



SAFETY DATA SHEET

according to the regulation of the European Parliament and the Council (EC)
No. 1907/2006 (REACH) as amended

Citric acid monohydrate

Creation date	05/10/2022	Version number	2.0
Date of revision			

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

1.1. Product identifier	Citric acid monohydrate
Substance / mixture	substance
Number	not specified
Chemical Name CAS	citric acid monohydrate
Number	5949-29-1
Index number	607-750-00-3
EC number (EINECS)	201-069-1
Registration number	01-2119457026-42

Other names of the substance

Citric acid, Citric acid monohydrate, 2-hydroxypropane-1,2,3-tricarboxylic acid monohydrate

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

Intended use of the substance

Food additive, pharmaceutical products, personal care products (cosmetics), products consumer chemistry, formulation of mixtures, laboratory chemicals.

Unrecommended use of the substance

The product must not be used in ways other than those listed in section 1.

An exposure scenario is attached to the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Supplier

Name or business name	Ekokoza s.r.o
Address	Fryčovice 297
	73945, Fryčovice
Identification number (IĽO)	ID: 07508247
TIN	
Phone	+ 420605779993
E-mail	eshop@ekokoza.cz,
Website address	

E-mail address of the professionally qualified person responsible for the safety data sheet

Name	Ekokoza s.r.o
E-mail	eshop@ekokoza.cz

1.4. Telephone number for emergencies

Toxicology Information Center, Clinic of Occupational Medicine VFN and 1st Faculty of Medicine, UK, Na Bojišti 1, 120 00, Prague 2, phone: 224 919 293 and 224,915,402.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification of the substance according to Regulation (EC) No. 1272/2008

The substance is classified as dangerous.

Eye Irritation. 2, H319

STOT SE 3, H335

The full text of all classifications and H-phrases is given in section 16.

The most serious adverse physicochemical effects

They are not known.

The most serious adverse effects on human health and the environment

Causes serious eye irritation. May cause respiratory irritation.



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2.2. Marking elements

Danger warning symbol



Signal word

Warning

Standard hazard statements

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Instructions for safe handling

P261 Avoid breathing dust.

P264

Wash hands and affected body parts thoroughly after handling.

P280

Wear protective gloves/protective clothing/safety glasses.

P305+P351+P338

IF IN EYES: Rinse carefully with water for several minutes. Remove contact lenses, if fitted and if they can be removed easily. Continue rinsing.

P337+P313

If eye irritation persists: Get medical attention/treatment.

2.3. Other hazards

The substance does not have endocrine-disrupting properties in accordance with the criteria set out in Commission Regulation v delegated powers (EU) 2017/2100 or in Commission Regulation (EU) 2018/605. The substance does not meet the criteria for PBT substances or vPvB in accordance with Annex XIII, Regulation (EC) No. 1907/2006 (REACH), as amended.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical characteristics

The substance below.

Identification numbers	Substance name	Content in % weight	Classification according to regulation (EC) no. 1272/2008	Note
Index: 607-750-00-3 CAS: 5949-29-1 EC: 201-069-1 Registration number: 01-2119457026-42	the main component of a substance citric acid monohydrate	>98	Eye Irritation. 2, H319 STOT SE 3, H335	1

Comment

1 Substance for which exposure limits are established.

The full text of all classifications and H-phrases is given in section 16.

SECTION 4: First aid measures

4.1. Description of first aid

Take care of your own safety. In case of health problems or in case of doubt, inform the doctor and provide him information from this safety data sheet.

When inhaled

Stop the exposure immediately, move the victim to fresh air. Protect the victim from catching cold. Ensure medical treatment if irritation, shortness of breath or other symptoms persist.

In contact with skin

Put away the stained clothing. Wash the affected area with plenty of lukewarm water if possible. If there was no injury skin, it is also advisable to use soap, soap solution or shampoo. Get medical treatment if skin irritation persists.

On contact with the eyes

Immediately flush the eyes with a stream of running water, open the eyelids (perhaps by force); if the affected person wears contact lenses, remove them immediately. Rinse for at least 10 minutes. Get medical, professional treatment if possible.



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When ingested

Rinse the oral cavity with water and drink 2-5 dl of water. Get medical treatment for a person who has health problems.

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

When inhaled

May cause respiratory irritation.

In contact with skin

They are not expected.

On contact with the eyes

Causes serious eye irritation.

When ingested

Irritation, nausea.

4.3. Indication of any immediate medical attention and special treatment needed

Symptomatic treatment.

SECTION 5: Firefighting measures

5.1. Fire extinguishers

Suitable extinguishing agents

Alcohol-resistant foam, water jet, water mist.

Unsuitable fire extinguishers

Water - full flow.

5.2. Special hazards arising from the substance or mixture

In contact with air, dust can form an explosive mixture.

5.3. Instructions for firefighters

Do not inhale combustion fumes. Use self-contained breathing apparatus and chemical protective suit. Closed containers with cool the product with water near a fire. Do not let the contaminated extinguishing agent escape into the sewers, surface and groundwater.

SECTION 6: Accidental release measures

6.1. Personal protection measures, protective equipment and emergency procedures

Use personal protective work equipment. Follow instructions contained in sections 7 and 8. Do not inhale dust. Avoid contact with skin and eyes.

6.2. Environmental protection measures

Avoid soil contamination and release to surface or ground water.

6.3. Methods and material for containment and cleaning up

Collect mechanically (sweep, vacuum), collect in well-closed containers and dispose of according to section 13. In case of spillage large quantities of the product, inform the fire department and other competent authorities. After removing the product, wash the contaminated instead of a large amount of water.

6.4. Link to other sections

See sections 7, 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid dust generation/swirling. Avoid exceeding the highest permissible concentration for the working atmosphere. Do not inhale dust. Avoid contact with skin and eyes. Wash hands and affected body parts thoroughly after handling. Use it only outdoors or in well-ventilated areas. Use personal protective equipment according to section 8. Take care to the applicable legal regulations on safety and health protection.

7.2. Conditions for safe storage of substances and mixtures, including incompatible substances and mixtures

Store in tightly closed containers in cool, dry and well-ventilated places designated for this purpose. Store locked. Keep the package tightly closed.

Contents	Type of packaging	Packaging material
25 kg	bag / sack bag /	HDPE
500 kg	sack bag / sack	PP
1000 kg		PP



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Storage temperature

minimum 10 °C, maximum 30 °C

7.3. Specific end/specific end uses

See section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Czech Republic

government regulation 361/2007 Coll. as amended

Name of substance	Type	Value	Conversion to ppm
(ingredient) citric acid monohydrate (CAS: 5949-29-1)	PELc	4.0 mg/m ³	

Czech Republic

Government Regulation 41/2020 Coll.

Name of substance	Type	Value	Conversion to ppm
(ingredient) citric acid (CAS: 5949-29-1)	PELc	4.0 mg/m ³	

PNEC

citric acid monohydrate

Exposure route	Value	Determination of value	Source
Freshwater environment	0.44 mg/l		
Sea water	0.044 mg/l		
Microorganisms in cleaning plants wastewater	1000 mg/l		
Freshwater sediments	34.6 mg/kg dry weight sediment		
Marine sediments	3.46 mg/kg dry matter sediment		
Land (agricultural)	33.1 mg/kg dry weight soil		

8.2. Limiting exposure

Observe the usual measures to protect health at work. Ensure adequate ventilation. Avoid contact with eyes and skin. Keep away from food, drink and feed. Do not eat, drink or smoke while working. After work and before a meal break and rest, wash your hands thoroughly with soap and water.

Eye and face protection

Goggles.

Skin protection

Hand protection: Protective gloves resistant to the product. Follow the recommendations of the specific glove manufacturer when choosing a suitable one thickness, material and permeability. In case of skin contamination, wash it thoroughly.

Respiratory protection

Half mask with dust filter when exposure limits of substances are exceeded or in a poorly ventilated environment.

Thermal hazard

Not listed.

Limiting environmental exposure

Observe the usual environmental protection measures, see point 6.2.

Additional information

An exposure scenario is attached to the safety data sheet.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Solid state

Color colorless, white

Odor

odorless



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Melting point/freezing point	153°C
Boiling point or initial boiling point and boiling range	cannot be determined - decomposition occurs
Combustibility	not flammable
Lower and upper explosive limits	the data is not available
Flash-point	not determined
Auto-ignition temperature	the data is not available
pH decomposition temperature	>175 °C
Kinematic viscosity	1.5-2 (1-10% solution)
Solubility in water	the data is not available
Partition coefficient n-octanol/water (log value)	soluble
Steam pressure	log Pow -1.67
Density and/or relative density density	<0.001 hPa at 25 °C
Form	1.54 g/cm³ at 20 °C
9.2. More information	solid: particles / powder
Oxidizing properties	does not have oxidizing properties
Explosive properties	The product is not explosive, but may form explosives with air mixtures.
Dust class: St(H)1	

SECTION 10: Stability and reactivity

10.1. Reactivity

The substance is non-flammable.

10.2. Chemical stability

The product is stable under normal conditions.

10.3. Possibility of hazardous reactions

They are not known.

10.4. Conditions to avoid

Under normal use, the product is stable, does not decompose. Protect from flames, sparks, overheating and from cold.

10.5. Incompatible materials

Protect from strong acids, bases and oxidizing agents.

10.6. Hazardous decomposition products

They do not arise under normal use. At high temperatures and in case of fire, dangerous products such as oxide are formed carbon dioxide and carbon dioxide.

SECTION 11: Toxicological information

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

not specified

Acute toxicity

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

citric acid monohydrate

Exposure path	Parameter	Method	Value	Time exposure	Species	Sex	Source
Orally	LD50		5400 mg/kg		Mouse		acid lemon anhydrous
Orally	LD50		3000 mg/kg		Rat		acid lemon anhydrous



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Exposure path	Parameter	Method	Value	Time exposure	Species	Sex	Source
Dermal	LD50		2700 mg/kg		Mouse		acid lemon anhydrous
Dermal	LD50	OECD 402	>2000 mg/kg		Rat		

Skin corrosion/irritation

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

citric acid monohydrate

Exposure route	Result	Exposure time	Species	Source
Skin	Mildly irritating	72 hours	Rabbit	acid lemon anhydrous

Serious eye damage / eye irritation

Causes serious eye irritation.

citric acid monohydrate

Exposure route	Result	Exposure time	Species	Source
Eye	Strongly irritating	72 hours	Rabbit	acid lemon anhydrous

Respiratory sensitization / skin sensitization

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

Germ cell mutagenicity

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

Carcinogenicity

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

Reproductive toxicity

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

Specific target organ toxicity - single exposure

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

Specific target organ toxicity - repeated exposure

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

citric acid monohydrate

Way exposure	Parameter	Value	Exposure time	Result	Species	Sex	Source
	NOAEL	4000 mg/kg TH/day	10 day		Rat		acid lemon anhydrous
	NOAEL	1200 mg/kg TH/day	2 year		Rat		acid lemon anhydrous

Inhalation hazard

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

11.2. Information on additional hazards

not specified

SECTION 12: Ecological information

12.1. Toxicity



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Acute toxicity

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Parameter	Value	Exposure time	Species	Environment	Source
LC50	>440 mg/kg	96 hours	Fish (Leuciscus idus)		
LC50	1516 mg/kg	96 hours	Fish (Lepomis macrochirus)		acid lemon anhydrous
EC50	120 mg/kg	72 hours	Daphnia (Daphnia great)		acid lemon anhydrous
EC50	>1000 mg/kg	4 p.m	Microorganisms (Pseudomonas putida)		acid lemon anhydrous

12.2. Persistence and degradability

Biodegradability

citric acid monohydrate

Parameter	Value	Exposure time	Environment	Result	Source
	98%	2 day		Easy biologically degradable	acid lemon anhydrous

12.3. Bioaccumulative potential

citric acid monohydrate

Parameter	Value	Exposure time	Species	Environment	Temperature [°C]	Source
BCF	0.01					acid lemon anhydrous
Log Pow	-1.67					

Low.

