

MATERIAL SAFETY DATA SHEET

prepared in accordance with 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 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union No L 203,

26/06/2020)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND IDENTIFICATION ENTERPRISES

1.1 Product ID

FREEZE55

UFI number: UQ00-00G4-W00A-4R2K

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

Identified uses: Product used for thermal location of electronic device faults from electronic and office equipment. Uses advised against: other than the above.

1.3 Details of the supplier of the safety data sheet

Supplier:

Micro Chip Electronic Barbara Kaczmarczyk ul.
Kochanowskiego 9
40-035 Katowice
Phone +48 503 017 712

E-mail of the person responsible for the safety data sheet: info@micro-chip.pl

1.4 Emergency telephone number

Emergency number in Poland (open 9:00-15:00): + 48 503 017 712

Date of preparation/update: 07/01/2010/06/02/2023

SECTION 2: HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended:

Aerosol products, hazard category 1 (Aerosol 1)
Extremely flammable aerosol (H222)

2.2 Labeling elements

Pictograms:



Signal Word: Danger

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Hazard statements:

H222 – Extremely flammable aerosol.

H229 - Pressurized container: May burst if heated.

Precautionary statements:

P102 – Keep out of reach of children.

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 - In case of leak, eliminate all ignition sources.

P403 - Store in a well-ventilated place.

P410 + P412 – Protect from sunlight. Do not expose to temperatures exceeding 50 °C.

2.3 Other threats

The mixture does not meet the PBT and vPvB criteria. It does not contain any ingredients considered to be endocrine disrupting according to Article 57(f) of the REACH Regulation or Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 at a concentration of 0.1% or higher.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.2 Mixture

Ingredients of the mixture:

Name of the substance	index number	CAS No.	EC No.	ul. mass in %	Classification according to Regulation (EC) No 1272/2008	
					Hazard classes and Category Codes	Return codes indicating type threats
Butane	601-004-00-0	106-97-8	203-448-7	< 45	Flame Gas1 Press Gas	H220
Isobutane	601-004-00-0	75-28-5	200-857-2	< 45	Flame Gas1 Press Gas	H220
Propane	601-003-00-5	74-98-6	200-827-9	< 45	Flame Gas1 Press Gas	H220

The full text of H phrases and the acronyms of symbols, hazard classes and category codes are given in Section 16 of the Safety Data Sheet.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove the injured person from the place of exposure, place them in a comfortable half-sitting or sitting position, ensure calmness, protect against heat loss. If breathing problems occur, apply artificial respiration. If symptoms persist, call a doctor.

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Skin contact:	Pour cold water over the frostbitten body part, then remove contaminated clothing, rings, bracelets, watches, etc. If the clothing is stuck to the skin, do not remove it. Warm up the frostbitten body part slowly.
Eye contact:	Cover with a sterile dressing. Do not use ointments or creams. Note: soak contaminated clothing with water before removing. Rinse immediately with plenty of water, preferably running, for at least 15 minutes. Remove contact lenses. Avoid strong water jets due to the risk of mechanical damage to the cornea. In case of burns, seek immediate medical attention.
Digestive tract:	This is an unlikely route of exposure. Do not induce vomiting. Rinse mouth with water and then drink plenty of water. Consult a physician if necessary.

4.2 Most important acute and delayed symptoms and effects of exposure

Higher concentrations may cause cough, headaches, dizziness, nausea, breathing disorders, sometimes psychomotor disorders, weakness, pain behind the sternum, drowsiness, memory disorders, nervousness, at high concentrations loss of consciousness, convulsions, paralysis of the respiratory center may occur.

As a gas heavier than air, it accumulates in the lower areas of rooms, which can lead to loss of consciousness and suffocation due to local lack of oxygen. As with all liquefied gases, contact with rapidly evaporating liquid can cause burns (frostbite) of the skin and eyes.

4.3 Indications of any immediate medical attention and special treatment for the injured person

In case of contact with the product in liquid form, proceed as in the case of frostbite. Do not give anything by mouth to an unconscious person and do not induce vomiting. Provide the doctor providing assistance with the safety data sheet.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Small fires outdoors should be allowed to burn out, provided that this does not pose a threat to the surroundings; in closed rooms, extinguish with a powder or carbon dioxide extinguisher or introduce carbon dioxide gas.

