE 2; H373

Section 3

Flue dust

Concentration	$0.2 \leq x < 1 \%$
CAS number	68475-76-3
EC number	270-659-9
Registration Number	01-2119486767-17-xxxx
Hazard classification	▪ Skin Irrit. 2; H315 ▪ Skin Sens. 1; H317 ▪ Eye Dam. 1; H318 ▪ STOT SE 3; H335

QUARTZ

Concentration	$0.091 \leq x < 0.39 \%$
CAS number	14808-60-7
EC number	238-878-4
Hazard classification	▪ STOT RE 1; H372
Substance with a community workplace exposure limit.	

The full wording of hazard (H) phrases is given in section 16 of the sheet.

Section 4 First aid measures

4.1 Description of first aid measures

In case of doubt or in the presence of symptoms contact a doctor and show him this document.

In case of more severe symptoms, ask for immediate medical aid.

EYES: Remove, if present, contact lenses if the situation allows you to do so easily. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. Get medical advice/attention.

SKIN: Take off immediately all contaminated clothing. Wash immediately and thoroughly with running water (and soap if possible). Get medical advice/attention. Avoid further contact with contaminated clothing.

INGESTION: Do not induce vomiting unless explicitly authorised by a doctor. Do not give anything by mouth to an unconscious person. Get medical advice/attention.

INHALATION: Remove victim to fresh air, away from the accident scene. Get medical advice/attention.

Rescuers protection

It is good practice for rescuers lending support to a person who has been exposed to a chemical substance or to a mixture to wear personal protective equipment. The nature of such protection depends on the hazard level of the substance or mixture, on the type of exposure and on the extent of the contamination. In the absence of other more specific indications, use of disposable gloves in the event of possible contact with body fluids is recommended. For the type of PPE suitable for the characteristics of the substance or mixture, see section 8.

4.2 Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

DELAYED EFFECTS: Based on the information currently available, there are no known cases of delayed effects following exposure to this product.

4.3 Indication of any immediate medical attention and special treatment needed

Immediately call a poison center/doctor.

Means to have available in the workplace for specific and immediate treatment

Running water for skin and eye wash.

Section 5 Firefighting measures

5.1 Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

Section 5

UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

5.2 Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products.

5.3 Advice for firefighters

GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

Section 6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

If there are no contraindications, spray powder with water to prevent the formation of dust.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2 Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3 Methods and material for containment and cleaning up

Collect the leaked product and place it in containers for recovery or disposal. If there are no contraindications, use jets of water to eliminate product residues.

Make sure the leakage site is well aired. Evaluate the compatibility of the container to be used, by checking section 10. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4 Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

Section 7 Handling and storage

7.1 Precautions for safe handling

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

After expiry of the shelf life, the product is no longer usable, as the effect of the contained reducing substance ceases and the concentration of soluble chromium(VI) may exceed the maximum limit mentioned in section 2.3. In these circumstances, due to the water-soluble chromate contained in the product, an allergic chromium dermatitis may be caused in a prolonged case.

7.2 Conditions for safe storage, including any incompatibilities

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

Storage class TRGS 510 (Germany)

None

Section 7

Applicable technical instruction according to Royal Decree 656/2017:

Classification	Storage in fixed containers	Storage in mobile containers
- H317 – Skin Sens. 1 - H318 – Eye Dam. 1	Not applicable	MIE APQ-10 – Storage in mobile containers

Respect the joint storage conditions established in Royal Decree 656/2017.

Efficacy of Chromium (VI) Reducing Agent:

The integrity of the package and compliance with the above-mentioned storage methods are essential conditions to guarantee the maintenance of the effectiveness of the reducing agent for the period of time indicated on the package.

This time limit exclusively concerns the effectiveness of the reducing agent in maintaining the level of water-soluble chromium (VI), determined according to EN 196-10, below the limit of 2 ppm, imposed by current legislation (see p. 15), without prejudice to the limits of use of the mixture dictated by the general rules of conservation and use of the product itself.

7.3 Specific end use(s)

Special uses:
Building and construction.

