



SAFETY DATA SHEET CITRIC ACID ANHYDROUS

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

1.1. Product identifier

Product name	CITRIC ACID ANHYDROUS
Product number	20184
Synonyms; trade names	2-HYDROXY 1,2,3 PROPANE TRICARBOXYLIC ACID, CITRIC ACID ANHYDROUS BP2003/E330/USP27, CITRIC ACID ANH FG 30-100 M, CITRIC ACID ANHYDROUS F6000, CITRIC ACID ANHYDROUS N1560, CITRIC ACID 0AQ FCC ed7, CITRIC ACID WV, CITRIC ACID 0AQ, CITRIC ACID WV GRAN, CITRIC ACID ANH E330 12-40M LT, CITRIC ACID ANH E330 16-40M YX, CITRIC ACID ANH E330 MG 1200 CB, CITRIC ACID ANH JBN, CITRIC ACID ANHYDROUS F4020, CITRIC ACID ANH E330 12-40M LT, CITRIC ACID ANHYDROUS FINE GRANULAR 51N, CITRIC ACID ANHY WFG JBN, CITRIC ACID ANH LTY JBN, CITRIC ACID ANH JGY JBN, CITRIC ACID ANH WEY JBN, CITRIC ACID ANH P250 PH, CITRIC ACID ANHDROUS F0000, CITRIC ACID ANHDROUS F6040, CITRIC ACID ANHDROUS F7040, CITRIC ACID ANHDROUS G3015, CITRIC ACID ANHDROUS F3500
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1

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

Identified uses	Food industry Cosmetics Industrial application For further information, see attached Exposure Scenario.
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1.3. Details of the supplier of the safety data sheet

Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	20184

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	Eye Irrit. 2 - H319

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Environmental hazards Not Classified

2.2. Label elements

EC number 201-069-1

Pictogram



Signal word Warning

Hazard statements H319 Causes serious eye irritation.

Precautionary statements P264 Wash contaminated skin thoroughly after handling.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name CITRIC ACID ANHYDROUS

REACH registration number 01-2119457026-42-XXXX

CAS number 77-92-9

EC number 201-069-1

Composition comments The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Remove person to fresh air and keep comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation. Get medical attention if symptoms are severe or persist. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.

Ingestion Rinse mouth thoroughly with water. Remove any dentures. Remove person to fresh air and keep comfortable for breathing. Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if symptoms are severe or persist. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues. Wash clothing and clean shoes thoroughly before reuse.

Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention.

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Protection of first aiders No action shall be taken without appropriate training or involving any personal risk.

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

Inhalation May cause respiratory irritation.

Ingestion No specific health hazards known.

Skin contact No specific health hazards known.

Eye contact Causes serious eye irritation.

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

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with the following media: Water. Foam.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Dust may form explosive mixture with air.

Hazardous combustion products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Carbon dioxide (CO₂). Carbon monoxide (CO).

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Follow precautions for safe handling described in this safety data sheet Avoid generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Provide adequate ventilation.

For non-emergency personnel No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Do not touch or walk into spilled material. No smoking, sparks, flames or other sources of ignition near spillage.

6.2. Environmental precautions

Environmental precautions Avoid discharge into water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Remove spillage with vacuum cleaner or collect with a shovel and broom, or similar. Flush contaminated area with plenty of water. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

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Usage precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Avoid contact with skin, eyes and clothing. Avoid generation and spreading of dust. Provide adequate ventilation. Keep only in the original container. Container must be kept tightly closed when not in use. Avoid inhalation of dust and contact with skin and eyes. Keep away from heat, sparks and open flame. Take precautionary measures against static discharges. Do not reuse empty containers. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.
Advice on general occupational hygiene	Do not eat, drink or smoke when using this product. Wash after use and before eating, smoking and using the toilet. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store in tightly-closed, original container in a dry and cool place. Store at temperatures between 10°C and 30°C. Protect from sunlight. Keep away from food and drink. Keep away from heat, sparks and open flame. Avoid contact with oxidising agents.
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7.3. Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.
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SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Ingredient comments	No exposure limits known for ingredient(s).
PNEC	<ul style="list-style-type: none"> - Fresh water; 0.44 mg/l - Marine water; 0.044 mg/l - Sediment (Freshwater); 7.52 mg/kg - Sediment (Marinewater); 0.752 mg/kg - Soil; 29.2 mg/kg

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Avoid inhalation of dust. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection

The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. The selected gloves should have a breakthrough time of at least 8 hours. Nitrile rubber. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear suitable protective clothing as protection against splashing or contamination.

