SAFETY DATA SHEET

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. **Product identifier:**
DIETHYL CARBONATE

IUPAC name: Diethyl carbonate
CAS number: 105-58-8
EC number: 203-311-1
Registration number: 01-2119943044-45-0001; complete registration.

1.2. **Relevant identified uses of the substance or mixture and uses advised against:**
Organic synthesis intermediate for industrial use.

1.3. **Details of the supplier of the safety data sheet:**
Framochem French-Hungarian Fine Chemicals Ltd.
3700 Kazincbarcika, Szerviz út 5, Pf. 504
Tel: +36 (48) 311-991
Fax: +36 (48) 512-162

1.3.1. Responsible person: -
E-mail: info@framochem.hu

1.4. **Emergency telephone number:** **Public Toxicological Health Service (ETTSZ)**
1097 Budapest, Albert Flórián út 2-6.
Tel.: +36 80 201 199 (0-24, free of charge – only from Hungary)
Tel.: +36 1 476 6464 (0-24, normal charge – also from foreign countries)

SECTION 2: HAZARDS IDENTIFICATION

2.1. **Classification of the substance or mixture:**

Classification according to Regulation (EC) No 1272/2008 (CLP):
Flammable liquids, Hazard Category 3 – H226

Hazard statements:
H226 – Flammable liquid and vapour.

2.2. **Label elements:**

IUPAC name: Diethyl carbonate
CAS number: 105-58-8
EC number: 203-311-1

WARNING

Hazard statements:
H226 – Flammable liquid and vapour.

Precautionary statements:

P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 – Ground and bond container and receiving equipment.
P243 – Take action to prevent static discharges.
P303 + **P361** + **P353** – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P403 + **P235** – Store in a well-ventilated place. Keep cool.
P501 – Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3. **Other hazards:**
No other known specific hazards for human or environment.
Information concerning specific hazards for human and environment: See Section 11.
The substance does not meet the criteria for PBT or vPvB substances.
Endocrine disrupting property: Not an endocrine disruptor.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. **Substance:**

IUPAC name: Diethyl carbonate
Synonym: Carbonic acid, diethyl ester
CAS number: 105-58-8
EC number: 203-311-1
Formula: $C_5H_{10}O_3$
Molar mass: 118.13 g/mol
Purity: >99.9%

SECTION 4: FIRST AID MEASURES

4.1. **Description of first aid measures:**
General information: In case of doubt or persistent symptoms, seek medical advice.
INGESTION:
Measures:
- Rinse out mouth and then drink plenty of water.
- Whether vomiting should be induced or not has to be decided by a doctor.
- Seek medical treatment.

INHALATION:
Measures:
- Supply fresh air; consult doctor in case of pain.

SKIN CONTACT:
Measures:
- Remove soiled clothes and shoes.
- Clean effected skin thoroughly with water and a mild cleansing agent.
- No residues shall remain on the skin.

EYE CONTACT:
Measures:
- Rinse opened eye for several minutes under running water.
- If symptoms persist, consult a doctor.

4.2. **Most important symptoms and effects, both acute and delayed:**
After resorption of larger quantities, the following symptoms may occur:
Drowsiness, dizziness, spasms, euphoria, narcotic effect.

4.3. **Indication of any immediate medical attention and special treatment needed:**
No special treatment needed; treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. **Extinguishing media:**
5.1.1. **Suitable extinguishing media:**
Foam, fire-extinguishing powder, carbon dioxide.
Use firefighting measures that suit the environment.
5.1.2. **Unsuitable extinguishing media:**
Direct jet water.

5.2. **Special hazards arising from the substance or mixture:**
Flammable liquid and vapour.
In case of fire, smoke and other combustion products may be formed, the inhalation of such combustion products can have serious adverse effects on health.
Heating leads to pressure increase entailing danger of bursting and explosion.

5.3. **Advice for firefighters:**
Wear full protective clothing and self-contained breathing apparatus.
Immediately cool neighbouring packages and containers with sprayed water and, if possible, remove them out of the danger zone.
Dispose of fire debris and contaminated fire-fighting water in accordance with official regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. **Personal precautions, protective equipment and emergency procedures:**

6.1.1. **For non-emergency personnel:**
Allow only well-trained experts wearing suitable protective clothing to abide in the field of the accident.

6.1.2. **For emergency responders:**
Wear protective equipment.
Keep unprotected persons away.
Ensure adequate ventilation.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Keep away from sources of ignition - No smoking.