Extinguish large fires after cutting off the gas supply with water spray. Use remote sprinkler systems or fight the fire from behind protective covers – risk of explosion. Cool containers exposed to fire or high temperatures with water from a safe distance (risk of explosion); if possible and safe, remove them from the danger area.

5.2 Special hazards arising from the substance or mixture

Extremely flammable gas. Quickly evaporates when released from a container. Creates explosive mixtures with air. Closed vessels/containers exposed to fire or high temperatures may explode due to pressure build-up inside them. Carbon oxides are produced in a fire environment. Avoid inhaling combustion products – they may pose a health hazard. Prevent sewage from entering the sewage system and water after extinguishing the fire. Follow procedures applicable to extinguishing chemical fires. Persons involved in extinguishing the fire should be trained, equipped with protective clothing and breathing apparatus with an independent air supply.

5.3 Information for the fire brigade

Vapours form flammable and explosive mixtures with air, are heavier than air and accumulate near the ground and in lower parts of rooms. When a closed container is heated, there is a risk of pressure increase and bursting of the packaging. Cool containers exposed to fire from a safe distance with a sprayed water jet; if possible, remove them from the endangered area. Wear gas-tight protective clothing and breathing apparatus independent of the ambient air.

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SECTION 6: MEASURES IN THE EVENT OF ACCIDENTAL ENVIRONMENTAL RELEASES

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition - extinguish open flames, announce a ban on smoking and use of sparking tools, protect containers from heating (explosion hazard). Do not enter the endangered area.

Avoid direct contact with released gas. Do not breathe gas. Provide effective ventilation.

Wear protective clothing and equipment (see section 8).

CAUTION: Potentially explosive area. Gas is heavier than air and can travel along the floor/ground to distant ignition sources and create a flashback hazard. To ensure safe working conditions, check gas levels before allowing personnel to enter.

Inform the surroundings about the failure; remove from the danger area all persons not involved in eliminating the failure, if necessary order an evacuation; call rescue teams.

6.2 Environmental precautions

Prevent entry into sewage systems, surface and ground waters, soil and all places (e.g. ground depressions) where accumulation may occur.

6.3 Methods and materials for containment and cleaning up

Small quantities: If possible and safe, stop leak (close gas supply, seal). Allow small amount of released liquefied gas to evaporate.

Large quantities: Dilute large quantities of escaping gas with water spray. Place the damaged vessel, if possible, in a hermetic emergency chamber.

6.4 References to other sections

Dispose of in accordance with the recommendations in section 13.

SECTION 7: HANDLING AND REMEDIES OF SUBSTANCES AND MIXTURES STORAGE

7.1 Precautions for safe handling

Ensure adequate general and local ventilation. Keep away from sources of high temperature and sources of ignition. It is advisable to take precautions to avoid contact with skin and eyes when working with the mixture. Do not inhale vapours.

Prevent from entering sewage system, surface and ground water and soil. Do not eat, drink or smoke during use. Wash hands during breaks and after finishing work. Remove contaminated clothing immediately, wash before re-wearing.

7.2 Conditions for safe storage, including information on any incompatibilities

Product vapors with air may form explosive mixtures. Vapours are heavier than air and accumulate near the floor or ground surface. Store in original, properly labeled, tightly closed containers, in a cool, dry, well-ventilated storage room, equipped with explosion-proof electrical and ventilation installations. Pressurized containers: protect from sunlight, do not expose to temperatures above 50°C. Store away from sources of high temperature, sources of ignition, oxidizers. Protect from sunlight.

7.3 Specific end use(s)

No information on uses other than those mentioned in section 1.2.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Legal basis:

Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018, on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws, item 1286, 2018) and Regulation of the Minister of Family, Labor and Social Policy of January 9, 2020, amending the regulation on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws, item 61, 2020) and Regulation of the Minister of Development, Labor and Technology of February 18, 2021, amending the regulation on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws, item 325, 2021)

Name of the substance CAS No. Standard value Propane 74-98-6 OEL 1800 OELCh and NDSP

not determined

unit

mg/m3

Butane

106-97-8

NDS

1900

mg/m3

NDSch

3000

mg/m3

NDSP

Not specified

8.2 Exposure Control

8.2.1 Appropriate technical control measures

Local exhaust ventilation to remove vapors from their emission points and general ventilation of the room are necessary. Local ventilation intake openings at the work surface or below. General ventilation exhausts at the top of the room and at the floor. Ventilation systems must meet the conditions established due to the risk of fire. Do not use near sources of high temperature and sources of ignition. In the event of insufficient ventilation, use respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Respiratory: If permissible vapour concentrations are exceeded, respiratory protection with an independent air source should be used.