12.4. Mobility in soil

Data not available.

12.5. Results of PBT and vPvB assessment

The product does not contain substances meeting the criteria for PBT or vPvB substances in accordance with Annex XIII, Regulation (EC) no. 1907/2006 (REACH) as amended.

12.6. Endocrine-disrupting properties

not specified

12.7. Other adverse effects

Not listed.

SECTION 13: Disposal considerations

13.1. Waste management methods

Follow the applicable waste disposal regulations. Store the unused product and soiled packaging in the designated areas containers for waste collection and hand over for disposal to an authorized waste disposal person (a specialized company) who has authorization for this activity. Do not pour the unused product down the drain. It must not be removed together with communal wastes. Empty packaging can be used for energy in a waste incinerator or stored in a landfill of the appropriate classification. Perfectly cleaned packaging can be sent for recycling.

Waste legislation

Act No. 545/2020 Coll., amending Act No. 477/2001 Coll., on packaging and amending certain laws (Act on Packaging), as amended. Act No. 541/2020 Coll., on waste, as amended. Decree No. 8/2021 Coll., on the Catalogue of waste and assessment of waste properties (Waste Catalogue). Decision 2000/532/EC establishing a list of wastes, as amended. Decree No. 273/2021 Coll., on the details of waste management.



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SECTION 14: Transport information

14.1. UN number or ID number

not subject to transport regulations

14.2. Official (UN) shipping name

not relevant

14.3. Transport hazard class(es).

not relevant

14.4. Packaging group

not relevant

14.5. Danger to the environment

not relevant

14.6. Special safety measures for users

not specified

14.7. Maritime bulk transport according to IMO instruments

not relevant

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 on the registration, assessment, authorization and restriction of chemical substances, on the establishment of the European Agency for Chemical Substances, on the amendment of Directive 1999/45/EC and on the repeal of Council Regulation (EEC) No. 793/93, Commission Regulation (EC) No. 1488/94, Council Directive 76/769/EEC and Commission Directive 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended. Regulation of the European Parliament and of the Council (EC) No. 1272/2008 of 16 December 2008 on the classification, labeling and packaging of substances and mixtures, on the amendment and repeal of directives 67/548/EEC and 1999/45/EC and amending Regulation (EC) No. 1907/2006, as amended. Act No. 350/2011 Coll., on Chemical Substances and Chemical Mixtures and on the amendment of some laws (chemical law). Act No. 258/2000 Coll., on the protection of public health, as amended. Government Regulation No. 361/2007 Coll., which establishes the conditions for health protection at work, as amended. Decree No. 190/2018 Coll., which amends Decree No. 415/2012 Coll., on the permissible level of pollution and its detection and on the implementation of certain other provisions of the Air Protection Act, as amended. Act No. 541/2020 Coll., on waste, in its final wording. Act No. 201/2012 Coll., on air protection, as amended. Decree No. 432/2003 Coll., which establishes conditions for classifying works into categories, limit values of biological exposure test indicators, sampling conditions of biological material for carrying out biological exposure tests and requirements for reporting work with asbestos and biological agent, as amended.

15.2. Chemical safety assessment

It was done.

SECTION 16: Further information

List of standard hazard statements used in the safety data sheet

H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

List of safe handling instructions used in the safety data sheet

P261 Avoid breathing dust.
P264 Wash hands and affected body parts thoroughly after handling.
P280 Wear protective gloves/protective clothing/safety glasses.
P305+P351+P338 IF IN EYES: Rinse carefully with water for several minutes. Remove contact lenses, if fitted and if they can be removed easily. Continue rinsing.
P337+P313 If eye irritation persists: Get medical attention/treatment.

Additional information important from the point of view of safety and protection of human health

The product may not - without the special consent of the manufacturer/importer - be used for a purpose other than that specified in section 1.
The user is responsible for compliance with all related health regulations.

Legend to abbreviations and acronyms used in the safety data sheet

ADR European agreement on the international transport of dangerous goods by road
BCF Bioconcentration factor
TIME Chemical Abstracts Service
CLP Regulation (EC) No. 1272/2008 on classification, labeling and packaging of substances and mixtures



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EC50	The concentration of a substance at which 50% of the population is affected
EINECS	European list of existing traded chemical substances
EmS	Contingency plan
EC	The EC number is a numerical identifier of substances on the EC list
EU	European Union
EuPCS	European product categorization system
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Goods in Bulk chemicals
ICAO	International Civil Aviation Organization
IMDG	International maritime transport of dangerous goods
INCI	International nomenclature of cosmetic ingredients
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LC50	Lethal concentration of a substance that can be expected to cause the death of 50% of the population
LD50	Lethal dose of a substance that can be expected to cause the death of 50% of the population
log Kow	Octanol-water partition coefficient
MARPOL	International Convention for the Prevention of Pollution from Ships
NOAEL	No-observed-adverse-effect dose value
NPK	The highest permissible concentration
OEL	Exposure limits in the workplace
PBT	Persistent, bioaccumulative and toxic
PEL	Permissible exposure limit
PNEC	An estimate of the concentration at which no adverse effects occur
ppm	Number of particles per million (millionth)
REACH	Registration, evaluation, authorization and restriction of chemical substances
RID	Agreement on the transport of dangerous goods by rail
UN	The four-digit identification number of the substance or article taken from the UN Model Regulations
UVCB	A substance of unknown or variable composition, a complex reaction product, or biological material
VOCs	Volatile organic compounds
vPvB	Highly persistent and highly bioaccumulative
Eye Irritation.	Eye irritation
HUNDRED	Specific target organ toxicity - single exposure

Training Guidelines

Familiarize workers with the recommended method of use, mandatory protective equipment, first aid and prohibited items manipulations with the product.

Recommended use restrictions

not specified

Information on data sources used in compiling the safety data sheet

Regulation of the European Parliament and of the Council (EC) No. 1907/2006 (REACH), as amended. Regulation of the European Parliament a Council (EC) No. 1272/2008, as amended. Act No. 350/2011 Coll., on chemical substances and chemical mixtures, in force wording. Data from the manufacturer of the substance/mixture, if available - data from the registration documentation.

Changes made (which information was added, deleted or modified)

Version 2.0 replaces version 1.0 BL dated 06/23/2017. New edition.

Additional information

Data taken from the manufacturer/supplier's safety data sheet.

Declaration

The safety data sheet contains information to ensure safety and health protection at work and environmental protection.
The given data correspond to the current state of knowledge and experience and are in accordance with valid legal regulations.
They cannot be considered as a guarantee of suitability and usability of the product for a specific application.

EXPOSURE SCENARIOS – CITRIC ACID

Addendum: Identified Use						
Name	Categories use	Product category Process	category	Category subjects	Release to the environment	SPERC
Fabric production	SU8	PC19	PROC1, PROC2, PROC3, PROC4, PROC8b		ERC1	
Use as intermediate SU8, SU9		PC19	PROC1, PROC2, PROC3, PROC4, PROC8b		ERC6a	
Formulation of preparations	SU5, SU10, SU13, SU20	PC1, PC3, PC9a, PC9b, PC9c, PC12, PC18, PC30, PC31, PC35, PC39	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC19		ERC1, ERC2, ERC3, ERC4	
Personal care	SU20	PC2, PC39	PROC10, PROC11, PROC19	AC8	ERC8a, ERC11a	
Personal care	SU20	PC2, PC39	PROC10, PROC11, PROC19	AC8	ERC8a, ERC11a	
Personal care	SU20	PC2, PC39		AC8	ERC8a, ERC11a	
Use in cleaning agents	SU3	PC3, PC28, PC31, PC35, PC36, PC37	PROC2, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13	AC8, AC35	ERC2, ERC4, ERC8a, ERC8b, ERC9a, ERC9b	
Use in cleaning agents	SU3	PC3, PC28, PC31, PC35, PC36, PC37	PROC1, PROC4, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC19	AC8, AC35	ERC2, ERC4, ERC8a, ERC8d, ERC9a, ERC9b	
Use in cleaning products	SU21	PC3, PC28, PC31, PC35, PC36, PC37		AC8, AC35	ERC8a, ERC8d, ERC9a, ERC9b	
Paper industry	SU6b	PC26	PROC5, PROC8a		ERC4	
Construction application	SU2a, SU2b, SU10, SU19		PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24	AC4	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a	
Construction application	SU2a, SU2b, SU10, SU19		PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24	AC4	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a	
Construction application	SU2a, SU2b, SU10, SU19	PC1, PC9b		AC4	ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	
Production of polymers Production of plastics	SU11, SU12	PC32	PROC3, PROC5, PROC8a, PROC8b		ERC1, ERC6b	
Drilling method and production method in oil fields	SU2a, SU2b	PC20, PC40	PROC3, PROC4, PROC5, PROC8a, PROC8b		ERC8d	
Textile	SU5	PC20, PC23, PC34	PROC8a, PROC8b, PROC10, PROC13, PROC22	AC5, AC6	ERC4	
Use in coating, Colors	SU17, SU18, SU19	PC9a, PC9b, PC9c, PC18, PC34	PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24	AC4, AC11	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	
Use in coating, Colors	SU17, SU18, SU19	PC9a, PC9b, PC18, PC34	PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24	AC4, AC11	ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	
Use in coating, Colors	SU17, SU18, SU19, SU21	PC9a, PC18, PC34		AC4, AC11	ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b	
Photography activities	SU20	PC30	PROC5, PROC9, PROC13		ERC8a	
Photography activities	SU20	PC30			ERC8a	
Use as a laboratory reagent	SU3	PC4, PC16, PC20, PC37	PROC1, PROC2, PROC4, PROC8a		ERC4, ERC7, ERC8f	