Hygiene measures

Wash at the end of each work shift and before eating, smoking and using the toilet. Remove contaminated clothing and wash the skin thoroughly with soap and water after work. Eye wash facilities and emergency shower must be available when handling this product.

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Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. Particulate filter, type P2. EN 136/140/141/145/143/149
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Crystalline powder. Powder. Granules. Solid
Colour	White.
Odour	Odourless.
Odour threshold	No information available.
pH	pH (diluted solution): 1.8 (50 g/l) @ 25°C
Melting point	~153°C
Initial boiling point and range	>175°C
Flash point	345°C Closed cup.
Evaporation rate	Not applicable.
Evaporation factor	No information available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	No information available.
Other flammability	No information available.
Vapour pressure	<0.001 hPa @ 20°C
Vapour density	No information available.
Relative density	1.665 @ 20°C
Bulk density	400 - 1300 kg/m ³
Solubility(ies)	576 - 1330 g/l water @ 20°C Soluble in the following materials: Ethanol.
Partition coefficient	log Pow: -1.80 - -0.2
Auto-ignition temperature	No information available.
Decomposition Temperature	175°C
Viscosity	6.5 mPa s @ 20°C
Explosive properties	No information available.
Explosive under the influence of a flame	No information available.
Oxidising properties	No information available.
<u>9.2. Other information</u>	
Other information	No information available.
Refractive index	No information available.

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Particle size	No information available.
Molecular weight	192.13
Volatility	No information available.
Saturation concentration	No information available.
Critical temperature	No information available.
Volatile organic compound	No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No test data specifically related to reactivity available for this product or its ingredients.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Under normal conditions of storage and use, no hazardous reactions will occur.

10.4. Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time. Avoid generation and spreading of dust.

10.5. Incompatible materials

Materials to avoid Strong oxidising agents. Avoid contact with acids and alkalis.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 5,400.0

Species Mouse

ATE oral (mg/kg) 5,400.0

Acute toxicity - dermal

Notes (dermal LD₅₀) LD₅₀ > 2000 mg/kg, Dermal, Rat

Skin corrosion/irritation

Skin corrosion/irritation May be slightly irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation Irritating to eyes.

Respiratory sensitisation

Respiratory sensitisation No specific test data are available.

Skin sensitisation

Skin sensitisation No specific test data are available.

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Germ cell mutagenicity

Genotoxicity - in vitro Negative.

Genotoxicity - in vivo Negative.

Carcinogenicity

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

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

Inhalation Dust in high concentrations may irritate the respiratory system.

Ingestion May cause discomfort if swallowed.

Skin contact Prolonged skin contact may cause temporary irritation.

Eye contact Causes serious eye irritation.

SECTION 12: Ecological Information

Ecotoxicity The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish LC₅₀, 48 hours: 440 mg/l, *Leuciscus idus* (Golden orfe)

Acute toxicity - aquatic invertebrates EC₅₀, 24 hours: 1535 mg/l, *Daphnia magna*

Acute toxicity - aquatic plants EC₅₀, 168 hours: 425 mg/l, Algae

Acute toxicity - microorganisms EC₅₀, 16 hours: >10000 mg/l,

12.2. Persistence and degradability

Persistence and degradability The product is readily biodegradable.

Biodegradation - Degradation 97%: 28 days
OCED 301B

Biological oxygen demand 0.526 g O₂/g substance

Chemical oxygen demand 0.728 g O₂/g substance

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Partition coefficient log Pow: -1.80 - -0.2

12.4. Mobility in soil

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Mobility The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects Not determined.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

No information required.

14.2. UN proper shipping name

No information required.

14.3. Transport hazard class(es)

No information required.

14.4. Packing group

No information required.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

No information required.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information required.

SECTION 15: Regulatory information

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

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
Commission Regulation (EU) No 2015/830 of 28 May 2015.

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15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

All the ingredients are listed or exempt.

Canada - DSL/NDSL

All the ingredients are listed or exempt.
DSL

US - TSCA

All the ingredients are listed or exempt.