Hands and skin:

Use protective clothing made of natural materials (cotton) or synthetic fibers, protective gloves. For prolonged and repeated contact, use nitrile or leather protective gloves, compliant with PN-EN ISO 374 and PN-EN ISO 21420. The gloves should remain flexible at temperatures below the boiling point of gas at atmospheric pressure.

Eyes:

When performing activities that may result in contact with the face, wear goggles, a mask, and safety glasses with side shields.

Occupational hygiene: General industrial hygiene regulations apply. Do not exceed permissible normative concentrations in the workplace environment. After finishing work, remove contaminated clothing. Before breaks in work, wash hands and face. After work, wash the whole body thoroughly. Do not eat, drink, or smoke while working.

8.2.3 Environmental exposure controls

Prevent entry into watercourses.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) State of matter

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Aerosol gas. b) Colour

Colourless.

c) Odour

Hydrocarbon.

d) Melting point/

freezing point No data available.

e) Boiling point or initial boiling point and boiling range

No data. f)

Flammability of materials

Extremely flammable gas. g)

Lower and upper explosion limits Explosion limits

in a mixture with air: Upper: 9.5% vol.

Lower: 2.1% by

volume h) Flash point No

data available.

i) Auto-ignition temperature No data

available. j)

Decomposition temperature

No data

available. k) pH Not

determined. l) Kinematic viscosity

Viscosity is a property of a substance in the liquid state (the product is a gas at room temperature). m) Solubility Insoluble in water. n) Partition

coefficient n-octanol/water (log coefficient value)

The partition coefficient is determined for the substance in the liquid state (the product is a gas at room temperature)..

o) Vapour pressure

̈ 0.100 MPa

(20°C) ̈ 2.55MPa (70°C) p)

Density or relative density 0.5 g/ml (water

= 1). q) Relative

vapour density 2.1 (air = 1).

r)

Characteristics of the

molecules Not applicable 9.2 Other information 9.2. 1.

Information on physical hazard

classes a) Explosives: Not applicable. b)

Flammable gases:

Extremely flammable gas. c)

Aerosols: Aerosol 1. d) Oxidizing

gases Not applicable e) Gases

under pressure Not applicable f)

Flammable liquids Not applicable g) Flammable solids

Not applicable h) Self-reactive substances

and mixtures Not applicable i) Pyrophoric

liquids Not applicable j) Pyrophoric solids Not applicable k) Self-heating substances and mixtures Not applicable

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l) Substances and mixtures which in contact with water emit flammable gases Not applicable m) Oxidizing liquids
Not applicable n) Oxidizing solids Not applicable o)
Organic peroxides Not applicable p) Corrosive to
metals Not applicable q) Desensitized
explosives Not applicable

9.2.2 Other safety properties a) mechanical
sensitivity: No data available. b) self-
accelerating polymerization temperature: No data available. c)
formation of explosive dust/air mixtures: Not applicable. d) acid/base
reserve: No data available. e) evaporation
rate: No data available. f) miscibility:
No data available. g) conductivity: No
data available. h) corrosive
action: Not applicable. i) gas group:
Not applicable. j) redox
potential: No data available. k)
radical formation potential: No data available. l)
photocatalytic properties: No data available.

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity No
reactivity when stored and handled as intended.
- 10.2 Chemical stability
Under normal conditions of use and storage the product is stable.
- 10.3 Possibility of hazardous reactions The container contains gas
under increased pressure - it should be protected from sunlight, the temperature should not exceed 50
°C. Vapours form explosive mixtures with air.
- 10.4 Conditions to avoid High temperature,
ignition sources, open flames.
- 10.5 Incompatible Materials
Lack.
- 10.6 Hazardous decomposition products None
known.

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.

