® §ROTH

date of compilation: 2023-03-23

Revision: 2024-03-01

#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: **20P2** Version: **2.0 en** Replaces version of: 2023-03-23 Version: (1)

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

iii iioaaceiaciiciiici	1.1	<b>Product identifier</b>
------------------------	-----	---------------------------

Identification of the substance	<b>Perfluorooctanic acid sodium salt</b> ROTI®Star PFAS Standard			
Article number	20P2			
EC number	206-404-5			
CAS number	335-95-5			
Alternative name(s)	PFAS			
Relevant identified uses of the substance or mixture and uses advised against				

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

Relevant identified uses:	
---------------------------	--

Laboratory and analytical use Laboratory chemical

Uses advised against:

Do not use for private purposes (household). Food, drink and animal feedingstuffs.

#### **1.3** Details of the supplier of the safety data sheet

Carl Roth GmbH + Co. KG Schoemperlenstr. 3-5 D-76185 Karlsruhe Germany

**Telephone:**+49 (0) 721 - 56 06 0 **Telefax:** +49 (0) 721 - 56 06 149 **e-mail:** sicherheit@carlroth.de **Website:** www.carlroth.de

Competent person responsible for the safety data Department Health, Safety and Environment sheet:

#### e-mail (competent person):

#### sicherheit@carlroth.de

#### 1.4 Emergency telephone number

Name	Street	Postal code/city	Telephone	Website
National Poisons Information Service City Hospital	Dudley Rd	B187QH Birmingham	844 892 0111	

### **SECTION 2: Hazards identification**

#### 2.1 Classification of the substance or mixture

**Classification acc. to GHS** 

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: 20P2

Section	Hazard class	Cat- egory	Hazard class and category	Hazard statement
3.2	Skin corrosion/irritation	2	Skin Irrit. 2	H315
3.3	Serious eye damage/eye irritation	2	Eye Irrit. 2	H319
3.8R	Specific target organ toxicity - single exposure (respirat- ory tract irritation)	3	STOT SE 3	H335

For full text of abbreviations: see SECTION 16

#### 2.2 Label elements

#### Labelling

Signal word	Warning
Pictograms	~
GHS07	

#### **Hazard statements**

H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation

#### **Precautionary statements**

#### **Precautionary statements - prevention**

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

#### 2.3 Other hazards

#### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

#### **Endocrine disrupting properties**

Does not contain an endocrine disruptor (ED) at a concentration of  $\ge 0,1\%$ .

## **SECTION 3: Composition/information on ingredients**

### 3.1 Substances

Name of substance	Perfluorooctanic acid sodium salt
Molecular formula	$C_8HF_{15}O_2Na$
Molar mass	437,1 <sup>g</sup> / <sub>mol</sub>
CAS No	335-95-5
EC No	206-404-5

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: 20P2

### **SECTION 4: First aid measures**

#### 4.1 Description of first aid measures



#### **General notes**

Take off contaminated clothing.

#### **Following inhalation**

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following skin contact

Rinse skin with water/shower. In case of skin irritation, consult a physician.

#### Following eye contact

Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. In case of eye irritation consult an ophthalmologist.

#### **Following ingestion**

Rinse mouth. Call a doctor if you feel unwell.

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

#### Irritation, Cough, Dyspnoea

**4.3 Indication of any immediate medical attention and special treatment needed** none

### **SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media



#### Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings! water, foam, dry extinguishing powder, ABC-powder

#### Unsuitable extinguishing media

water jet

#### 5.2 Special hazards arising from the substance or mixture

Combustible.

#### Hazardous combustion products

In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

#### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: **20P2** 

### **SECTION 6: Accidental release measures**

6.1 Personal precautions, protective equipment and emergency procedures



#### For non-emergency personnel

Avoid contact with skin, eyes and clothes. Do not breathe dust.

#### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

#### 6.3 Methods and material for containment and cleaning up

#### Advice on how to contain a spill

Covering of drains. Take up mechanically.

#### Advice on how to clean up a spill

Take up mechanically. Control of dust.

#### Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

#### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

### SECTION 7: Handling and storage

#### 7.1 Precautions for safe handling

Provision of sufficient ventilation. Avoid dust formation.

#### Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

#### 7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place. Keep in a cool place.

#### Incompatible substances or mixtures

Observe hints for combined storage.

#### Consideration of other advice:

#### Specific designs for storage rooms or vessels

Recommended storage temperature: 2 - 8 °C

#### 7.3 Specific end use(s)

No information available.

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: 20P2

## **SECTION 8: Exposure controls/personal protection**

8.1 Control parameters

#### **National limit values**

#### **Occupational exposure limit values (Workplace Exposure Limits)**

This information is not available.