EXPOSURE SCENARIOS – CITRIC ACID

Addendum: Identified Use						
Name	Categories use	Product category Process	category	Category subjects	Release to the environment	SPERC
Preparations for water treatment	SU14, SU15, SU16, SU17	PC4, PC7, PC14, PC16, PC17, PC20, PC25, PC31, PC35, PC37	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC20, PROC23		ERC4, ERC6b, ERC7	
Preparations for surface treatment of metals	SU14, SU15, SU16, SU17	PC7, PC14, PC25, PC31, PC35	PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23		ERC4, ERC6b	
Agriculture	SU1	PC8, PC12, PC21	PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19		ERC2, ERC4, ERC8b, ERC8d	
Agriculture	SU1	PC8, PC12, PC21	PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19		ERC2, ERC4, ERC8b, ERC8d	
Agriculture	SU1	PC8, PC12, PC21			ERC8b, ERC8d	
Medical devices SU20		PC20	PROC1		ERC7	
Medical devices SU22		PC20	PROC1		ERC7	
Medical devices SU21		PC20			ERC7	

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 01

Fabrication EC Ref. no: 01
EC type: Worker

Usage descriptors	PROC1, PROC2, PROC3, PROC4, PROC8b PC19 SU8 ERC1
Processes covered by activities associated with tasks	Use as an intermediate product Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1.1 Sub-scenario controlling worker exposure (PROC1)

PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions
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Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/year):	350
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight: Breathing	70 kg Default
	volume Includes	10 m³/d Default
	skin contact area up to Measures for	Palm of one hand (240 cm²)
Other given operating conditions that affect environmental exposure	ventilation and venting It is based on	Not used.
	the implementation of an appropriate standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist). In high concentrations: Use self-contained breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.1.2 Sub-scenario controlling worker exposure (PROC2, PROC4)

PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.

Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/year):	350
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	Palms of both hands (480 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

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Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist), In high concentrations: Use self-contained breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.1.3 Subscenario controlling worker exposure (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
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Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/year):	350
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	Palm of one hand (240 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.1.4 Sub-scenario controlling worker exposure (PROC8b)

PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
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Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/year):	350
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	Palms of both hands (480 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 95
	It is based on the implementation of a suitable standard for occupational hygiene.	

EXPOSURE SCENARIOS – CITRIC ACID

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist)	
	In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC1)

ERC1	Fabric production
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Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	100000 t/year
	Regional amount of use (tons/year):	10000 t/year
	Annual site tonnage (tons/year):	10000 t/year
	Locally used part of regional tonnage:	30 tons/day
Environmental factors unaffected by risk management	Local drinking water dilution factor:	900
	Local seawater dilution factor:	1000
Other operating conditions related to environmental exposure	Proportion of release to air from the process (initial release before RMM):	0
	Proportion of release to process wastewater (initial release before RMM):	0.0001

Risk management measures

Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Wastewater pretreatment	Before discharge to the treatment plant wastewater must be neutralized
	Treatment of waste water	Central biological treatment of wastewater
	Alleged ratio of domestic waste water (m3/d):	10000 m³/d
Conditions and measures related to the sewage treatment plant	None/no one	
Conditions and measures for external treatment of sewage waste	The proportion of the quantity used that will be supplied by external waste management	No specific dates
Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.
	Retain sludge.	fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1.1	ECETOC TRA model used (May 2010 version)
2.1.2	ECETOC TRA model used (May 2010 version)
2.1.3	ECETOC TRA model used (May 2010 version)
2.1.4	ECETOC TRA model used (May 2010 version)

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 02

Use as intermediate EC Ref. no: 02

EC type: Worker

Usage descriptors	PROC1, PROC2, PROC3, PROC4, PROC8b PC19 SU8, SU9 ERC6a
Processes covered by activities associated with tasks Use as an intermediate product	Production of heavy, bulk chemicals (including petroleum products) Production of light chemicals Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1.1 Sub-scenario controlling worker exposure (PROC1)

PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions
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Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/	300
	year): Exposure	1 case per day
	time Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to Measures	Palm of one hand (240 cm²)
Other given operating conditions that affect environmental exposure	for ventilation and venting It is based	Not used.
	on the implementation of an appropriate standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist)	
	In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.1.2 Subscenario controlling worker exposure (PROC2)

PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
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Product features

Physical form	Crystalline solid, powder
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)
Other product features	Risk of dust explosion, irritant

Operating conditions

Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to	Palms of both hands (480 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	Use in case of insufficient ventilation suitable breathing apparatus, (Dust/Mist)	
	In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

EXPOSURE SCENARIOS – CITRIC ACID

2.1.3 Subscenario controlling worker exposure (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions	
Product features		
Physical form	Crystalline solid, powder	
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)	
Other product features	Risk of dust explosion, irritant	
Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to	Palm of one hand (240 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	
Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.1.4 Subscenario controlling worker exposure (PROC4)

PROC4	Chemical production with potential exposure.	
Product features		
Physical form	Crystalline solid, powder	
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)	
Other product features	Risk of dust explosion, irritant	
Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to	Palms of both hands (480 cm2)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	
Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.1.5 Sub-scenario controlling worker exposure (PROC8b)

PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities	
Product features		
Physical form	Crystalline solid, powder	
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)	
Other product features	Risk of dust explosion, irritant	

EXPOSURE SCENARIOS – CITRIC ACID

Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to	Palms of both hands (480 cm ²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 95
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC6a)

intermediate product		
ERC6a	Using an intermediate	

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	100000 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Wastewater pretreatment	Neutralization must be carried out before discharge to the sewage treatment plant
	Treatment of waste water	Central biological treatment of wastewater
Conditions and measures related to the sewage treatment plant	None/no one	
Conditions and measures for external treatment of sewage waste	The proportion of the quantity used that will be supplied by external waste management	No specific dates
Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.
	Retain sludge.	fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1.1	ECETOC TRA model used (May 2010 version)
2.1.2	ECETOC TRA model used (May 2010 version)
2.1.3	ECETOC TRA model used (May 2010 version)
2.1.4	ECETOC TRA model used (May 2010 version)
2.1.5	ECETOC TRA model used (May 2010 version)

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 03

Formulation of preparations ES Ref. no: 03
EC type: Worker

Usage descriptors	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC19 PC1, PC3, PC9a, PC9b, PC9c, PC12, PC18, PC30, PC31, PC35, PC39 SU5, SU10, SU13, SU20 ERC1, ERC2, ERC3, ERC4
Processes covered by task activities Adhesives, sealants, air fresheners, coatings and paints Fillers and sealants thinners Fertilizers Photochemical ink and toners Washing and cleaning products (including solvent-based products), cosmetics, personal care products Production of textiles, leather, furs Formulation [mixing] of preparations and/or their repackaging (except alloys) Production of other non-metallic mineral products, e.g. cement mixtures, cement Health services Use in industrial facilities (IS)	
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1.1 Sub-scenario controlling worker exposure (PROC1)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC1 Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions	

Product features

Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, volatility, high

Operating conditions

Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m ³ /day
	Includes skin contact area up to	Palm of one hand (240 cm ²)
Other given operating conditions that affect environmental exposure	Local exhaust ventilation	Not used.
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.2 Sub-scenario controlling worker exposure (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC14)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC2 Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions	
PROC4	Chemical production with potential exposure.
PROC5	Mixing or mixing in batch production processes
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC9	Transport of substance or preparation in small containers (specialized filling line, including weighing)
PROC14	Tableting, compression, extrusion, pelletization, granulation

Product features

Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, volatility, high

Operating conditions

Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m ³ /day
	Includes skin contact area up to	Palms of both hands (480 cm ²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

EXPOSURE SCENARIOS – CITRIC ACID

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.3 Sub-scenario controlling worker exposure (PROC3, PROC15)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).		
processes with equivalent control conditions	Manufacture or formulation in the chemical industry in closed batch processes with occasional PROC3 controlled exposure or in	
PROC15	Use as a laboratory reagent	

Product features

Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, volatility, high

Operating conditions

Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m³/day
	Includes skin contact area up to	Palm of one hand (240 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.4 Subscenario controlling worker exposure (PROC7)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).		
PROC7	Spraying techniques in industrial facilities.	

Product features

Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, volatility, high

Operating conditions

Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m³/day
	Includes skin contact area up to	hands and forearms (1500 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.5 Sub-scenario controlling worker exposure (PROC8a)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).		
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities	

Product features

Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, volatility, high

EXPOSURE SCENARIOS – CITRIC ACID

Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m³/day
	Includes skin contact area up to	Both hands (960 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.6 Sub-scenario controlling worker exposure (PROC13)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).		
PROC13	Treatment of objects by dipping and pouring	

Product features	
Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, Volatility, low

Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m³/day
	Includes skin contact area up to	Palms of both hands (480 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

2.1.7 Sub-scenario controlling worker exposure (PROC19)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).		
PROC19	Manual activities involving hand contact	

Product features	
Physical form	Crystalline solid, powder
Other product features	Risk of dust explosion, irritant, Volatility, low

Operating conditions		
Frequency and duration of use	Emission days (days/year):	300
	Exposure time	1 case per day
	Exposure time	>4 h
Human factors that are not affected by risk management	Body weight:	70 kg
	Tidal volume	10 m³/day
	Includes skin contact area up to	hands and forearms (1980 cm²)
Other given operating conditions that affect environmental exposure	With local suction	Local ventilation efficiency minimum [%]: 90
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	For further specifications see section 8 of the safety data sheet.	