Australia - AICS

All the ingredients are listed or exempt.

Korea - KECI

All the ingredients are listed or exempt.

Philippines – PICCS

All the ingredients are listed or exempt.

New Zealand - NZIOC

All the ingredients are listed or exempt.

SECTION 16: Other information

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Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 CAS: Chemical Abstracts Service.
 DNEL: Derived No Effect Level.
 IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.
 EL50: Exposure Limit 50
 hPa: Hectopascal
 LL50: Lethal Loading fifty
 OECD: Organisation for Economic Co-operation and Development
 POW: Octanol-water partition coefficient
 SCBA: self-contained breathing apparatus
 STP: Sewage Treatment Plant
 VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

Supplier's information.

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

26/11/2018

Version number

3.002

Supersedes date

23/11/2018

SDS number

20184

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SDS status	Approved.
Hazard statements in full	H319 Causes serious eye irritation.
Signature	Lisa Bland



Exposure scenario Use as intermediate

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use as intermediate
Product category	PC19 Intermediate.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC6a Industrial use resulting in manufacture of another substance (use of intermediates).
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Worker

Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure PROC3 Use in closed batch process (synthesis or formulation). PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details	Covers concentrations up to 100 %.
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Amounts used

Annual site tonnage: 3000 tonnes
Daily amount per site: 10000 kg

Use as intermediate

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.7%
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 40 Local marine water dilution factor: 100
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Risk management measures

Good practice	Carefully handle the substance to minimise releases.
STP type	Onsite STP.
STP details	Assumed onsite sewage treatment plant flow: 10000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
Waste treatment	pH adjustment Dispose of waste in accordance with environmental legislation.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid
Concentration details	Covers concentrations up to 100 %.

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Use in closed process, no likelihood of exposure. PROC3 Use in closed batch process (synthesis or formulation). Palm of one hand. Covers skin contact area up to 240 cm ² . PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Palm of both hands. Covers skin contact area up to 480 cm ² .
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Other given operational conditions affecting workers exposure

Setting	Indoor.
Ventilation rate	Handle substance within a predominantly closed system provided with extract ventilation.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Handle in a fume cupboard or under extract ventilation. Provide extract ventilation to points where emissions occur.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.
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Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Use as intermediate

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure Fresh water: Exposure 0.0154 mg/l, PNEC 0.440 mg/l, RCR 0.035

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Formulation of preparations

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Formulation of preparations
Product category	PC1 Adhesives, sealants. PC3 Air care products. PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC12 Lawn and garden preparations (- fertilizers). PC18 Ink and toners. PC30 Photochemicals. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products). PC39 Cosmetics, personal care.
Main sector	SU3 Industrial uses
Sector of use	SU5 Manufacture of textiles, leather, fur SU10 Formulation [mixing] of preparations and/or re-packaging SU13 Manufacture of other non-metallic mineral products SU20 Health services
<u>Environment</u>	
Environmental release category	ERC1 Manufacture of substances. ERC2 Formulation of preparations. ERC3 Formulation in materials. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles.
<u>Worker</u>	

Formulation of preparations

Process category	<p>PROC1 Use in closed process, no likelihood of exposure.</p> <p>PROC2 Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3 Use in closed batch process (synthesis or formulation).</p> <p>PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).</p> <p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC13 Treatment of articles by dipping and pouring.</p> <p>PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.</p> <p>PROC15 Use as laboratory reagent.</p> <p>PROC19 Hand-mixing with intimate contact and only PPE available.</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual site tonnage: 6000 tonnes
Daily amount per site: 20000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0.25%

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.05%

Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Carefully handle the substance to minimise releases.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 10000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, low dustiness , or: Solid in solution

Formulation of preparations

Concentration details Covers concentrations up to 100 %.