#### 8.2 Exposure controls

#### Individual protection measures (personal protective equipment)

#### **Eye/face protection**



Use safety goggle with side protection.

#### **Skin protection**



#### hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a consider-able reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

#### • type of material

NBR (Nitrile rubber)

#### material thickness

>0,11 mm

#### • breakthrough times of the glove material

>480 minutes (permeation: level 6)

#### other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

#### **Respiratory protection**



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P2 (filters at least 94 % of airborne particles, colour code: White).

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: 20P2

#### **Environmental exposure controls**

Keep away from drains, surface and ground water.

## **SECTION 9: Physical and chemical properties**

#### 9.1 Information on basic physical and chemical properties Physical state solid Form crystalline Colour not determined Odour characteristic Melting point/freezing point not determined 275 °C Boiling point or initial boiling point and boiling range this material is combustible, but will not ignite Flammability readily Lower and upper explosion limit not determined Flash point not applicable Auto-ignition temperature not determined Decomposition temperature not relevant pH (value) not applicable Kinematic viscosity not relevant Solubility(ies) Water solubility (soluble) Partition coefficient Partition coefficient n-octanol/water (log value): this information is not available Vapour pressure not determined Density and/or relative density not determined Density Relative vapour density Information on this property is not available. Particle characteristics No data available. Other safety parameters

Oxidising properties

#### 9.2 Other information

Information with regard to physical hazard classes:

hazard classes acc. to GHS (physical hazards): not relevant

none

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

#### article number: **20P2**

Other safety characteristics:

There is no additional information.

## **SECTION 10: Stability and reactivity**

#### 10.1 Reactivity

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

#### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

#### **10.3** Possibility of hazardous reactions

Violent reaction with: strong oxidiser

#### 10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

#### 10.5 Incompatible materials

There is no additional information.

#### 10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

### **SECTION 11: Toxicological information**

#### 11.1 Information on toxicological effects

#### **Classification acc. to GHS**

#### Acute toxicity

Shall not be classified as acutely toxic.

#### Skin corrosion/irritation

Causes skin irritation.

#### Serious eye damage/eye irritation

Causes serious eye irritation.

#### **Respiratory or skin sensitisation**

Shall not be classified as a respiratory or skin sensitiser.

#### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

#### Carcinogenicity

Shall not be classified as carcinogenic.

#### **Reproductive toxicity**

Shall not be classified as a reproductive toxicant.

#### Specific target organ toxicity - single exposure

May cause respiratory irritation.

#### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: **20P2** 

#### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

#### Symptoms related to the physical, chemical and toxicological characteristics

#### • If swallowed

Data are not available.

#### • If in eyes

Causes serious eye irritation

#### • If inhaled

Irritation to respiratory tract, cough, Dyspnoea

#### • If on skin

causes skin irritation

#### • Other information

This information is based upon the present state of our knowledge. Substance not yet fully tested.

#### 11.2 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of  $\ge 0,1\%$ .

#### 11.3 Information on other hazards

There is no additional information.

### **SECTION 12: Ecological information**

#### 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

#### 12.2 Persistence and degradability

Theoretical Oxygen Demand (without nitrification): 0,5491  $^{mg}/_{mg}$ Theoretical Oxygen Demand (with nitrification): 0,5491  $^{mg}/_{mg}$ Theoretical Carbon Dioxide: 0,8056  $^{mg}/_{mg}$ 

#### 12.3 Bioaccumulative potential

Data are not available.

#### 12.4 Mobility in soil

Data are not available.

**12.5 Results of PBT and vPvB assessment** Data are not available.

### 12.6 Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of  $\ge 0,1\%$ .

#### 12.7 Other adverse effects

Data are not available.

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: **20P2** 

## **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Sewage disposal-relevant information

Do not empty into drains.

#### Waste treatment of containers/packagings

Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

#### 13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

#### Properties of waste which render it hazardous

- **HP 4** irritant skin irritation and eye damage
- HP 5 specific target organ toxicity (STOT)/aspiration toxicity

#### 13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

### **SECTION 14: Transport information**

14.1 L	JN nun	າber or	ID n	umber
--------	--------	---------	------	-------

- 14.2 UN proper shipping name
- 14.3 Transport hazard class(es)
- 14.4 Packing group
- 14.5 Environmental hazards

not subject to transport regulations

not assigned

none

not assigned

non-environmentally hazardous acc. to the dangerous goods regulations

#### 14.6 Special precautions for user

There is no additional information.