6.2. **Environmental precautions:**
Dispose of the spillage and the resulting waste according to the applicable environmental regulations. Do not allow the product and the resulting waste to enter sewers/soil/surface or ground water. Notify the respective authorities in accordance with local law in the case of environmental pollution immediately.

6.3. **Methods and material for containment and cleaning up:**
Prevent seepage into sewage system, workpits and cellars.
Absorb with non-combustible material such as sand, soil or diatomite.
Ensure adequate ventilation.
Make sure to recycle or dispose of in suitable receptacles.
Dispose contaminated materials as waste according to Section 13.

6.4. **Reference to other sections:**
For further and detailed information see Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. **Precautions for safe handling:**
Observe conventional hygiene precautions.
Avoid contact with eyes and skin.
Avoid inhalation of vapours.
Technical measures:
Ensure good ventilation/exhaustion at the workplace.
Ensure good interior ventilation, especially at floor level (fumes are heavier than air).
Precautions against fire and explosion:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Ground/bond container and receiving equipment.
Take precautionary measures against static discharge.
Fumes can combine with air to form an explosive mixture.
No welding.
Work on containers and pipelines is permitted only after thorough purging and inerting.

7.2. **Conditions for safe storage, including any incompatibilities:**
Technical measures and storage condition:
Keep in original, closed and labelled container.
The place of storage has to be properly ventilated and cleanable.
Store in cool and dry place.
Keep away the unauthorized persons.
Avoid spillage of the product.
Keep away from incompatible materials (e.g.: strong oxidants).
Keep away from heat and ignition sources.
Keep away from humidity, water and the moisture of the air.

Do not smoke in the place and the vicinity of the storage.
Follow all instructions on the label.
Incompatible materials: strong oxidizing agents.
Packaging material: Metal container lined with polyethylene or with inert material, polyethylene container, stainless steel container. It is forbidden to use other packaging material or packaging material made of other material.

7.3. Specific end use(s):
No specific instructions available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Occupational exposure limit values (Commission Directive (EC) No 2000/39 of 8 June 2000):
The substance is not regulated with exposure limit value.

DNEL values:
Workers:
Long-term exposure, systemic effects (inhalation): 17.6 mg/m³
Long-term exposure, systemic effects (dermal): 2 mg/kg bw/day
Consumers:
Long-term exposure, systemic effects (inhalation): 4.4 mg/m³
Long-term exposure, systemic effects (dermal): 1 mg/kg bw/day
Long-term exposure, systemic effects (oral): 2 mg/kg bw/day

PNEC values:
Freshwater: 0.1 mg/l
Intermittent release: 1 mg/l
Marine water: 0.01 mg/l
STP: 10-100 mg/l
Freshwater sediment: no exposure of sediment expected
Marine water sediment: no exposure of sediment expected
Air: No hazard identified.
Soil: No exposure of soil expected.
Secondary poisoning: No potential for bioaccumulation.

8.2. Exposure controls:
In case of a hazardous material with no controlled concentration limit it is the employer's duty to keep concentration levels down to a minimum achievable by existing scientific and technological means, where the hazardous substance poses no harm to workers.

8.2.1. **Appropriate engineering controls:**
In pursuance of work is proper foresight needed to avoid spilling onto clothes and floors and to avoid contact with eyes and skin.

8.2.2. **Individual protection measures, such as personal protective equipment:**
The usual precautionary measures should be adhered to when handling chemicals.
Remove all soiled and contaminated clothing immediately.
Do not eat, drink, smoke or sniff while working.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
Wash hands before breaks and at the end of work.
After skin contact cleanse skin thoroughly.
After contact with eyes rinse immediately.

1. **Eye/face protection:** Appropriate goggles are recommended during refilling (EN ISO 16321-1:2022; EN 166).
2. **Skin protection:**
    a. **Hand protection:** Use appropriate chemically resistant protective gloves (EN 374).
    The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
    Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
    To avoid skin problems, reduce the wearing of gloves to the required minimum.
    After use of gloves apply skin-cleaning agents and skin cosmetics.
    Material of gloves: butyl rubber (BR).
    The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
    Penetration time of glove material:
    Butyl 0.5 mm ≥ 240 minutes (in case of permanent contact do not use gloves more than 4 hours).

The exact penetration time has to be found out by the manufacturer of the protective gloves and has to be observed.
Not suitable glove materials: natural rubber (NR), polychloropren rubber (CR), nitrile rubber (NBR), fluorocarbon rubber (FKM), polyvinylchloride (PVC).

b. **Other:** Use flame retardant, antistatic protective clothing.