EXPOSURE SCENARIOS – CITRIC ACID

2.2 Sub-scenario controlling environmental exposure (ERC1, ERC2, ERC3, ERC4)

Adhesives, sealants, air fresheners, Coatings and paints, fillers, trowels, thinners, fertilizers, ink and toners, Photochemical substances, polishes and wax mixtures, Washing and cleaning products (including solvent-based products), Cosmetics, personal care products.	
ERC1	Fabric production
ERC2	Formulation into the mixture
ERC3	Formulation into a solid base
ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)

Product features

There is no additional information

Operating conditions

Quantity used	Daily quantity per plant	20 tons/day
	Annual site tonnage (tons/year):	6000 t/year
Frequency and duration of use	Emission days (days/year):	300 days/year
Other operating conditions related to environmental exposure	Proportion of release to air from the process (initial release before RMM):	0.025
	Proportion of release to process wastewater (initial release before RMM):	0.02

Risk management measures

Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Wastewater pretreatment	Neutralization must be carried out before discharge to the sewage treatment plant
	Wastewater treatment	No specific dates
	Alleged ratio of domestic waste water (m3/d):	10000 m3/d
Conditions and measures related to the sewage treatment plant	External waste processing	It applies
Conditions and measures for external treatment of sewage waste	The proportion of the quantity used that will be supplied by external waste management	No specific dates
Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1.1	ECETOC TRA model used (May 2010 version)
2.1.2	ECETOC TRA model used (May 2010 version)
2.1.3	ECETOC TRA model used (May 2010 version)
2.1.4	ECETOC TRA model used (May 2010 version)
2.1.5	ECETOC TRA model used (May 2010 version)
2.1.6	ECETOC TRA model used (May 2010 version)
2.1.7	ECETOC TRA model used (May 2010 version)

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 04a

Personal Care ES Ref. no: 04a
EC type: Worker

Usage descriptors	PROC10, PROC11, PROC19 PC2, PC39 AC8 SU20 ERC8a, ERC11a
Processes covered by activities associated with the tasks	of the Health Service Cosmetics, personal care products Adsorbents Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC1)

Personal Care: REACH Exemption	
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC19	Manual activities involving hand contact

Product features

There is no additional information

Operating conditions

There is no additional information

Risk management measures

There is no additional information

2.2 Sub-scenario controlling environmental exposure (ERC8a, ERC11a)

ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
ERC11a	Wide use of articles with a low release value (indoors)

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	7500000 t/year
	Regionally applicable share of EU tonnage:	0.1
	Regional amount of use (tons/year):	750000 t/year
	Locally used part of regional tonnage:	7500 t/year
Frequency and duration of use	Emission days (days/year):	365 days/year
Environmental factors unaffected by risk management	Local drinking water dilution factor:	900
	Local seawater dilution factor:	1000
Other operating conditions related to environmental exposure	Proportion of release to air from the process (initial release before RMM):	0
	Proportion of release to wastewater from the process (initial release before RMM):	1

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	Not used.

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	Not applicable
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 04b

Personal Care ES Ref. no: 04b
EC type: Worker

Usage descriptors	PROC10, PROC11, PROC19 PC2, PC39 AC8 SU20 ERC8a, ERC11a
Processes covered by activities associated with the tasks of the Health Service	Cosmetics, personal care products Adsorbents Widely used by professional workers (PW)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC10, PROC11, PROC19)

Personal Care: Exemption from the REACH Regulation	
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC19	Manual activities involving hand contact

Product features

There is no additional information

Operating conditions

There is no additional information

Risk management measures

There is no additional information

2.2 Sub-scenario controlling environmental exposure (ERC8a, ERC11a)

ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
ERC11a	Wide use of articles with a low release value (indoors)

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	7500000 t/year
	Regionally applicable share of EU tonnage:	0.1
	Regional amount of use (tons/year):	750000 t/year
	Locally used part of regional tonnage:	7500 t/year
Frequency and duration of use	Emission days (days/year):	365 days/year
Environmental factors unaffected by risk management	Local drinking water dilution factor:	900
	Local seawater dilution factor:	1000
Other operating conditions related to environmental exposure	Proportion of release to air from the process (initial release before RMM):	0
	Proportion of release to process wastewater (initial release before RMM):	1

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	Not used.

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	Not applicable
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 04c

Personal Care ES Ref. no: 04c

EC type: Consumer

Usage descriptors	PC2, PC39 AC8 SU20 ERC8a, ERC11a
Processes covered by activities associated with tasks	Consumer use, e.g. as a carrier in cosmetic products and products personal care, perfumes and fragrances. Note: Only an environmental risk assessment is required under REACH for cosmetics and personal care products, as risks to human health are covered by other regulations Health services Adsorbents Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC2, PC39)

Health services, adsorbents, cosmetics, personal care products	
PC2	Adsorbents
PC39	cosmetics, personal care products

Product features

There is no additional information

Operating conditions

Additional operational conditions related to exposure of use	Exemption: use in cosmetic products and substance not classified as PBT or vPvB	
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Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable	
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2.2 Sub-scenario controlling environmental exposure (ERC8a, ERC11a)

Adsorbents, cosmetics, preparations for personal care There are no specific risk management measures on operating conditions.	
ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
ERC11a	Wide use of articles with a low release value (indoors)

Product features

There is no additional information

Operating conditions

Quantity used	Annual habitat tonnage (tons/year):	7500000
Frequency and duration of use	Period of use/release.	365 days/year
Environmental factors unaffected by risk management	Local drinking water dilution factor: Local	900
	seawater dilution factor: Regionally usable	1000
Other operating conditions related to environmental exposure	share of EU tonnage: Regional amount of use	10%
	(tons/year): Locally used part of regional	750000 t/year
	tonnage: Daily amount per plant, (average)	7500 t/year
		1030 kg/day
	Major local resource fraction	0.0005

Risk management measures

Conditions and measures related to the external use of waste	Solid waste	It can be in harmony with the locals regulations landfilled or incinerated.
	Retain sludge.	fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 Not used.	

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	Not applicable
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 05a

Use in cleaning agents EC Ref. no: 05a

EC type: Worker

Usage descriptors	PROC2, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13 PC3, PC28, PC31, PC35, PC36, PC37 AC8, AC35 SU3 ERC2, ERC4, ERC8a, ERC8b, ERC9a, ERC9b
Processes covered by activities associated with Air Freshener tasks	Car care products (spray, liquid) Perfumes, fragrances Polishes and wax mixtures Washing and cleaning products (including solvent-based products) Water softeners Preparations for water treatment Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1.1 Sub-scenario controlling worker exposure (PROC2, PROC4)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC2 Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions	
PROC4	Chemical production with potential exposure.

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25% Unless otherwise stated
Other product features	Volatility, low

Operating conditions

Frequency and duration of use	Emission days (days/year): Exposure time Exposure time	365 1 case per day >4 h
Other given operating conditions that affect environmental exposure	Local exhaust ventilation It is based on the implementation of a suitable standard for occupational hygiene.	Not used.

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene. Wear gloves, Safety glasses, Wear work clothes with long sleeves. For further specifications see section 8 of the safety data sheet.	
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2.1.2 Subscenario controlling worker exposure (PROC7)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC7	Spraying techniques in industrial facilities.

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25% Unless otherwise stated
Other product features	volatility, high

Operating conditions

Frequency and duration of use	Emission days (days/year): Exposure time Exposure time	365 1 case per day >4 h
Human factors that are not affected by risk management	Includes skin contact area up to	hands and forearms (1500 cm²)
Other given operating conditions that affect environmental exposure	With local suction It is based on the implementation of a suitable standard for occupational hygiene.	Local ventilation efficiency minimum [%]: 95

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene. Wear gloves, Safety glasses, Wear work clothes with long sleeves. For further specifications see section 8 of the safety data sheet.	
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2.1.3 Sub-scenario controlling worker exposure (PROC8a, PROC10)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC10 Application by roller or brush.	

EXPOSURE SCENARIOS – CITRIC ACID

Product features		
Physical form	Coarse-grained solid, aqueous solution	
Concentration of the substance in the mixture/article	>25%	
	Unless otherwise stated	
Other product features	Volatility, low	
Operating conditions		
Frequency and duration of use	Emission days (days/	365
	year): Exposure	1 case per day
	time Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to Local exhaust	Both hands (960 cm²)
Other given operating conditions that affect environmental exposure	ventilation It is based on the	Not used.
	implementation of an appropriate standard for occupational hygiene.	
Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear gloves, Safety glasses, Wear work clothes with long sleeves.	
	For further specifications see section 8 of the safety data sheet.	

2.1.4 Sub-scenario controlling worker exposure (PROC8b, PROC9, PROC13)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC9	Transport of substance or preparation in small containers (specialized filling line, including weighing)
PROC13	Treatment of objects by dipping and pouring

Product features		
Physical form	Coarse-grained solid, aqueous solution	
Concentration of the substance in the mixture/article	>25%	
	Unless otherwise stated	
Other product features	Volatility, low	
Operating conditions		
Frequency and duration of use	Emission days (days/	365
	year): Exposure	1 case per day
	time Exposure time	>4 h
Human factors that are not affected by risk management	Includes skin contact area up to Local exhaust	Palms of both hands (480 cm2)
Other given operating conditions that affect environmental exposure	ventilation It is based on the	Not used.
	implementation of an appropriate standard for occupational hygiene.	
Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear gloves, Safety glasses, Wear work clothes with long sleeves.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC2, ERC4, ERC8a, ERC8b, ERC9a, ERC9b)

ERC2	Formulation into the mixture
ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
ERC8b	Wide use of reactive excipient (without incorporation into the object or its surface, indoors)
ERC9a	Wide use of functional fluid (in indoor spaces)
ERC9b	Wide use of functional liquid (in outdoor areas)

Product features		
Other product features	Easily biodegradable	
Operating conditions		
Quantity used	Quantity used	100000 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures		
Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Wastewater pretreatment	Neutralization must be carried out before discharge to the sewage treatment plant
	Treatment of waste water	Central biological treatment of wastewater
Conditions and measures related to the sewage treatment plant	None/no one	
Conditions and measures for external treatment of sewage waste	The proportion of the quantity used that will be supplied by external waste management	No specific dates

EXPOSURE SCENARIOS – CITRIC ACID

Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.
	Retain sludge.	Fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1.1	ECETOC TRA model used (May 2010 version)
2.1.2	ECETOC TRA model used (May 2010 version)
2.1.3	ECETOC TRA model used (May 2010 version)
2.1.4	ECETOC TRA model used (May 2010 version)

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 05b

Use in cleaning agents EC Ref. no: 05b

EC type: Worker

Usage descriptors	PROC1, PROC4, PROC8a, PROC9, PROC10, PROC11, PROC13, PROC19 PC3, PC28, PC31, PC35, PC36, PC37 AC8, AC35 SU3 ERC2, ERC4, ERC8a, ERC8d, ERC9a, ERC9b
Processes covered by activities associated with Air Freshener tasks	Car care products (spray, liquid) Perfumes, fragrances Polishes and wax compounds Washing and cleaning products (including solvent-based products) Water softeners Preparations for water treatment Widely used by professional workers (PW)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1.1 Sub-scenario controlling worker exposure (PROC1, PROC4, PROC13)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC13	Treatment of objects by dipping and pouring

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25% Unless otherwise stated
Other product features	Volatility, low

Operating conditions

Amount used	Daily quantity per plant	10 kg
Frequency and duration of use	Emission days (days/year):	365
	Exposure time	1 case per day
	Exposure time	15 minutes Detergents and dishwashing detergents
	Exposure time	30 minutes Car care products (spray, liquid)
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
Other given operating conditions that affect environmental exposure	Liquid	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.
	Local exhaust ventilation	Not used.

Risk management measures

Technical conditions and measures to control dispersion from the source towards the worker	Not applicable	
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2.1.2 Sub-scenario controlling worker exposure (PROC8a, PROC10)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).	
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC10	Application by roller or brush.