**14.7** Maritime transport in bulk according to IMO instruments The cargo is not intended to be carried in bulk.

#### 14.8 Information for each of the UN Model Regulations

**International Maritime Dangerous Goods Code (IMDG) - Additional information** Not subject to IMDG.

**International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information** Not subject to ICAO-IATA.

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

#### article number: 20P2

## **SECTION 15: Regulatory information**

#### Safety, health and environmental regulations/legislation specific for the substance or mixture 15.1

**Relevant provisions of the European Union (EU)** 

#### **Seveso Directive**

2012/18/EU (Seveso III)				
Νο	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the ap- plication of lower and upper-tier re- quirements	Notes	
	not assigned			

#### **Deco-Paint Directive**

VOC content	
-------------	--

0 %	
-----	--

#### **Industrial Emissions Directive (IED)**

VOC content

0 %

#### Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

#### Regulation concerning the establishment of a European Pollutant Release and Transfer **Register (PRTR)**

not listed

#### Water Framework Directive (WFD)

List of pollutants (WFD)				
Name of substance	Name acc. to inventory	CAS No	Listed in	Remarks
Perfluorooctanic acid sodium salt	perfluorooctane sulfonic acid compounds	1763-23-1	c)	
Perfluorooctanic acid sodium salt	perfluorooctane sulfonic acid compounds		b)	HAZ
Perfluorooctanic acid sodium salt	Organohalogen compounds and substances which may form such compounds in the aquatic envir- onment		a)	
Perfluorooctanic acid sodium salt	Persistent hydrocarbons and per- sistent and bioaccumulable or- ganic toxic substances		a)	
Perfluorooctanic acid sodium salt	Metals and their compounds		a)	

#### Legend

a) b) c) HAZ

Indicative list of the main pollutants List of priority substances in the field of water policy Environmental Quality Standards for Priority Substances and certain other pollutants Identified as priority hazardous substance

#### Regulation on the marketing and use of explosives precursors

not listed

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

article number: 20P2

#### **Regulation on drug precursors**

#### not listed

#### Regulation on substances that deplete the ozone layer (ODS)

not listed

#### Regulation concerning the export and import of hazardous chemicals (PIC)

chemicals subject to the international prior informed consent (PIC) procedure (the 'PIC procedure').

Name of substance	Name acc. to inventory	CAS No	Wt%	Category / subcat- egory	Use limita- tion
Perfluorooctanic acid sodium salt	perfluorooctanoic acid (PFOA), its salts and PFOA-related com- pounds		100	i(1) i(2)	sr b
Perfluorooctanic acid sodium salt	perfluorooctanoic acid (PFOA), its salts and PFOA-related com- pounds		100	i	
Perfluorooctanic acid sodium salt	perfluorooctanoic acid (PFOA), its salts and PFOA-related com- pounds		100		

#### Legend

b

Use limitation: ban (for the sub-category or sub-categories concerned) according to Union legislation

i(1) i(2) sr

Category: i - industrial chemical Sub-category: i(1) - industrial chemical for professional use Sub-category: i(2) - industrial chemical for public use Use limitation: severe restriction (for the sub-category or sub-categories concerned) according to Union legislation

#### **Regulation on persistent organic pollutants (POP)**

Name of substance	CAS No	Wt%	Type of registra- tion	Re- marks	Exemp- tions	Concen- tration limit
Perfluorooctanic acid sodium salt		100	Annex I - A	A1A-ad- 03	A1-ex-13	
Perfluorooctanic acid sodium salt		100	Annex IV	A4-cl-06		1 mg/kg

Legend A1-ex-13

For the purposes of this entry, point (b) of Article 4(1) shall apply to concentrations of PFOA or any of its salts equal to or below 0,025 mg/kg (0,000025 % by weight) where they are present in substances, mixtures or articles.
 For the purposes of this entry, point (b) of Article 4(1) shall apply to concentrations of any individual PFOA-related compound or a combination of PFOA-related compounds equal to or below 1 mg/kg (0,0001 % by weight) where they are present in substances, mixtures or articles.
 For the purposes of this entry, point (b) of Article 4(1) shall apply to concentrations of PFOA-related compounds equal to or below 20 mg/kg (0,002 % by weight) where they are present in a substance to be used as a transported isolated intermediate within the meaning of Article 3 point 15(c) of Regulation (EC) No 1907/2006 and fulfilling the strictly controlled conditions set out in Article 18(4)(a) to (f) of that Regulation for the production of fluoro-chemicals with a perfluoro carbon chain equal to or shorter than 6 atoms. This exemption shall be reviewed and