3. **Respiratory protection:** Not necessary if room is well-ventilated. Use suitable respiratory protective device in case of insufficient ventilation.
In case of unintended release:
In case of brief exposure or low pollution use a respiratory filter device. In case of intensive or longer exposure use a respiratory protective device that is independent of circulating air.
Short term filter device: filter A.

4. **Thermal hazards:** No thermal hazards known.

8.2.3. **Environmental exposure controls:**
No specific prescription.
The requirements detailed in Section 8 assume skilled work under normal conditions and usage of the product for appropriate aims. If conditions differ from normal or work is carried out under extreme conditions, an expert's advice is necessary before deciding upon further protective measures.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. **Information on basic physical and chemical properties:**

	Parameter	Value / Test method / Remarks
1.	Physical state	liquid (20 °C, 1013 hPa)
2.	Colour	colourless
3.	Odour, odour threshold	mild odour
4.	Melting point/freezing point	- 43 °C (101 325 Pa)
5.	Boiling point or initial boiling point and boiling range	126 °C (101 325 Pa)
6.	Flammability	flammable liquid and vapour
7.	Lower and upper explosion limit	10.8 Hgmm (=14.4 hPa) (25 °C)
8.	Flash point	25 °C (101 325 Pa, closed cup)
9.	Auto-ignition temperature	445 °C (101 325 Pa)
10.	Decomposition temperature	no data*
11.	pH	no data*
12.	Kinematic viscosity	no data*
13.	Solubility in water in other solvents	soluble in water up to 18.8 g/l (20 °C) no data*
14.	Partition coefficient n-octanol/water (log value)	1.21 (log Pow) (QSAR, 25 °C)
15.	Vapour pressure	14.4 hPa (25 °C)
16.	Density and/or relative density	0.963 g/cm³ (20 °C), 0.975 g/cm³ (30 °C)
17.	Relative vapour density	no data*
18.	Particle characteristics	no data*

9.2. **Other information:**

9.2.1. **Information with regard to physical hazard classes:**
Explosive properties: Non-explosive.
Oxidizing properties: Non-oxidizing.

9.2.2. **Other safety characteristics:**
Dynamic viscosity: 0.837 +/- 0.007 mPa*s (20 °C)
Diethyl carbonate is a reactive intermedier for organic synthesis, pharmaceutical synthesis. Solvent of resins, oils, cellulose esters and nitrocellulose.
The product hydrolyses very slowly, while carbon dioxide and ethanol are formed.
The vapours of the diethyl carbonate and ethanol can form explosive mixtures with air.

*: The manufacturer did not carry out any tests on this parameter for the product or the results of the tests are not available at the time of publication of the data sheet, or the property is not applicable for the product.

SECTION 10: STABILITY AND REACTIVITY

10.1. **Reactivity:**

Stable within normal temperature and under general work conditions.

10.2. **Chemical stability:**
Stable within normal temperature and under general work conditions.

10.3. **Possibility of hazardous reactions:**
Strong exothermic reaction with strong oxidizing agents.

10.4. **Conditions to avoid:**
To avoid thermal decomposition do not overheat.

10.5. **Incompatible materials:**
Strong oxidizing agents.

10.6. **Hazardous decomposition products:**
No decomposition if used and stored according to specifications.
In case of fire or at high temperatures the formation of following decomposition products may be formed:
Carbon monoxide, carbon dioxide, irritant gases/vapours.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. **Information on hazard classes as defined in Regulation (EC) No 1272/2008:**
Acute toxicity: Based on available data, the classification criteria are not met.
Skin corrosion/irritation: Based on available data, the classification criteria are not met.
Serious eye damage/irritation: Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
Germ cell mutagenicity: Based on available data, the classification criteria are not met.
Carcinogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity: Based on available data, the classification criteria are not met.
STOT-single exposure: Based on available data, the classification criteria are not met.
STOT-repeated exposure: Based on available data, the classification criteria are not met.
Aspiration hazard: Based on available data, the classification criteria are not met.

11.1.1. **Summaries of the information derived from the test conducted:**
No data available.