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Use in closed process, no likelihood of exposure. PROC3 Use in closed batch process (synthesis or formulation). PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. Hands and forearms. Covers skin contact area up to 1500 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

Ventilation rate Handle substance within a predominantly closed system provided with extract ventilation.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle in a fume cupboard or under extract ventilation. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure Fresh water: Exposure 0.0158 mg/l, PNEC 0.440 mg/l, RCR 0.0359

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in personal care products

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in personal care products
Product category	PC2 Adsorbents. PC39 Cosmetics, personal care.
Article category	AC8 Paper articles
Main sector	SU21 Consumer uses
Sector of use	SU20 Health services SU22 Professional uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC11a Wide dispersive indoor use of long-life articles and materials with low release.
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Worker

Process category	PROC10 Roller application or brushing of adhesive and other coating. PROC11 Spraying outside industrial settings and/or applications. PROC19 Hand-mixing with intimate contact and only PPE available.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 1.03 kg
Regional use tonnage: 750 tonnes/year

Use in personal care products

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%

Emission factor - water Release fraction to wastewater from wide dispersive use: 100%

Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 900
Local marine water dilution factor: 1000

Risk management measures

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure Fresh water: Exposure 0.0158 mg/l, PNEC 0.440 mg/l, RCR 0.0359

3. Exposure estimation (Health 1)

In accordance to the Article 14 (5b) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.



Exposure scenario

Use in cleaning products, Industrial

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in cleaning products, Industrial
Product category	PC3 Air care products. PC28 Perfumes, fragrances. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products). PC36 Water softeners. PC37 Water treatment chemicals.
Article category	AC8 Paper articles AC35 Scented paper articles
Main sector	SU3 Industrial uses
Sector of use	SU5 Manufacture of textiles, leather, fur SU10 Formulation [mixing] of preparations and/or re-packaging SU13 Manufacture of other non-metallic mineral products SU20 Health services

Environment

Environmental release category	ERC2 Formulation of preparations. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC9a Wide dispersive indoor use of substances in closed systems. ERC9b Wide dispersive outdoor use of substances in closed systems.
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Worker

Use in cleaning products, Industrial

Process category	<p>PROC2 Use in closed, continuous process with occasional controlled exposure</p> <p>PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC13 Treatment of articles by dipping and pouring.</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 5000 kg
Daily amount per site: 14 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 100%

Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Risk management measures

Good practice Carefully handle the substance to minimise releases.

STP type Onsite STP.

STP details Assumed onsite sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

Disposal method Dispose of waste cans and containers according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Solid in solution

Concentration details Covers concentrations up to 100 %.

Human factors not influenced by risk management

Use in cleaning products, Industrial

Potentially exposed body parts PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. Hands and forearms. Covers skin contact area up to 1500 cm².

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Ventilation rate Handle substance within a predominantly closed system provided with extract ventilation.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle in a fume cupboard or under extract ventilation. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure Fresh water: Exposure 0.0248 mg/l, PNEC 0.440 mg/l, RCR 0.0563

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in cleaning products, Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in cleaning products, Professional
Product category	PC3 Air care products. PC28 Perfumes, fragrances. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products). PC36 Water softeners. PC37 Water treatment chemicals.
Article category	AC8 Paper articles AC35 Scented paper articles
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC9a Wide dispersive indoor use of substances in closed systems. ERC9b Wide dispersive outdoor use of substances in closed systems.

Worker

Use in cleaning products, Professional

Process category	<p>PROC1 Use in closed process, no likelihood of exposure.</p> <p>PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC11 Spraying outside industrial settings and/or applications.</p> <p>PROC13 Treatment of articles by dipping and pouring.</p> <p>PROC19 Hand-mixing with intimate contact and only PPE available.</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Risk management measures

Good practice	Carefully handle the substance to minimise releases.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid, low dustiness , or: Solid in solution
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	<p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC11 Spraying outside industrial settings and/or applications. Hands and forearms. Covers skin contact area up to 1500 cm². PROC19 Hand-mixing with intimate contact and only PPE available. Both hands and main part of the arms. Covers skin contact area up to 1980 cm².</p>
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Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented.
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Risk management measures

Wear suitable working clothes.
Use suitable eye protection and gloves.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Daily amount for wide dispersive uses: 14 kg
Regional use tonnage: 10000 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Use in cleaning products, Professional

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from wide dispersive use: 100%
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
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3. Exposure estimation (Environment 1)

Assessment method	Used EUSES model.
Environmental exposure	Fresh water: Exposure 0.0248 mg/l, PNEC 0.440 mg/l, RCR 0.0563