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25% Unless otherwise stated
Other product features	Volatility, low

Operating conditions

Quantity used	Daily quantity per plant	10 kg
Frequency and duration of use	Emission days (days/year):	365
	Exposure time	1 case per day
	Exposure time	15 minutes Detergents and dishwashing detergents
	Exposure time	30 minutes Car care products (spray, liquid)
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	Both hands (960 cm²)

EXPOSURE SCENARIOS – CITRIC ACID

Other given operating conditions that affect environmental exposure	Liquid	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.
	Local exhaust ventilation	Not used.

Risk management measures

Technical conditions and measures to control dispersion from the source towards the worker	Not applicable	
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2.1.3 Subscenario controlling worker exposure (PROC9)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).
PROC9 Transport of substance or preparation in small containers (specialized filling line, including weighing)

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25%
	Unless otherwise stated
Other product features	Volatility, low

Operating conditions

Quantity used	Daily quantity per plant	10 kg
Frequency and duration of use	Emission days (days/year):	365
	Exposure time	1 case per day
	Exposure time	15 minutes
	Exposure time	30 minutes
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	Palms of both hands (480 cm²)
Other given operating conditions that affect environmental exposure	Liquid	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.
	Local exhaust ventilation	Not used.

Risk management measures

Technical conditions and measures to control dispersion from the source towards the worker	Not applicable	
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2.1.4 Sub-scenario controlling worker exposure (PROC11)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).
PROC11 Non-industrial spraying techniques.

Product features

Physical form	Coarse-grained solid, aqueous solution
Concentration of the substance in the mixture/article	>25%
	Unless otherwise stated
Other product features	Volatility, low

Operating conditions

Quantity used	Daily quantity per plant	10 kg
Frequency and duration of use	Emission days (days/year):	365
	Exposure time	1 case per day
	Exposure time	15 minutes
	Exposure time	30 minutes
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	hands and forearms (1500 cm²)
Other given operating conditions that affect environmental exposure	Liquid	Checking the pH value
	Coarse-grained solid	The product does not create any dust during application.
	Local exhaust ventilation	Not used.

Risk management measures

Technical conditions and measures to control dispersion from the source towards the worker	Not applicable	
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2.1.5 Sub-scenario controlling worker exposure (PROC19)

Washing and cleaning products (including solvent-based products). Car care products (spray, liquid).
PROC19 Manual activities involving hand contact

EXPOSURE SCENARIOS – CITRIC ACID

Product features		
Physical form	Coarse-grained solid, aqueous solution	
Concentration of the substance in the mixture/article	>25%	
	Unless otherwise stated	
Other product features	Volatility, low	
Operating conditions		
Quantity used	Daily quantity per plant	10 kg
Frequency and duration of use	Emission days (days/year):	365
	Exposure time	1 case per day
	Exposure time	15 minutes Detergents and dishwashing detergents
	Exposure time	30 minutes Car care products (spray, liquid)
Human factors that are not affected by risk management	Body weight:	70 kg Default
	Tidal volume	10 m³/d Default
	Includes skin contact area up to	hands and forearms (1980 cm²)
Other given operating conditions that affect environmental exposure	Liquid	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.
	Local exhaust ventilation	Not used.
Risk management measures		
Technical conditions and measures to control dispersion from the source towards the worker	Not applicable	
2.2 Sub-scenario controlling environmental exposure (ERC2, ERC4, ERC8a, ERC8d, ERC9a, ERC9b)		
ERC2	Formulation into the mixture	
ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)	
ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)	
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)	
ERC9a	Wide use of functional fluid (in indoor spaces)	
ERC9b	Wide use of functional liquid (in outdoor areas)	
Product features		
Other product features	Easily biodegradable	
Operating conditions		
Amount used Other	Quantity used	100000 t/year
operating conditions related to environmental exposure	Not applicable	
Risk management measures		
Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Not applicable	
Conditions and measures related to the sewage treatment plant	None/no one	
Conditions and measures for external treatment of sewage waste	Not used.	
Conditions and measures related to the external use of waste	Not used.	
3. Exposure estimate and reference to its source		
3.1. Health		
Information for supporting exposure scenario		
2.1.1	ECETOC TRA model used (May 2010 version)	
2.1.2	ECETOC TRA model used (May 2010 version)	
2.1.3	ECETOC TRA model used (May 2010 version)	
2.1.4	ECETOC TRA model used (May 2010 version)	
2.1.5	ECETOC TRA model used (May 2010 version)	
3.2. Environment		
Information for supporting exposure scenario		
2.2	EUSES	
4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario		
4.1. Health		
Instructions - health	No data available	
4.2. Environment		
Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.	

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 05c

Use in cleaning agents EC Ref. no: 05c

EC type: Consumer

Usage descriptors	PC3, PC28, PC31, PC35, PC36, PC37 AC8, AC35 SU21 ERC8a, ERC8d, ERC9a, ERC9b
Processes covered by activities associated with tasks	Air fresheners Car care products (spray, liquid) Perfumes, fragrances Polishes and wax compounds Washing and cleaning products (including solvent-based products) Water softeners Preparations for water treatment Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC3, PC28, PC31, PC35, PC36, PC37)

washing and cleaning products (including solvent-based products), Car care products (spray, liquid)	
PC3	air fresheners
PC28	perfumes, scents
PC31	polishes and wax mixtures
PC35	laundry and cleaning products (including solvent-based products)
PC36	water softeners
PC37	preparations for water treatment

Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	Contains up to 25% of the substance in the product, unless otherwise stated

Operating conditions

Human factors that are not affected by risk management	Includes skin contact area up to	Both hands (960 cm²)
Additional operating conditions related to exposure to use Tidal volume		26 m³ Standard values: Washing and cleaning/laundry products/ cleaning fluids
	Includes use at spatial size from {0}.	20 m³
	Body weight:	65 kg Standard values: Washing and cleaning/laundry products/ cleaning fluids
	Hourly ventilation rate	0.6
	Liquids, aqueous solution	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable	
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2.2 Sub-scenario controlling environmental exposure (ERC8a, ERC8d, ERC9a, ERC9b)

surface materials and paints, thinners, surface material removers, ink and toners, preparations for dyeing, finishing and impregnating textiles; including bleaching agents and other auxiliary substances used in the manufacturing process There are no specific risk management measures on operating conditions.	
ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)
ERC9a	Wide use of functional fluid (in indoor spaces)
ERC9b	Wide use of functional liquid (in outdoor areas)

Product features

Other product features	Easily biodegradable
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Operating conditions

Quantity used	Annual habitat tonnage (tons/year):	100000
Frequency and duration of use	Period of use/release.	365 days/year
Environmental factors unaffected by risk management	Local Drinking Water Dilution Factor:	10
	Local Seawater Dilution Factor: Regionally	100
Other operating conditions related to environmental exposure	Usable Share of EU Tonnage: Regional Amount	10%
	of Use (tons/year): Locally Used Portion of	10000 t/year
	Regional Tonnage: Annual Habitat Tonnage (tons/year): Fraction of Major Local Source	200 t/year
		0.01 t/d
		0.0005

EXPOSURE SCENARIOS – CITRIC ACID

Risk management measures

Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.
	Retain sludge.	Fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	No data available

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 06

Paper industry EC Ref. no: 06

EC type: Worker

Usage descriptors	PROC5, PROC8 and PC26 SU6b ERC4
Processes covered by activities associated with tasks	Preparations for the treatment of paper and cardboard Production of wood and wooden products Production of pulp, paper and paper products Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure

Mixing or mixing in batch production processes, Transport of substance or preparation (filling/discharging) from/to containers/
large containers in non-specialized facilities

Preparations for the treatment of paper and cardboard

Product features

Physical form	Liquid, aqueous solution
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Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing apparatus. In high concentrations: Use self-contained breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC4)

Mixing or mixing in batch production processes, Transport of substance or preparation (filling/discharging) from/to containers/
large containers in non-specialized facilities

Preparations for the treatment of paper and cardboard

ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
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Product features

There is no additional information

Operating conditions

Amount used	Amount used Time	1000 t/year
Frequency and duration of use	of use/release.	300 days/year
Other operating conditions related to environmental exposure	Share of leachate in wastewater from widespread use:	67 kg/day

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	It applies
	All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health

No data available

4.2. Environment

Instructions - environment

The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 07a

Construction application ES Ref. no: 07a
EC type: Worker

Usage descriptors	PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24 AC4 SU2a, SU2b, SU10, SU19 ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a
Processes covered by activities associated with the tasks	Preparations for the construction industry, not elsewhere specified. Formulation [mixing] of preparations and/or their repackaging (except alloys) Construction and construction work Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24)

Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Treatment of objects by dipping and pouring. tableting, compression, extrusion or pelletizing. Manual activities involving hand contact.

Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Preparations for construction, not elsewhere specified.

PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC5	Mixing or mixing in batch production processes
PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC13	Treatment of objects by dipping and pouring
PROC14	Tableting, compression, extrusion, pelletization, granulation
PROC19	Manual activities involving hand contact
PROC21	Low-energy processing of substances bound in materials and/or objects and handling of these substances
PROC24	Processing of substances bound in materials and/or objects using large (mechanical) energy

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist)	
	In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a)

Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Treatment of objects by dipping and pouring. tableting, compression, extrusion or pelletizing. Manual activities involving hand contact.

Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Preparations for construction, not elsewhere specified.

ERC5	Use in industrial equipment that leads to incorporation into the object / its surface
ERC8c	Wide use that leads to incorporation into the object / its surface (in interior spaces)

EXPOSURE SCENARIOS – CITRIC ACID

ERC8f	Wide use that leads to incorporation into the object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
ERC10b	Widespread use of articles with a high release value or intentional release (outdoors)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)
ERC12a	Processing of objects in industrial facilities with a low release value

Product features

There is no additional information

Operating conditions

Amount used	Amount used Time	1500 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Share of releases to soil from widespread use (only regionally):	3699 kg/day Regional information
	Share of leachate in wastewater from widespread use: 411 kg/day	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	It applies
	All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2 No data available	

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 07b

Construction application ES Ref. no: 07b
EC type: Worker

Usage descriptors	PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24 AC4 SU2a, SU2b, SU10, SU19 ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, ERC12a
Processes covered by activities associated with the tasks	Preparations for the construction industry, not elsewhere specified. Formulation [mixing] of preparations and/or their repackaging (except alloys) Construction and construction work Widely used by professional workers (PW)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Subscenario controlling worker exposure (PROC2, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC14, PROC19, PROC21, PROC24)

Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Treatment of objects by dipping and pouring. tableting, compression, extrusion or pelletizing. Manual activities involving hand contact.

Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Preparations for construction, not elsewhere specified.

PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC5	Mixing or mixing in batch production processes
PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC13	Treatment of objects by dipping and pouring
PROC14	Tableting, compression, extrusion, pelletization, granulation
PROC19	Manual activities involving hand contact
PROC21	Low-energy processing of substances bound in materials and/or objects and handling of these substances
PROC24	Processing of substances bound in materials and/or objects using large (mechanical) energy

Product features

Physical form	Liquid, coarse-grained solid
Concentration of the substance in the mixture/article	Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Operating conditions

Other given operating conditions that affect environmental exposure	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Technical conditions and measures at process level to prevent release	Not applicable	
Conditions and measures in relation to personal protection, hygiene and health examinations	For further specifications see section 8 of the safety data sheet.	

Sub-scenario controlling environmental exposure (ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b, 2.2 ERC12a)

Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Treatment of objects by dipping and pouring. tableting, compression, extrusion or pelletizing. Manual activities involving hand contact.

Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Preparations for construction, not elsewhere specified.

ERC5	Use in industrial equipment that leads to incorporation into the object / its surface
ERC8a	Wide use leading to incorporation into an object / its surface (in indoor spaces)
ERC8f	Wide use leading to incorporation into an object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
	Wide use of articles with a high release value or intentional release (in outdoor ERC10b spaces)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)
ERC12a	Processing of objects in industrial facilities with a low release value

EXPOSURE SCENARIOS – CITRIC ACID

Product features		
There is no additional information		
Operating conditions		
Quantity used	Amount used Time	1500 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Not applicable	
Risk management measures		
Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	Not applicable

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2	No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 07c

Construction application ES Ref. no: 07c

EC type: Consumer

Usage descriptors	PC1, PC9b AC4 SU2a, SU2b, SU10, SU19 ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b
Processes covered by activities associated with tasks	Construction and construction work Formulation [mixing] of preparations and/or their repackaging (except alloys) Mining industry (excluding offshore industries) Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC1, PC9b)

Preparations for construction, not elsewhere specified. Building materials and building material for internal use: building masonry material, ceramic, metal, plastic and wooden building material, insulation material. Building materials and building materials for outdoor use: Masonry materials, materials for road construction, ceramic, metal, plastic and wooden building materials, insulation materials.	
PC1	adhesives, sealants
PC9b	fillers, sealants, plasters, sculpting clay

Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	Operating conditions Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Additional operating conditions related to exposure Use Indoor and outdoor use.	
Liquids	Checking the pH value.
Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable
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2.2 Sub-scenario controlling environmental exposure (ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b)

Preparations for construction, not elsewhere specified.	
ERC8c	Wide use that leads to incorporation into the object / its surface (in interior spaces)
ERC8f	Wide use that leads to incorporation into the object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
ERC10b	Widespread use of articles with a high release value or intentional release (outdoors)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)

Product features

There is no additional information

Operating conditions

Quantity used	Annual habitat tonnage (tons/year):	1500
Frequency and duration of use	Period of use/release.	365 days/year

Risk management measures

There is no additional information

3. Exposure estimate and reference to its source

3.1 Health

Information for supporting exposure scenario	
2.1	No data available

3.2 Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1 Health

Instructions - health	No data available
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4.2 Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 08

Production of polymers/Production of plastics ES Ref. no: 08
EC type: Worker

Usage descriptors	PROC3, PROC5, PROC8a, PROC8b PC32 SU11, SU12 ERC1, ERC6b
Processes covered by activities associated with tasks	Polymer preparations and compounds Production of rubber products Production of plastic products, including amalgamation and conversion Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC3, PROC5, PROC8a, PROC8b)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities

polymer preparations and compounds

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC5	Mixing or mixing in batch production processes
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist)	
	In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC1, ERC6b)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities

Polymer preparations and compounds

ERC1	Fabric production
ERC6b	Use of reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)

Product features

There is no additional information

Operating conditions

Quantity used	Amount used 200 t/year	
Frequency and duration of use	Period of Use/Release. 300 days/year	
Other operating conditions related to environmental exposure	Share of leachate in wastewater from widespread use: 0.35 kg/day	Regional information
	Share of leachate in wastewater from widespread use: 3.18 kg/day	Europe
	The share of release into the air from widespread use (only 0 regionally):	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant All	It applies
	polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

EXPOSURE SCENARIOS – CITRIC ACID

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health

No data available

4.2. Environment

Instructions - environment

The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 09

Drilling method and production method in oil fields ES Ref. no: 09

EC type: Worker

Usage descriptors	PROC3, PROC4, PROC5, PROC8a, PROC8b PC20, PC40 SU2a, SU2b ERC8d
Processes covered by the activities associated with the Chemicals for Mining tasks	Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents, extraction agents
	Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC3, PROC4, PROC5, PROC8a, PROC8b)

Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes	
Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. extraction means	
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC5	Mixing or mixing in batch production processes
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	It is based on the implementation of a suitable standard for occupational hygiene.	
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Risk management measures

Conditions and measures in relation to personal protection, hygiene and health tests	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	Use in case of insufficient ventilation suitable breathing apparatus, (Dust/Mist). In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC8d)

Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Mixing or mixing in batch production processes	
Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. extraction agents	
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)

Product features

There is no additional information

Operating conditions

Amount used	Quantity used	1000 t/year
Frequency and duration of use	Period of Use/Release.	365 days/year
Other operating conditions related to environmental exposure	Share of leachate in wastewater from widespread use: 274 kg/day	Regional information
	Share of leachate in wastewater from widespread use: 2470 kg/day	Europe

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant All	It applies
	polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

EXPOSURE SCENARIOS – CITRIC ACID

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health

No data available

4.2. Environment

Instructions - environment

The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 10

Textile EC Ref. no: 10

EC type: Worker

Usage descriptors	PROC8a, PROC8b, PROC10, PROC13, PROC22 PC20, PC23, PC34 AC5, AC6 SU5 ERC4
Processes covered by task-related activities	Excipients such as buffers, flocculating agents, precipitants, neutralizing agents preparations for skin treatment Textile paints, finishing and impregnating agents Production of textiles, leather, furs Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC8a, PROC8b, PROC10, PROC13, PROC22)

auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents. skin care products. preparations for dyeing, finishing and impregnating textiles; including bleaching agents and other auxiliary substances used in the manufacturing process	
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC13	Treatment of objects by dipping and pouring
PROC22	Production and processing of minerals and/or metals at significantly elevated temperatures

Product features

Physical form	Solid, Aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Frequency and duration of use	Emission days (days/year):	300 Period of Use/Release.
Human factors that are not affected by risk management	Body weight: Tidal	70 kg (Default)
	volume Ensure	10 m³/day
Other given operating conditions that affect environmental exposure	adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist). In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC4)

Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)	
ERC4 surface)	Use of non-reactive auxiliary substances in industrial equipment (without incorporation into the object or its

Product features

Other product features	Easily biodegradable
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Operating conditions

Quantity used	Amount used Time	300 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Technical conditions and on-site measures aimed at reducing or limiting waste and emissions affecting the air and soil	Wastewater pretreatment	Neutralization must be carried out before discharge to the sewage treatment plant
	Treatment of waste water	No specific dates
	All polluted waste water must be treated in an industrial or municipal treatment plant, which can carry out both initial treatment and subsequent treatment.	
Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	It applies
Conditions and measures for external treatment of sewage waste	The proportion of the quantity used that will be supplied by external waste management	No specific dates

EXPOSURE SCENARIOS – CITRIC ACID

Conditions and measures related to the external use of waste	Solid waste	May be landfilled or incinerated in accordance with local regulations.
	Retain sludge.	fertilizers

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	ECETOC TRA model used (May 2010 version)

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 11a

Use in coating; Colors ES Ref. no: 11a

EC type: Worker

Usage descriptors	PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24 PC9a, PC9b, PC9c, PC18, PC34 AC4, AC11 SU17, SU18, SU19 ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b
Processes covered by the activities associated with the tasks	Surface materials and paints, thinners, surface material removers Ink and toners Textile paints, finishing and impregnating agents General manufacturing, eg machinery, equipment, vehicles and other transport equipment Furniture manufacturing Construction and construction work Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Subscenario controlling worker exposure (PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24)

Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush.

Non-industrial spraying techniques. Manual activities involving hand contact. Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Surface materials and paints, thinners, removers of surface materials. Textile paints, finishing and impregnating agents. Ink and toners

PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC19	Manual activities involving hand contact
PROC21	Low-energy processing of substances bound in materials and/or objects and handling of these substances
PROC24	Processing of substances bound in materials and/or objects using large (mechanical) energy

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist)	
	In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities

polymer preparations and compounds

ERC5	Use in industrial equipment that leads to incorporation into the object / its surface
ERC8c	Wide use that leads to incorporation into the object / its surface (in interior spaces)
ERC8f	Wide use that leads to incorporation into the object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
ERC10b	Widespread use of articles with a high release value or intentional release (outdoors)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)

Product features

There is no additional information

EXPOSURE SCENARIOS – CITRIC ACID

Operating conditions		
Amount used	Amount used 300 t/year	
Frequency and duration of use	Period of Use/Release. 365 days/year	
Other operating conditions related to environmental exposure	Regionally applicable share of EU tonnage: 40 t/year	
	Share of leachate in wastewater from widespread use: 2.2 kg/day	Regional information
	Share of leachate in wastewater from widespread use: 14.3 kg/day	Europe
Risk management measures		
Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	It applies
	All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	
3. Exposure estimate and reference to its source		
3.1. Health		
Information for supporting exposure scenario		
2.1 No data available		
3.2. Environment		
Information for supporting exposure scenario		
2.2	No data available	
4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario		
4.1. Health		
Instructions - health	No data available	
4.2. Environment		
Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.	

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 11b

Use in coating; Colors ES Ref. no: 11b

EC type: Worker

Usage descriptors	PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, PROC24 PC9a, PC9b, PC18, PC34 AC4, AC11 SU17, SU18, SU19 ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b
Processes covered by the activities associated with the tasks	Surface materials and paints, thinners, surface material removers Ink and toners Textile paints, finishing and impregnating agents General manufacturing, eg machinery, equipment, vehicles and other transport equipment Furniture manufacturing Construction and construction work Formulation [mixing] of preparations and/or their repackaging (except alloys) Widely used by professional workers (PW)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

Sub-scenario controlling worker exposure (PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC19, PROC21, 2.1 PROC24)

Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush.

Non-industrial spraying techniques. Manual activities involving hand contact. Low-energy processing of substances bound in materials and/or objects and handling of these substances. Processing of substances bound in materials and/or objects using large (mechanical) energy

Surface materials and paints, thinners, removers of surface materials. Textile paints, finishing and impregnating agents.