11.1.2. **Relevant toxicological properties:**
Acute toxicity:
LD50 (oral, rat): 4876-15000 mg/kg bw
LD50 (oral, rat): 5 ml/kg bw
LC50 (inhalation, rat): 1.268 mg/l air/7h
Irritation/corrosion:
- Skin: non-irritant
- Eye: non-irritant
Sensitisation:
Not sensitising.
Repeated dose toxicity:
NOAEL (oral, rat): 1000 mg/kg bw/day
LOAEL (oral, mouse): 50 ppm
NOAEC (inhalation, mouse): 18.995 mg/l air
NOAEC (inhalation, other species): 18.995 mg/l/air
Genetic toxicity:
In vitro: Observed adverse effect (positive).
In vivo: No adverse effect observed (negative).
Carcinogenicity:
No adverse effect observed.
NOAEL (chronic, rat): 300 mg/kg bw/day

11.1.3. **Information on likely routes of exposure:**
Ingestion, inhalation, skin contact, eye contact.

11.1.4. **Symptoms related to the physical, chemical and toxicological characteristics:**
After resorption of larger quantities, the following symptoms may occur:
Drowsiness, dizziness, spasms, euphoria, narcotic effect.

11.1.5. **Delayed and immediate effects as well as chronic effects from short and long-term exposure:**
No data available.

11.1.6. **Interactive effects:**
No data available.

11.1.7. **Absence of specific data:**
No information.

11.2. **Information on other hazards:**
Endocrine disrupting properties:

Endocrine disrupting property: Not an endocrine disruptor.
Other information:
No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. **Toxicity:**
The substance is not classified as hazardous for the environment.
Hazard for air: No hazard identified.
Hazard for terrestrial organisms: No exposure of soil expected.
Hazard for predators: No potential for bioaccumulation.
LC0 (fish): 65 mg/l/4 days
EC50 (aquatic invertebrates): 74.16-100 mg/l/48h
NOEC (aquatic invertebrates): 100 mg/l/48h
NOEC (aquatic invertebrates): 100 mg/l/24h
EC50 (algae and cyanobacteria): 57.29-100 mg/l/72h
NOEC (algae and cyanobacteria): 57.29-100 mg/l/72h
LOEC (algae and cyanobacteria): 100 mg/l/72h
EC10/NOEC (freshwater algae): 100 mg/l
EC50 (microorganisms): 11-10000 mg/l/30 min
EC50 (microorganisms): 10 g/l

12.2. **Persistence and degradability:**
Phototransformation in air:
Diethyl carbonate is expected to exist solely as a vapour in the ambient atmosphere (10.8 mm Hg vapour pressure at 25 °C).
Vapour-phase diethyl carbonate is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals: the half-life for this reaction in air is estimated to be 5 days.
Diethyl carbonate may also undergo direct photolysis in the environment since this compound contains a functional group that can absorb light greater than 290 nm.
Hydrolysis:
Diethyl carbonate is not expected to adsorb to suspended solids and sediment in water.
Volatilization from water surfaces is expected to be an important fate process.
Diethyl carbonate may undergo hydrolysis in water since esters are susceptible to hydrolysis.
Biodegradation in water:
In the test period of 27 days diethyl carbonate pure was degraded to 75%.
The test substance was not found to be toxic to bacteria at the test concentration.
The substance is readily biodegradable.
Biodegradation in soil:
Diethyl carbonate is expected to have high mobility in soil.
Volatilization of diethyl carbonate from moist soil surfaces is expected to be an important fate process.
Diethyl carbonate may volatilize from dry soil surfaces based upon its vapour pressure (10.8 mm Hg).

12.3. **Bioaccumulative potential:**
No potential for bioaccumulation.

12.4. **Mobility in soil:**
Diethyl carbonate is expected to have high mobility in soil.

12.5. **Results of PBT and vPvB assessment:**
The substance does not meet the criteria for PBT or vPvB substances.

12.6. **Endocrine disrupting properties:**
Endocrine disrupting property: Not an endocrine disruptor.

12.7. **Other adverse effects:**
No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. **Waste treatment methods:**
Disposal according to the local regulations.

13.1.1. **Information regarding the disposal of the product:**
Must not be disposed of together with household garbage.
Do not allow product to reach sewage system.
Disposal according to instructions of local authorities.
List of Waste Code:

No waste disposal key according to the List of Waste Code (LoW code) can be determined for this product, as only the purpose of application defined by the user enables an allocation. The LoW code number has to be determined after a discussion with a waste disposal specialist.

13.1.2. Information regarding the disposal of the packaging:
Recommendation: Disposal must be made according to official regulations.