Section 8 Exposure controls/personal protection
8.1 Control parameters

During the risk assessment process, it is essential to take into consideration the ACGIH occupational exposure levels for particulate not otherwise classified (PNOC respirable fraction: 3 mg/m³; PNOC inhalable fraction: 10 mg/m³). For values above these limits, use a P type filter, whose class (1, 2 or 3) must be chosen according to the outcome of risk assessment. The above values are not TLVs, but guide values, to be used for particles that do not have their own TLV and that are insoluble or poorly soluble in water and have low toxicity.

Regulatory references

ACGIH	ACGIH 2026
European Union-OEL	Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
Ireland-OELV	2020 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations (2001-2015) and the Safety, Health and Welfare at Work (Carcinogens) Regulations (2001-2019)
Malta-TLV	PROTECTION OF THE HEALTH AND SAFETY OF WORKERS FROM THE RISKS RELATED TO CHEMICAL AGENTS AT WORK REGULATIONS (S.L.424.24). PROTECTION OF WORKERS FROM THE RISKS RELATED TO EXPOSURE TO CARCINOGENS OR MUTAGENS AT WORK REGULATIONS (S.L.424.22)

KAOLIN

	TWA		STEL		CEILING		Remarks
	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	
ACGIH	2						Respiratory
Ireland-OELV	2						Respiratory
Ireland-OELV	2						--

QUARTZ

	TWA		STEL		CEILING		Remarks
	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	
ACGIH	0.025						Respiratory
European Union-OEL	0.1						Respiratory
Ireland-OELV	0.1						Respiratory
Ireland-OELV	0.1						--
Malta-TLV	0.1						Respiratory As Silica

Portland cement clinker, Cr(VI) < 2 ppm

Health - Derived no-effect level - DNEL / DMEL	Local effect	Systemic effect
Consumers, long-term, inhalation	Not available	1 mg/m ³

Section 8

Flue dust
Predicted no-effect concentration - PNEC

Normal value of STP microorganisms	6 mg/l
Normal value in fresh water	0.028 mg/l
Normal value for fresh water sediment	0.875 mg/kg/d
Normal value in marine water	0.003 mg/l
Normal value for marine water sediment	0.088 mg/kg/d
Normal value for the terrestrial compartment	5 mg/kg/d
Normal value for water, intermittent release	0.282 mg/l

Health - Derived no-effect level - DNEL / DMEL	Local effect	Systemic effect
Consumers, short-term, inhalation	Not available	4 mg/m ³
Consumers, long-term, inhalation	Not available	1 mg/m ³
Workers, short-term, inhalation	Not available	4 mg/m ³
Workers, long-term, inhalation	Not available	1 mg/m ³

Vinyl acetate-ethylene copolymer, with additives

	TWA		STEL		CEILING		Remarks
	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	
European Union-OEL	5						--

8.2 Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

When choosing risk management measures and operating conditions, consult the exposure scenarios attached.

Provide an emergency shower with face and eye wash station.

HAND PROTECTION

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (see standard EN 374).

Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.

Protect your hands with gloves of the following type:

Protect your hands with gloves of the following type

Material	Thickness	Breakthrough time
Nitrile rubber (NBR)	0.4 ≤ x ≤ 0.6 mm	480 min
–	–	–

SKIN PROTECTION

Wear category II professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344/EN ISO 13034).

Wash body with soap and water after removing protective clothing.

EYE PROTECTION

Wear airtight protective goggles (see standard EN 166).

RESPIRATORY PROTECTION

Use a type P filtering facemask, whose class (1, 2 or 3) and effective need, must be defined according to the outcome of risk assessment (see standard EN 149).

ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

Section 9

Section 9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	powder	
Colour	grey	
Odour	odourless	
Odour threshold	Not applicable	
Melting point / freezing point	Not available	
Initial boiling point	Not applicable	
Flammability	not flammable	
Lower explosive limit	Not available	
Upper explosive limit	Not available	
Flash point	Not applicable	
Auto-ignition temperature	Not available	
Decomposition temperature	Not available	
pH	The mixture reacts with water	
Kinematic viscosity	Not available	
Solubility	slightly watersoluble	
Partition coefficient: n-octanol/water	Not available	
Vapour pressure	Not applicable	
Density and/or relative density	$1 \leq x \leq 1.5$ g/ml	
Relative vapour density	Not available	

Particle characteristics

Information not available.