3. Exposure estimation (Health 1)

Assessment method	Used ECETOC TRA model. Qualitative approach used to conclude safe use.
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Exposure scenario Use in cleaning products, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in cleaning products, Consumer
Product category	PC3 Air care products. PC28 Perfumes, fragrances. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products). PC36 Water softeners. PC37 Water treatment chemicals.
Article category	AC8 Paper articles AC35 Scented paper articles
Main sector	SU21 Consumer uses
Sector of use	SU20 Health services SU22 Professional uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC9a Wide dispersive indoor use of substances in closed systems. ERC9b Wide dispersive outdoor use of substances in closed systems.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Concentration details	Covers concentrations up to 100 %.
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Amounts used

Use in cleaning products, Consumer

Daily amount for wide dispersive uses: 14 kg
Regional use tonnage: 10000 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%
Emission factor - water Release fraction to wastewater from wide dispersive use: 100%
Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Risk management measures

STP type Municipal STP.
STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid, low dustiness , or: Solid in solution
Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Setting Indoor/outdoor use.
Ventilation rate Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.
Environmental exposure Fresh water: Exposure 0.0248 mg/l, PNEC 0.440 mg/l, RCR 0.0563

3. Exposure estimation (Health 1)

Assessment method Used ECETOC TRA model.
Qualitative approach used to conclude safe use.



Exposure scenario Use in paper industry

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in paper industry
Product category	PC26 Paper and board dye, finishing and impregnation products, including bleaches and other processing aids.
Main sector	SU3 Industrial uses
Sector of use	SU6b Manufacture of pulp, paper and paper products

Environment

Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles.
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Worker

Process category	PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual site tonnage: 100 tonnes
Daily amount per site: 333 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
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Use in paper industry

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 2%

Emission factor - soil Not applicable - no direct release to soil.

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 10000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid in solution

Human factors not influenced by risk management

Potentially exposed body parts PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in construction products, Industrial and Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in construction products, Industrial and Professional
Product category	PC10 Building and construction preparations not covered elsewhere.
Article category	AC4 Stone, plaster, cement, glass and ceramic articles AC7 Metal articles AC8 Paper articles AC10 Rubber articles AC11 Wood articles AC13 Plastic articles
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU2a Mining (without offshore industries) SU2b Offshore industries SU10 Formulation [mixing] of preparations and/or re-packaging SU19 Building and construction work

Environment

Environmental release category	ERC5 Industrial use resulting in inclusion into or onto a matrix. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC10b Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC11a Wide dispersive indoor use of long-life articles and materials with low release. ERC11b Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC12a Industrial processing of articles with abrasive techniques (low release).
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Use in construction products, Industrial and Professional

Worker

Process category

PROC2 Use in closed, continuous process with occasional controlled exposure
 PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.
 PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
 PROC7 Spraying in industrial settings and applications.
 PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
 PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
 PROC10 Roller application or brushing of adhesive and other coating.
 PROC11 Spraying outside industrial settings and/or applications.
 PROC13 Treatment of articles by dipping and pouring.
 PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.
 PROC19 Hand-mixing with intimate contact and only PPE available.
 PROC21 Low energy manipulation of substances bound in materials and/or articles
 PROC24 High (mechanical) energy work-up of substances bound in materials and/or articles

2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Regional use tonnage: 1500 tonnes/year

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%
Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 10%
Emission factor - soil Release fraction to soil from process (initial release prior to RMM): 90

Risk management measures

STP type Municipal STP.
STP details Assumed domestic sewage treatment plant flow: 10000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.
Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid in solution

Human factors not influenced by risk management

Use in construction products, Industrial and Professional

Potentially exposed body parts	PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm ² . PROC7 Spraying in industrial settings and applications. PROC11 Spraying outside industrial settings and/or applications. Hands and forearms. Covers skin contact area up to 1500 cm ² . PROC19 Hand-mixing with intimate contact and only PPE available. Both hands and main part of the arms. Covers skin contact area up to 1980 cm ² .
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.
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Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice	Avoid splashing.
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3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in construction products, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in construction products, Consumer
Product category	PC10 Building and construction preparations not covered elsewhere.
Article category	AC4 Stone, plaster, cement, glass and ceramic articles AC7 Metal articles AC8 Paper articles AC10 Rubber articles AC11 Wood articles AC13 Plastic articles
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC10b Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC11a Wide dispersive indoor use of long-life articles and materials with low release. ERC11b Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC12a Industrial processing of articles with abrasive techniques (low release).