CL50 - inhalation rat 658 mg/l (4h)

Skin corrosion/irritation: Based on available

data, the classification criteria are not met. Direct contact with liquefied gas may cause frostbite.

Serious eye damage/eye irritation:

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Based on available data, the classification criteria are not met. Direct contact with liquefied gas may cause eye damage.

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.

Specific target organ toxicity – single exposure: Based on available data, the
classification criteria are not met.

Specific target organ toxicity – repeated exposure: Based on available data, the
classification criteria are not met.

Aspiration hazard: Based on available data,
the classification criteria are not met.

11.2 Information on other hazards 11.2.1.

Endocrine disrupting properties

No information about endocrine disrupting properties.

11.2.2. Other information No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity Based

on available data, the classification criteria are not met.

Butane

CL50 – fish 24.11 mg/l (96h)

CL50 – invertebrates (*Daphnia magna*) 14.22 mg/l (48h)

CE50 – algae 7.71 mg/l (96h)

12.2 Persistence and degradability

Photodecomposition: Half-life (direct photolysis): 3.2 d Stability in water: Half-life value:
< 62.4 h

12.3 Bioaccumulative potential

Octanol/water partition coefficient (log Ko/w): Not determined for gases Bioconcentration factor
(BCF): Not applicable.

12.4 Mobility in soil Due to

the low boiling point the product quickly evaporates into the atmosphere.

12.5 Results of PBT and vPvB assessment The

substance does not meet the PBT and vPvB criteria.

12.6 Endocrine disrupting properties

No information about endocrine disrupting properties.

12.7 Other harmful effects

No data available.

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SECTION 13: WASTE CONSIDERATIONS**13.1 Waste treatment methods Hazardous waste*: HP 3****"Flammable"**

*COMMISSION REGULATION (EU) No 1357/2014 of 18 December 2014 replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives (Official Journal of the EU, L 365, December 2014).

Waste codes

16 05 05: Gases in containers other than those mentioned in 16 05 04

Package 15.01

05

Special Precautions: Use caution

when handling emptied containers that have not been thoroughly cleaned. Do not cut, weld or reuse used containers unless they have been thoroughly cleaned.

Legal basis:

Announcement of the Marshal of the Sejm of the Republic of Poland of 16 April 2020 on the announcement of the consolidated text of the Act on Waste (Journal of Laws, item 797, 2020).

Announcement of the Speaker of the Sejm of the Republic of Poland of 1 December 2022 on the announcement of the uniform text of the Act on the management of packaging and packaging waste (Journal of Laws, item 160, 2023).

REGULATION OF THE MINISTER OF CLIMATE of 2 January 2020 on the waste catalogue (Journal of Laws, item 10, 2020).

SECTION 14: TRANSPORT INFORMATION**ADR/RID, IMDG, IATA 14.1****UN number or ID number**

1950

14.2 UN proper shipping name

AEROSOLS.

14.3 Transport hazard class(es)

2.5F

14.4 Packing group

Lack

**14.5 Environmental hazards No
recommendations****14.6 Special precautions for users
No recommendations.****14.7 Sea transport in bulk in accordance with IMO instruments Not
applicable.**

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SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental protection regulations specific to mixtures

ANNOUNCEMENT OF THE MARSHAL OF THE SEJM OF THE REPUBLIC OF POLAND of 22 July 2022 on the announcement of the uniform text of the act on chemical substances and their mixtures (Journal of Laws, item 1816, 29/08/2022).

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 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (Official Journal of the European Union, series L, No 353 of 31 December 2008) with subsequent amendments (adaptations to technical progress 1 - 18 ATP).

REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC (Official Journal of the EU, series L/81 of 31.03.2016).

Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the maximum permissible concentrations and intensities of harmful health factors in the work environment (Journal of Laws, item 1286, 2018)

REGULATION OF THE MINISTER OF FAMILY, LABOUR AND SOCIAL POLICY of 9 January 2020 amending the regulation on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws item 61, 2020)

Regulation of the Minister of Development, Labor and Technology of February 18, 2021 amending the regulation on the maximum permissible concentrations and intensities of factors harmful to health in the work environment (Journal of Laws, item 325, 2021).

Regulation of the Minister of Health of 2 February 2011 on tests and measurements of factors harmful to health in the work environment (Journal of Laws No. 33, item 166, 2011).