Ink and toners

PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC19	Manual activities involving hand contact
PROC21	Low-energy processing of substances bound in materials and/or objects and handling of these substances
PROC24	Processing of substances bound in materials and/or objects using large (mechanical) energy

Product features

Physical form	Liquid, coarse-grained solid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Technical conditions and measures at the process level k release prevention	Not applicable	
Conditions and measures in relation to personal protection, hygiene and health examinations	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC5, ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities

Polymer preparations and compounds

ERC5	Use in industrial equipment that leads to incorporation into the object / its surface
ERC8c	Wide use that leads to incorporation into the object / its surface (in interior spaces)
ERC8f	Wide use that leads to incorporation into the object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
ERC10b	Widespread use of articles with a high release value or intentional release (outdoors)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)

Product features

There is no additional information

EXPOSURE SCENARIOS – CITRIC ACID

Operating conditions		
Amount used	Amount used Time	300 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Not applicable	
Risk management measures		
Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	Not applicable
3. Exposure estimate and reference to its source		
3.1. Health		
Information for supporting exposure scenario		
2.1	No data available	
3.2. Environment		
Information for supporting exposure scenario		
2.2	No data available	
4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario		
4.1. Health		
Instructions - health	No data available	
4.2. Environment		
Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.	

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 11c

Use in coating; Colors ES Ref. no: 11c

EC type: Appliance

Usage descriptors	PC9a, PC18, PC34 AC4, AC11 SU17, SU18, SU19, SU21 ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b
Processes covered by task activities	Formulation [mixing] of preparations and/or their repackaging (except alloys) General manufacturing, eg machinery, equipment, vehicles and other transport equipment Furniture manufacturing Construction and construction work Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC9a, PC18, PC34)

Surface materials and paints, thinners, surface material removers, ink and toners, preparations for dyeing, finishing and impregnating textiles; including bleaching agents and other auxiliary substances used in the manufacturing process	
PC9a surface materials and paints, thinners, surface material removers	
PC18	ink and toners
PC34	Preparations for dyeing, finishing and impregnating textiles; including bleaching agents and other auxiliary substances used in the manufacturing process

Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Additional operating conditions related to exposure	Use Indoor and outdoor use.	
	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable	
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2.2 Sub-scenario controlling environmental exposure (ERC8c, ERC8f, ERC10a, ERC10b, ERC11a, ERC11b)

Surface materials and paints, thinners, surface material removers, ink and toners, preparations for dyeing, finishing and impregnating textiles; including bleaching agents and other auxiliary substances used in the manufacturing process	
ERC8c	Wide use that leads to incorporation into the object / its surface (in interior spaces)
ERC8f	Wide use leading to incorporation into an object / its surface (outdoors)
ERC10a	Wide use of articles with a low release value (outdoors)
ERC10b	Widespread use of articles with a high release value or intentional release (outdoors)
ERC11a	Wide use of articles with a low release value (indoors)
ERC11b	Widespread use of articles with a high release value or intentional release (indoors)

Product features

There is no additional information

Operating conditions

Amount used	Annual habitat tonnage (tons/year):	300
Frequency and duration of use	Period of use/release.	365 days/year
Environmental factors unaffected by risk management	Release to wastewater during processing	1% (300 tons/year)
	Locally Release to wastewater during processing	0.82 kg/day

Risk management measures

There is no additional information

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	No data available

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 12a

ES **photographic activities** Ref. no: 12a
EC type: Worker

Usage descriptors	PROC5, PROC9, PROC13 PC30 SU20 ERC8a
Processes covered by activities associated with the tasks	of the Health Service of photochemical substances Widely used by professional workers (PW)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC5, PROC9, PROC13)

Mixing or mixing in batch production processes. Transport of substance or mixture into small containers (closed filling line, including weighing). Treatment of objects by dipping and pouring

Photochemical substances

PROC5	Mixing or mixing in batch production processes
PROC9	Transport of substance or preparation in small containers (specialized filling line, including weighing)
PROC13	Treatment of objects by dipping and pouring

Product features

Physical form	Liquid, coarse-grained solid
Concentration of the substance in the mixture/article	Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Operating conditions

Other given operating conditions that affect environmental exposure	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Technical conditions and measures at the process level k release prevention	Not applicable	
Conditions and measures in relation to personal protection, hygiene and health examinations	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC8a)

Mixing or mixing in batch production processes. Transport of substance or mixture into small containers (closed filling line, including weighing). Treatment of objects by dipping and pouring

Photochemical substances

ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
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Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	200 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	Not applicable
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3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1	No data available

3.2. Environment

Information for supporting exposure scenario	
2.2	No data available

4. Instructions to the downstream user to ensure that he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 12b

ES **photographic activities** Ref. no: 12b

EC type: Consumer

Usage descriptors	PC30 SU20 ERC8a
Processes covered by the activities associated with the tasks of the photochemical substance Health services	Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC30)

PC30	photochemical substances
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Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Additional operational conditions related to exposure Use Indoor use.		
	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable	
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2.2 Sub-scenario controlling environmental exposure (ERC8a)

Photochemical substances	
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ERC8a	Wide use of non-reactive excipient (without incorporation into the object or its surface, indoors)
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Product features

There is no additional information

Operating conditions

Quantity used	Annual site tonnage (tons/year):	200
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Risk management measures

There is no additional information

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 13

Use as a laboratory reagent ES Ref. no: 13

EC type: Worker

Usage descriptors	PROC1, PROC2, PROC4, PROC8a PC4, PC16, PC20, PC37 SU3 ERC4, ERC7, ERC8f
Processes covered by the activities associated with the tasks	Antifreeze and antifreeze products Heat conducting liquids Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents Preparations for water treatment Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC1, PROC2, PROC4, PROC8a)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Transport of the substance or preparation (filling/discharging) in non-specialized facilities

Antifreeze mixtures and deicing products. Heat conducting liquids. Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. Preparations for water treatment

PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions
PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	Contains a proportion of the substance in the product up to 1%, unless otherwise stated

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC4, ERC7, ERC8f)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Transport of the substance or preparation (filling/discharging) in non-specialized facilities

Antifreeze mixtures and deicing products. Heat conducting liquids. Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. Preparations for water treatment

ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
ERC7	Use of functional fluids in industrial equipment
ERC8f	Wide use that leads to incorporation into the object / its surface (outdoors)

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	1000 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant All	It applies
	polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

EXPOSURE SCENARIOS – CITRIC ACID

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health

No data available

4.2. Environment

Instructions - environment

The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 14

Preparations for water treatment ES Ref. no: 14
EC type: Worker

Usage descriptors	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC20, PROC23 PC4, PC7, PC14, PC16, PC17, PC20, PC25, PC31, PC35, PC37 SU14, SU15, SU16, SU17 ERC4, ERC6b, ERC7
Processes covered by activities associated with tasks	Production of base metals including alloys Manufacture of machined metal products, except machinery and equipment Production of computer, electronic and optical products, electrical equipment General manufacturing, e.g. machinery, equipment, vehicles and other transport equipment Antifreezes and antifreeze products Base metals and alloys Preparations for surface treatment of metals Heat conducting liquids Hydraulic fluids Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents Fluids for metalworking Polishes and wax compounds Washing and cleaning products (including solvent-based products) Preparations for water treatment Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Subscenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC20, PROC23)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Transport of substance or mixture into small containers (closed filling line, including weighing). Application by roller or brush. Treatment of objects by dipping and pouring. Lubrication during the action of high energies during metalworking processes. General lubrication/lubrication at high kinetic energy. Use of functional fluids in small devices. Open processing and transport at significantly elevated temperatures	
Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. Preparations for water treatment	
conditions	Chemical production or refining in a closed process with no probability of exposure or PROC1 in processes with equivalent control
PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC9	Transport of substance or preparation in small containers (specialized filling line, including weighing)
PROC10	Application by roller or brush.
PROC13	Treatment of objects by dipping and pouring
PROC17	Lubrication during the action of high energies during metalworking processes
PROC18	General lubrication/lubrication at high kinetic energy
PROC20	Use of functional fluids in small devices
PROC23	Open processing and transport at significantly elevated temperatures

Product features	
Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions		
Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures		
Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

EXPOSURE SCENARIOS – CITRIC ACID

2.2 Sub-scenario controlling environmental exposure (ERC4, ERC6b, ERC7)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Spraying techniques in industrial facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Transport of substance or mixture into small containers (closed filling line, including weighing). Application by roller or brush. Treatment of objects by dipping and pouring. Lubrication during the action of high energies during metalworking processes. General lubrication/lubrication at high kinetic energy. Use of functional fluids in small devices. Open processing and transport at significantly elevated temperatures

Auxiliary substances such as buffers, flocculants, precipitants, neutralizing agents. Preparations for water treatment

	Use of non-reactive excipients in industrial equipment (without incorporation into the article or its ERC4 surface)
ERC6b	Use of reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
ERC7	Use of functional fluids in industrial equipment

Product features

There is no additional information

Operating conditions

Quantity used	Amount used 1000 t/year	
Other operating conditions related to environmental exposure	Share of leachate in wastewater from widespread use: 274 kg/day	Regional information
	Share of leachate in wastewater from widespread use: 2470 kg/day	Europe

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant All	It applies
	polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2 No data available	

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 15

Preparations for surface treatment of metals ES Ref. no: 15

EC type: Worker

Usage descriptors	PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23 PC7, PC14, PC25, PC31, PC35 SU14, SU15, SU16, SU17 ERC4, ERC6b
Processes covered by activities associated with tasks	Production of base metals including alloys Manufacture of machined metal products, except machinery and equipment Manufacture of computer, electronic and optical products, electrical equipment General manufacture, e.g. machinery, equipment, vehicles and other transport equipment Basic metals and alloys Preparations for surface treatment of metals Fluids for metalworking Polishes and wax compounds Washing and cleaning products (including solvent-based products) <u>Use in industrial facilities (IS)</u>
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Subscenario controlling worker exposure (PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, PROC23)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Spraying techniques in industrial facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of substance or mixture into small containers (closed filling line, including weighing). Application by roller or brush. Treatment of objects by dipping and pouring. Lubrication during the action of high energies during metalworking processes. General lubrication/lubrication at high kinetic energy. Open processing and transport at significantly elevated temperatures

Base metals and alloys. preparations for surface treatment of metals. Fluids for metalworking. polishes and wax mixtures. Washing and cleaning products (including solvent-based products)

PROC2	Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC4	Chemical production with potential exposure.
PROC7	Spraying techniques in industrial facilities.
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC9	Transport of substance or preparation in small containers (specialized filling line, including weighing)
PROC10	Application by roller or brush.
PROC13	Treatment of objects by dipping and pouring
PROC17	Lubrication during the action of high energies during metalworking processes
PROC18	General lubrication/lubrication at high kinetic energy
PROC23	Open processing and transport at significantly elevated temperatures

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation It is based on the implementation of a suitable standard for occupational hygiene.	
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Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene. Wear protective gloves/protective clothing and safety glasses/face shield. Use appropriate respiratory protection, an effective dust mask	
	Use in case of insufficient ventilation suitable breathing apparatus, (Dust/Mist) In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