the strictly controlled conditions set out in Article 18(4)(a) to (f) of that Regulation for the production of fluoro-chemicals with a perfluoro carbon chain equal to or shorter than 6 atoms. This exemption shall be reviewed and assessed by the Commission no later than 25 August 2023. 4. For the purposes of this entry, Article 4(1), point (b), shall apply to concentrations of PFOA and its salts equal to or below 1 mg/kg (0,0001 % by weight) where they are present in polytetrafluoroethylene (PTFE) micropowders produced by ionising irradiation or by thermal degradation as well as in mixtures and articles for industrial and professional uses containing PTFE micropowders until 18 August 2023. All emissions of PFOA during the manufac-ture and use of PTFE micropowders shall be avoided and, if not possible, reduced as far as possible. The limit of 1 mg/kg (0,0001 % by weight) shall apply only to manufacture, placing on the market and use of PFOA and its salts where they are present in PTFE micropowders that are transported or treated for the purpose to reduce the con-centration of PFOA and its salts below the limit of 0,025 mg/kg (0,000025 % by weight). 5. By way of derogation, the manufacturing, placing on the market and use of PFOA, its salts and PFOA-related compounds shall be allowed for the following purposes: (a) photolithography or etch processes in semiconductor manufacturing, until 4 July 2025; (b) photographic coatings applied to films, until 4 July 2025;

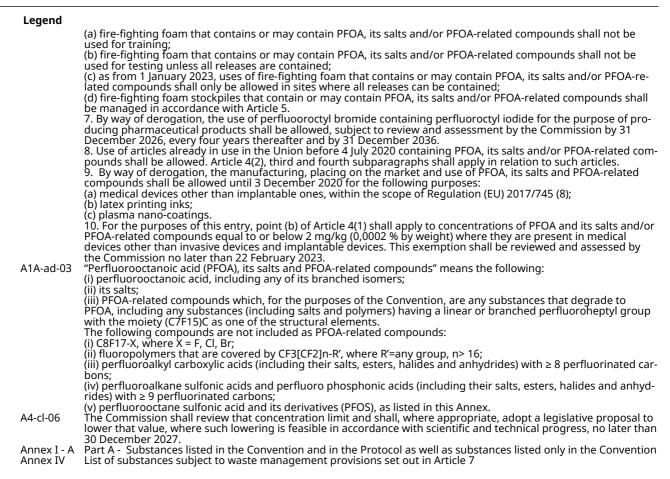
(b) photographic coatings applied to films, until 4 July 2025;
(c) textiles for oil- and water-repellency for the protection of workers from dangerous liquids that comprise risks to their health and safety, until 4 July 2023;
(d) invasive and implantable medical devices, until 4 July 2025.
6. By way of derogation, the use of PFOA, its salts and PFOA-related compounds shall be allowed in fire-fighting

foam for liquid fuel vapour suppression and liquid fuel fire (Class B fires) already installed in systems, including both mobile and fixed systems, until 4 July 2025, subject to the following conditions:

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### article number: 20P2



#### National regulations(GB)

# List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list not listed

#### **Restrictions according to GB REACH, Annex 17**

Dangerous substances with restrictions (GB REACH, Annex 17)				
Name of substance	Name acc. to inventory	CAS No	Νο	
Perfluorooctanic acid sodium salt	Perfluorooctanoic acid (PFOA), salts		68	

#### Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

#### National inventories

Country	Inventory	Status
CN	IECSC	substance is listed
EU	ECSI	substance is listed
JP	CSCL-ENCS	substance is listed
TW	TCSI	substance is listed



acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

#### article number: 20P2

Country	Inventory	Status
US	TSCA	substance is listed (ACTIVE)
Legend CSCL-ENCS ECSI IECSC TCSI TSCA	EC Substance Inventory (I	mical Substances Produced or Imported in China ce Inventory

#### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

### **SECTION 16: Other information**

#### Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety- relev- ant
2.3	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0,1%.	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of ≥ 0,1%.	yes
15.1		Regulation concerning the export and import of hazardous chemicals (PIC): change in the listing (table)	yes
15.1		National inventories: change in the listing (table)	yes

#### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concern- ing the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identi- fier of substances commercially available within the EU (European Union)
ED	Endocrine disruptor
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Na- tions
ΙΑΤΑ	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
NLP	No-Longer Polymer
РВТ	Persistent, Bioaccumulative and Toxic

acc. to Regulation (EC) No. 1907/2006 (REACH)



#### Perfluorooctanic acid sodium salt ROTI®Star PFAS Standard

#### article number: **20P2**

Abbr.	Descriptions of used abbreviations
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regula- tions concerning the International carriage of Dangerous goods by Rail)
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

#### Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

#### List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

#### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.