Announcement of the Minister of Health of 9 September 2016 on the announcement of a uniform text of the regulation of the Minister of Health on occupational health and safety related to the presence of chemical factors in the workplace (Journal of Laws, item 1488, 2016)

Government Statement of 26 July 2005 on the entry into force of amendments to Annexes A and B of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) concluded in Geneva on 30 September 1957 (Journal of Laws No. 178, item 1481, 2005 with subsequent amendments).

Announcement of the Speaker of the Sejm of the Republic of Poland of 16 April 2020 on the announcement of the consolidated text of the Act on Waste (Journal of Laws, item 797, 2020).

Announcement of the Speaker of the Sejm of the Republic of Poland of 1 December 2022 on the announcement of the uniform text of the act on the management of packaging and packaging waste (Journal of Laws, item 160, 2023)

REGULATION OF THE MINISTER OF CLIMATE of 2 January 2020 on the waste catalogue (Journal of Laws, item 10, 2020).

NOTICE of the Minister of Entrepreneurship and Technology of April 15, 2019 on the announcement of the uniform text of the regulation of the Minister of Economy on detailed requirements for aerosol products (Journal of Laws, item 975, 2019)

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 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (Official Journal of the European Union, series L, No 396 of 30 December 2006, as amended).

15.2 Chemical safety assessment

The supplier did not perform a chemical safety assessment of the mixture.

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SECTION 16: OTHER INFORMATION

The card was developed at the Łukasiewicz Research Network - **Industrial Chemistry Institute named after prof. I. Mościcki in Warsaw** based on the recipe and component data sheets.

The information provided in the safety data sheet is intended to describe the product only from the point of view of safety requirements. The user is responsible for creating conditions for safe use of the product and it is the user who takes responsibility for the consequences resulting from improper use of this product.

H phrases and acronyms of symbols, hazard classes and category codes **used in Section 3. Safety data sheets:**

H220	Extremely flammable gas
H222	Extremely flammable aerosol.
H229	Pressurized container may explode when heated
H280	Contains gas under pressure; may explode if heated.
Flam. Liq. 1	Flammable liquid, hazard category 1.
Press Gas	Gases under pressure.
Aerosol 1	Aerosol products, hazard category 1.

Abbreviations:

OEL - The highest permissible concentration at the workplace - the highest permissible weighted average concentration, the impact of which on an employee during an 8-hour working time, throughout his entire professional activity, should not cause any changes in his health or in the health of his future generations

OELCh - Maximum allowable momentary concentration - the highest allowable momentary concentration established as an average value that should not cause negative changes in the health of the employee and in the health of his future generations if it is maintained in the work environment for no longer than 30 minutes during a work shift

NDSP - concentration value which cannot be exceeded at any time in the work environment due to a threat to the health or life of an employee

vPvB - Very persistent and very bioaccumulative substance

PBT - Persistent, Bioaccumulative and Toxic

DL50 - Lethal dose - a dose at which 50% of the tested animals die within a specified time period.

CL50 - Lethal concentration - concentration at which 50% of the tested animals die within a specified time period.

CE50 - Effective concentration - effective concentration of a substance causing a response of 50% of the maximum value

BCF - Bioconcentration factor (bioconcentration) - the ratio of the concentration of a substance in an organism to its concentration in water at equilibrium

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
(Agreement on Dangerous Goods by Road)

RID - Regulations Concerning the International Transport of Dangerous Goods by Rail

IMDG - International Maritime Dangerous Goods Code

IATA - International Air Transport Association (International Air Transport Association)

IMO - International Maritime Organization

CAS - the number assigned to a chemical substance in the Chemical Abstracts Service inventory

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EC - reference number used in the European Union to identify dangerous substances, in particular those registered in the European Inventory of Existing Chemical Substances (EINECS) , or in the European List of *Notified Chemical Substances* (ELINCS), or the list of chemical substances listed in the publication "*No-longer polymers*"

UN number – a four-digit identification number of a material in the UN Hazardous Materials Inventory, derived from the UN Model Regulations, to which an individual material, mixture or article is classified

Update: change of address data, assignment of UFI number, changes introduced by Regulation 2020/878, change of composition, changes in sections 8,13 update of legal acts in section 15.1, supplementation of explanation of abbreviations in section 16.

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