9.2 Other information

9.2.1 Information with regard to physical hazards

Information not available.

9.2.2 Other safety characteristics

Total solids	90.00 %	Temperature: 250 °C (482 °F)
pH (aqueous dispersion)	(10%) 12	

Section 10 Stability and reactivity

10.1 Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

Portland cement clinker, Cr(VI) < 2 ppm

Reacts with: water

It reacts alkalinely with water. On contact with water, a calculated reaction takes place, in which the product hardens to form a solid mass, which does not react with its surroundings.

10.2 Chemical stability

The product is stable in normal conditions of use and storage.

10.3 Possibility of hazardous reactions

The powders are potentially explosive when mixed with air.

Section 10

10.4 Conditions to avoid

Avoid environmental dust build-up.

Portland cement clinker, Cr(VI) < 2 ppm

Avoid exposure to: moisture

10.5 Incompatible materials

Portland cement clinker, Cr(VI) < 2 ppm

Incompatible with: acids, ammonium salts

Avoid contact with: aluminium powder

10.6 Hazardous decomposition products

Additional data:

The mixture has a low chromate content. In the ready-to-use form after addition of water, the soluble chromium(VI) content is a maximum of 2 mg/kg on a dry basis. A prerequisite for a low chromate content is in any case proper storage, in dry conditions and observing the maximum storage periods indicated.

Section 11 Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.

It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

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

11.1.1 Metabolism, toxicokinetics, mechanism of action and other information

Information not available.

11.1.2 Information on likely routes of exposure

Information not available.

11.1.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available.

11.1.4 Interactive effects

Information not available.

11.1.5 ACUTE TOXICITY

Flue dust

LD50 (Oral):	> 1,848 mg/kg	Species/guidelines: Rat
LD50 (Dermal):	> 2,000 mg/kg	Species/guidelines: Rat
LC50 (Inhalation mists/powders):	> 6.04 mg/l	Exposure duration: 4 hours Species/guidelines: Rat (air)

11.1.6 SKIN CORROSION/IRRITATION

Does not meet the classification criteria for this hazard class

Cement has an irritating effect on the skin and mucous membranes. Contact of dry cement with wet skin, or of the skin with wet or damp cement can cause various irritative or inflammatory skin reactions, such as reddening or cracking. Prolonged contact, in combination with mechanical rubbing, can cause serious damage to the skin.

Section 11

11.1.7 SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage.

In the in vitro test, cement clinker showed varying effects on the cornea. The calculated "irritation index" is 128. Direct contact with cement can, through mechanical, irritative and inflammatory effects, cause damage to the cornea. Direct contact with large amounts of dry or wet cement can have effects ranging from moderate eye irritation to serious eye damage and even blindness (TNO report V8815/09; TNO report V8815/10).

11.1.8 RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin

11.1.9 GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

11.1.10 CARCINOGENICITY

Does not meet the classification criteria for this hazard class

11.1.11 REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

11.1.12 STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

Exposure to cement dust can cause irritation of the respiratory organs. If exposure exceeds the occupational limit value, coughing, sneezing and wheezing may result.

11.1.13 STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

Long-term exposure to inhalable cement dusts at levels above the current limits for working environments can cause coughing, wheezing and chronic obstructive respiratory changes. No chronic effect was observed at low concentrations (Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010, H. Notø, H. Kjuus, M. Skogstad and K.- C. Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.)

Cement can worsen existing skin diseases of the eyes or the respiratory tract, such as emphysema or asthma. Repeated inhalation of high amounts of dust increases the risk of lung disease.

11.1.14 ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

11.2 Information on other hazards

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

Section 12 Ecological information

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

12.1 Toxicity
Flue dust

Chronic NOEC for Fish	11.1 mg/l	Species/guidelines: Zebrafish (0-96h)
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Section 12

12.2 Persistence and degradability

Information not available.

12.3 Bioaccumulative potential

Information not available.