13.1.3. Physical/chemical properties that may affect waste treatment options shall be specified:
No data available.

13.1.4. Sewage disposal:
No data available.

13.1.5. Special precautions for any recommended waste treatment:
No data available.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number or ID number:
ADR/RID; IMDG; IATA:
UN 2366

14.2. UN proper shipping name:
ADR/RID:
DIETHYL CARBONATE
IMDG:
DIETHYL CARBONATE
IATA:
Diethyl carbonate

14.3. Transport hazard class(es):
ADR/RID:
Class: 3 (F1)
Label: 3
IMDG:
Class: 3
Label: 3
IATA:
Class: 3
Label: 3

14.4. Packing group:
ADR/RID; IMDG; IATA:
III

14.5. Environmental hazards:
ADR/RID; IMDG; IATA:
No

14.6. Special precautions for user:
ADR/RID:
Tunnel restriction code: (D/E)
IMDG:
EmS: F-E,S-D

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:

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive (EC) No 1999/45 and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive (EEC) No 76/769 and Commission Directives (EEC) No 91/155, (EEC) No 93/67, (EC) No 93/105 and (EC) No 2000/21

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives (EEC) No 67/548 and (EC) No 1999/45, and amending Regulation (EC) No 1907/2006

COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

15.2. **Chemical safety assessment:** No information.

SECTION 16: OTHER INFORMATION

Information regarding the revision of the safety data sheet:
The safety data sheet has been revised according to Regulation (EU) 2020/878 (Section 1-16).
The hazard classification of the substance did not change compared to the previous version.

This safety data sheet supersedes all previous versions according to Annex II of Regulation (EC) No 1907/2006.

Literature references / data sources:
Previous version of the safety data sheet (24. 08. 2018, version CLP_E).

Relevant hazard statements (code and full text) of Sections 2 and 3:
H226 – Flammable liquid and vapour.

Training advice: No data available.

Full text of the abbreviations in the safety data sheet:
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE: Acute Toxicity Estimate.
AOX: Adsorbable organic halides.
BCF: Bioconcentration factor.
BOD: Biological Oxygen Demand.
CAS number: Chemical Abstract Service number.
CLP: Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
CMR effects: Carcinogenic, mutagenic, reprotoxic effects.
COD: Chemical Oxygen Demand.
CSA: Chemical Safety Assessment.
CSR: Chemical Safety Report.
DNEL: Derived-No-Effect-Level.
ECHA: European Chemical Agency.
EC: European Community.
EC number: EINECS and ELINCS numbers (see also EINECS and ELINCS).
EEC: European Economic Community.
EEA: European Economic Area (EU + Iceland, Liechtenstein and Norway).
EINECS: European Inventory of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
EN: European Norm.
EU: European Union.
EWC: European Waste Catalogue (replaced by LoW – see below).
GHS: Globally Harmonized System of Classification and Labelling of Chemicals.
IATA: International Air Transport Association.
ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.
IMDG: International Maritime Dangerous Goods.
IMO: International Maritime Organization.
IMSBC: International Maritime Solid Bulk Cargoes.
IUCLID: International Uniform Chemical Information Database.
IUPAC: International Union of Pure and Applied Chemistry.
Kow: n-Octanol - Water Partition Coefficient.
LC50: Lethal concentration resulting in 50 % mortality.
LD50: Lethal dose resulting in 50 % mortality (median lethal dose).
LoW: List of Waste.
LOEC: Lowest Observed Effect Concentration.
LOEL: Lowest Observed Effect Level.
NOEC: No Observed Effect Concentration.
NOEL: No Observed Effect Level.

NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
OECD: Organization for Economic Cooperation and Development.
OSHA: Occupational Safety and Health Administration.
PBT: Persistent, Bioaccumulative and Toxic.
PNEC: Predicted No Effect Concentration.
QSAR: Quantitative Structure Activity Relationship.
REACH: Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.
SCBA: Self Contained Breathing Apparatus.
SDS: Safety Data Sheet.
STOT: Specific Target Organ Toxicity.
SVHC: Substances of Very High Concern.
UN: United Nations.
UVCB: Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials.
VOC: Volatile Organic Compound.
vPvB: very Persistent and very Bioaccumulative.

This safety data sheet had been prepared on the basis of information provided by the manufacturer/supplier and conform to the relevant regulations.
The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information.
The SDS shall be used only as a guide for handling the product; in the course of handling and using the product other considerations may arise or be required.
Users are cautioned to determine the appropriateness and applicability of the above information to their particular circumstances and purposes and assume all risk associated with the use of this product.
It is the responsibility of the user to fully comply with local, national and international regulations concerning the use of this product.

Safety data sheet was prepared by:
MSDS-Europe
International branch of ToxInfo Kft.

Professional help regarding the explanation of the safety data sheet:
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www.msds-europe.com