EXPOSURE SCENARIOS – CITRIC ACID

2.2 Sub-scenario controlling environmental exposure (ERC4, ERC6b)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production or refining in a continuous closed process with occasionally controlled exposure or in processes with equivalent control conditions. Chemical production with potential exposure. Spraying techniques in industrial facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of substance or mixture into small containers (closed filling line, including weighing). Application by roller or brush. Treatment of objects by dipping and pouring. Lubrication during the action of high energies during metalworking processes. General lubrication/lubrication at high kinetic energy. Open processing and transport at significantly elevated temperatures

Base metals and alloys. preparations for surface treatment of metals. Fluids for metalworking. polishes and wax mixtures. Washing and cleaning products (including solvent-based products)

ERC4 Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)

ERC6b Use of reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	1000 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	It applies
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3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health No data available

4.2. Environment

Instructions - environment The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 16a

Agriculture EC Ref. no: 16a

EC type: Worker

Usage descriptors	PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19 PC8, PC12, PC21 SU1 ERC2, ERC4, ERC8b, ERC8d
Processes covered by activities associated with tasks Agriculture, forestry, fishing biocidal products Preparations for the maintenance of lawns and gardens (+ fertilizers) Use in industrial facilities (IS)	
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Tableting, compression, extrusion, pelletization, granulation. Use as a laboratory reagent. Manual activities involving hand contact

Biocidal products (e.g. disinfectants, pest control). Fertilizers. Preparations for the maintenance of lawns and gardens (+ fertilizers)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC5	Mixing or mixing in batch production processes
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC14	Tableting, compression, extrusion, pelletization, granulation
PROC15	Use as a laboratory reagent
PROC19	Manual activities involving hand contact

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	In case of insufficient ventilation, use suitable breathing equipment, (Dust/Mist) In high concentrations: Use self-contained breathing apparatus.	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC2, ERC4, ERC8b, ERC8d)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Tableting, compression, extrusion, pelletization, granulation. Use as a laboratory reagent. Manual activities involving hand contact

Biocidal products (e.g. disinfectants, pest control). Fertilizers. Preparations for the maintenance of lawns and gardens (+ fertilizers)

ERC2	Formulation into the mixture
ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
ERC8b	Wide use of reactive excipient (without incorporation into the object or its surface, indoors)
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)

Product features

There is no additional information

EXPOSURE SCENARIOS – CITRIC ACID

Operating conditions		
Amount used	Amount used Time	1500 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Share of releases to soil from widespread use (only regionally):	3699 kg/day
	Share of leachate in wastewater from widespread use:	411 kg/day
Risk management measures		
Conditions and measures related to the sewage treatment plant	<u>Municipal wastewater treatment plant</u> All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	It applies
3. Exposure estimate and reference to its source		
3.1. Health		
Information for supporting exposure scenario		
2.1	No data available	
3.2. Environment		
Information for supporting exposure scenario		
2.2	No data available	
4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario		
4.1. Health		
Instructions - health	No data available	
4.2. Environment		
Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.	

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 16b

Agriculture EC Ref. no: 16b

EC type: Worker

Usage descriptors	PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19 PC8, PC12, PC21 SU1 ERC2, ERC4, ERC8b, ERC8d
Processes covered by activities associated with tasks Agriculture, forestry, fishing biocidal products Preparations for the maintenance of lawns and gardens (+ fertilizers) Use in industrial facilities (IS)	
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC14, PROC15, PROC19)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Tableting, compression, extrusion, pelletization, granulation. Use as a laboratory reagent. Manual activities involving hand contact

Biocidal products (e.g. disinfectants, pest control). Fertilizers. preparations for the maintenance of lawns and gardens (+ fertilizers)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions
PROC5	Mixing or mixing in batch production processes
PROC8a	Transport of the substance or preparation (filling/discharging) in non-specialized facilities
PROC8b	Transport of the substance or mixture (filling/discharging) in specialized facilities
PROC10	Application by roller or brush.
PROC11	Non-industrial spraying techniques.
PROC14	Tableting, compression, extrusion, pelletization, granulation
PROC15	Use as a laboratory reagent
PROC19	Manual activities involving hand contact

Product features

Physical form	Liquid, coarse-grained solid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Technical conditions and measures at the process level k release prevention	Not applicable	
Conditions and measures in relation to personal protection, hygiene and health examinations	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC2, ERC4, ERC8b, ERC8d)

Manufacture or formulation in the chemical industry in closed batch processes with occasionally controlled exposure or in processes with equivalent control conditions. Mixing or mixing in batch production processes. Transport of the substance or preparation (filling/discharging) in non-specialized facilities. Transport of the substance or mixture (filling/discharging) in specialized facilities. Application by roller or brush. Non-industrial spraying techniques. Tableting, compression, extrusion, pelletization, granulation. Use as a laboratory reagent. Manual activities involving hand contact

Biocidal products (e.g. disinfectants, pest control). Fertilizers. Preparations for the maintenance of lawns and gardens (+ fertilizers)

ERC2	Formulation into the mixture
ERC4	Use of non-reactive auxiliaries in industrial equipment (without incorporation into the object or its surface)
ERC8b	Wide use of reactive excipient (without incorporation into the object or its surface, indoors)
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)

Product features

There is no additional information

Operating conditions

Quantity used	Amount used Time	1500 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	Not applicable
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EXPOSURE SCENARIOS – CITRIC ACID

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario

2.1 No data available

3.2. Environment

Information for supporting exposure scenario

2.2 No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health

No data available

4.2. Environment

Instructions - environment

The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.

EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 16c

Agriculture EC Ref. no: 16c
EC type: Consumer

Usage descriptors	PC8, PC12, PC21 SU1 ERC8b, ERC8d
Processes covered by activities associated with tasks Agriculture, forestry, fisheries biocidal products	Fertilizers Preparations for the maintenance of lawns and gardens (+ fertilizers) Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC8, PC12, PC21)

biocidal products (e.g. disinfectants, pest control), fertilizers, lawn and garden maintenance products (+ fertilizers)

PC8	biocidal products
PC12 fertilizers	
PC21 laboratory chemicals	

Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other operating conditions related to the exposure of the use of Liquid	Checking the pH value.
Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable
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2.2 Sub-scenario controlling environmental exposure (ERC8b, ERC8d)

biocidal products (e.g. disinfectants, pest control), fertilizers, lawn and garden maintenance products (+ fertilizers)

ERC8b	Wide use of reactive excipient (without incorporation into the object or its surface, indoors)
ERC8d	Wide use of non-reactive excipient (without incorporation into the object or its surface, in outdoor areas)

Product features

There is no additional information

Operating conditions

Quantity used	Annual habitat tonnage (tons/year):	1500
Frequency and duration of use	Period of use/release.	365 days/year

Risk management measures

There is no additional information

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario
2.1 No data available

3.2. Environment

Information for supporting exposure scenario
2.2 EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 17a

EC medical devices Ref. no: 17a

EC type: Worker

Usage descriptors	PROC1 PC20 SU20 ERC7
Processes covered by activities associated with the tasks of the Health Service	Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC1)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions	
Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions

Product features

Physical form	Liquid, aqueous solution
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Ensure adequate ventilation	
	It is based on the implementation of a suitable standard for occupational hygiene.	

Risk management measures

Conditions and measures in relation to personal protection, hygiene and health examinations	It is based on the implementation of a suitable standard for occupational hygiene.	
	Wear protective gloves/protective clothing and safety glasses/face shield.	
	Use appropriate respiratory protection, an effective dust mask	
	Use in case of insufficient ventilation suitable breathing apparatus, (Dust/Mist)	
	In high concentrations: Use independent breathing apparatus	
	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC7)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions	
Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
ERC7	Use of functional fluids in industrial equipment

Product features

There is no additional information

Operating conditions

Quantity used	Amount used Time	1000 t/year
Frequency and duration of use	of use/release.	365 days/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	It applies
	All polluted wastewater must be treated in an industrial or municipal treatment plant, which can perform both initial treatment and subsequent treatment.	

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2 No data available	

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 17b

EC medical devices Ref. no: 17b

EC type: Worker

Usage descriptors	PROC1 PC20 SU22 ERC7
Processes covered by activities associated with the tasks of the Health Service	Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents Use in industrial facilities (IS)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling worker exposure (PROC1)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions	
Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
PROC1	Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions

Product features

Physical form	Liquid, coarse-grained solid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other given operating conditions that affect environmental exposure	Liquids	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Technical conditions and measures at the process level k release prevention	Not applicable	
Conditions and measures in relation to personal protection, hygiene and health examinations	For further specifications see section 8 of the safety data sheet.	

2.2 Sub-scenario controlling environmental exposure (ERC7)

Chemical production or refining in a closed process with no likelihood of exposure or in processes with equivalent control conditions	
Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
ERC7	Use of functional fluids in industrial equipment

Product features

There is no additional information

Operating conditions

Quantity used	Quantity used	1000 t/year
Other operating conditions related to environmental exposure	Not applicable	

Risk management measures

Conditions and measures related to the sewage treatment plant	Municipal wastewater treatment plant	Not applicable
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3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2	No data available

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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EXPOSURE SCENARIOS – CITRIC ACID

1. Exposure scenario 17c

EC medical devices Ref. no: 17c

EC type: Consumer

Usage descriptors	PC20 SU21 ERC7
Processes covered by activities associated with the tasks of the Health Service	Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents Consumer Use (C)
Evaluation method	see section 3 in this exposure scenario

2. Operating conditions and risk management measures

2.1 Sub-scenario controlling consumer exposure (PC20)

Auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
PC20	auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents

Product features

Physical form	Coarse-grained solid, liquid
Concentration of the substance in the mixture/article	It refers to the percentage of the substance in the product up to 100% (unless stated otherwise)

Operating conditions

Other operating conditions related to the exposure of the use of	Liquid	Checking the pH value.
	Coarse-grained solid	The product does not create any dust during application.

Risk management measures

Conditions and measures related to consumer information and handling instructions	Not applicable	
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2.2 Sub-scenario controlling environmental exposure (ERC7)

auxiliary substances such as buffers, flocculating agents, precipitants, neutralizing agents	
ERC7	Use of functional fluids in industrial equipment

Product features

There is no additional information

Operating conditions

Quantity used	Annual site tonnage (tons/year):	1000
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Risk management measures

There is no additional information

3. Exposure estimate and reference to its source

3.1. Health

Information for supporting exposure scenario	
2.1 No data available	

3.2. Environment

Information for supporting exposure scenario	
2.2	EUSES

4. Instructions for the downstream user to assess whether he is working within the limits set by the exposure scenario

4.1. Health

Instructions - health	No data available
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4.2. Environment

Instructions - environment	The expected exposure will not exceed the PNEC-value if the risk management measures/operating conditions in paragraph 2 are followed.
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