12.4 Mobility in soil

Information not available.

12.5 Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage $\geq$ than 0,1%.

12.6 Endocrine disrupting properties

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

12.7 Other adverse effects

Information not available.

Section 13 Disposal considerations

EWC: 170101.

13.1 Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

The management of waste arising from the use or dispersal of this product must be organised in accordance with occupational safety regulations. See section 8 for possible need for PPE.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

Hazardous waste classification - Reg. (UE) 1357/2014

None

Section 14 Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

14.1 UN number or ID number

Not applicable

14.2 UN proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

Section 14

14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

Not applicable

Section 15 Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****Seveso Category - Directive 2012/18/EU:**

None

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

	Restrictions	Registration Number EU
Product restrictions	--	
Contained substance		
	75	

Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors

Not applicable

Substances in Candidate List (Art. 59 REACH)On the basis of available data, the product does not contain any SVHC in percentage $\geq$ than 0,1%.**Substances subject to authorisation (Annex XIV REACH)**Authorisation
Number

Sunset date

Registration Number EU

None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Regulation (EU) 2019/1021 - on persistent organic pollutants

None

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

Section 15

German regulation on the classification of substances hazardous to water (AwSV, vom 18. April 2017)

WGK3 – Severe hazard to waters

Information pursuant to Directive 2003/53/EC: The product has been added with a particular reducing agent to guarantee compliance with the limit concentration of 0.0002% (2 ppm) of water-soluble hexavalent chromium (relative to the weight of the Portland cement contained). See the information on the packaging.

15.2 Chemical safety assessment

A chemical safety assessment has not been performed for the preparation/for the substances indicated in section 3.

Section 16 Other information
Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Eye Dam. 1	Serious eye damage, category 1
Skin Irrit. 2	Skin irritation, category 2
Skin Sens. 1	Skin sensitization, category 1
STOT RE 1	Specific target organ toxicity - repeated exposure, category 1
STOT RE 2	Specific target organ toxicity - repeated exposure, category 2
STOT SE 3	Specific target organ toxicity - single exposure, category 3
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.

Legend

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EC50: Effective concentration (required to induce a 50% effect)
- EC: Identifier in ESIS (European archive of existing substances)
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent, bioaccumulative and toxic
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PMT: Persistent, mobile and toxic
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very persistent and very bioaccumulative
- vPvM: Very persistent and very mobile

Section 16

Legend

- WGK: Water hazard classes (German).

General Bibliography

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I ATP CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II ATP CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III ATP CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV ATP CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V ATP CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI ATP CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII ATP CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII ATP CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX ATP CLP)
13. Regulation (EU) 2017/776 (X ATP CLP)
14. Regulation (EU) 2018/669 (XI ATP CLP)
15. Regulation (EU) 2019/521 (XII ATP CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII ATP CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (EU) 2020/217 (XIV ATP CLP)
19. Delegated Regulation (EU) 2020/1182 (XV ATP CLP)
20. Delegated Regulation (EU) 2021/643 (XVI ATP CLP)
21. Delegated Regulation (EU) 2021/849 (XVII ATP CLP)
22. Delegated Regulation (EU) 2022/692 (XVIII ATP CLP)
23. Delegated Regulation (EU) 2023/707
24. Delegated Regulation (EU) 2023/1434 (XIX ATP CLP)
25. Delegated Regulation (EU) 2023/1435 (XX ATP CLP)
26. Delegated Regulation (EU) 2024/197 (XXI ATP CLP)
27. Delegated Regulation (EU) 2024/2564 (XXII ATP CLP)
28. Regulation (EU) 2024/2865
29. Delegated Regulation (EU) 2025/1222 (XXIII ATP CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

Note for users

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

Calculation methods for classification

Chemical and physical hazards:
Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards:
Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards:
Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.

Section 16

Changes from the previous revision

This SDS has been prepared with a different software from the one previous revision. The new calculation does not allow us to identify all the differences compared to the previous version. We therefore recommend carefully reviewing all 16 sections of the SDS. We remain available to provide any clarification regarding the content or the changes made compared to the previous version, which is available to professional or industrial users.