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Regional use tonnage: 1500 tonnes/year

Frequency and duration of use

Use in construction products, Consumer

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from wide dispersive use: 10%
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Solid in solution
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Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario Use in polymers and plastics

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in polymers and plastics
Product category	PC32 Polymer preparations and compounds.
Main sector	SU3 Industrial uses
Sector of use	SU11 Manufacture of rubber products SU12 Manufacture of plastics products, including compounding and conversion

Environment

Environmental release category	ERC6b Industrial use of reactive processing aids.
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Worker

Process category	PROC3 Use in closed batch process (synthesis or formulation). PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 200 tonnes
Regional use tonnage: 20 tonnes/year
Daily amount per site: 67 kg

Frequency and duration of use

Use in polymers and plastics

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.65%
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

Good practice	Carefully handle the substance to minimise releases.
STP type	Onsite STP.
STP details	Assumed onsite sewage treatment plant flow: 2000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
Waste treatment	pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment
Disposal method	Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid in solution
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Human factors not influenced by risk management

Potentially exposed body parts	PROC3 Use in closed batch process (synthesis or formulation). Palm of one hand. Covers skin contact area up to 240 cm ² . PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Palm of both hands. Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. Both hands. Covers skin contact area up to 960 cm ² .
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Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.
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Risk management measures

	Use suitable eye protection and gloves. Wear suitable working clothes.
Additional advice	Avoid splashing.

3. Exposure estimation (Environment 1)

Use in polymers and plastics

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in textile industry

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in textile industry
Product category	PC20 Products such as ph-regulators, flocculants, precipitants, neutralization agents PC23 Leather tanning, dye, finishing, impregnation and care products. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids.
Main sector	SU3 Industrial uses
Sector of use	SU5 Manufacture of textiles, leather, fur SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles.
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Worker

Process category	PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. PROC13 Treatment of articles by dipping and pouring. PROC22 Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Use in textile industry

Annual amount used in the EU: 300 tonnes
 Regional use tonnage: 120 tonnes/year
 Annual amount per site: 6000 kg
 Daily amount per site: 20 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%
Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 100%
Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
 Local marine water dilution factor: 100

Risk management measures

Good practice Carefully handle the substance to minimise releases.
STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.
Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment
Disposal method Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid in solution

Human factors not influenced by risk management

Potentially exposed body parts PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
 Wear suitable working clothes.

Additional advice Avoid splashing.

Use in textile industry

3. Exposure estimation (Environment 1)

Assessment method Used EUSES model.

Environmental exposure Fresh water: Exposure 0.0292 mg/l, PNEC 0.440 mg/l, RCR 0.0663

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in paints and coatings, Industrial and Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in paints and coatings, Industrial and Professional
Product category	PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints.
Article category	AC4 Stone, plaster, cement, glass and ceramic articles AC11 Wood articles
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU10 Formulation [mixing] of preparations and/or re-packaging SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18 Manufacture of furniture SU19 Building and construction work

Environment

Environmental release category	ERC5 Industrial use resulting in inclusion into or onto a matrix. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC10b Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC11a Wide dispersive indoor use of long-life articles and materials with low release. ERC11b Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing).
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Worker

Use in paints and coatings, Industrial and Professional

Process category	<p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC11 Spraying outside industrial settings and/or applications.</p> <p>PROC19 Hand-mixing with intimate contact and only PPE available.</p> <p>PROC21 Low energy manipulation of substances bound in materials and/or articles</p> <p>PROC24 High (mechanical) energy work-up of substances bound in materials and/or articles</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 300 tonnes
 Regional use tonnage: 40 tonnes/year
 Annual amount for wide dispersive uses: 10 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 2%
Emission factor - soil	Not applicable - no direct release to soil.

Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 10000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
Waste treatment	pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid in solution
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Human factors not influenced by risk management

Potentially exposed body parts	<p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Palm of both hands. Covers skin contact area up to 480 cm².</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. PROC11 Spraying outside industrial settings and/or applications. Hands and forearms. Covers skin contact area up to 1500 cm². PROC19 Hand-mixing with intimate contact and only PPE available. Both hands and main part of the arms. Covers skin contact area up to 1980 cm².</p>
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Organisational measures to prevent/limit releases, dispersion and exposure

Use in paints and coatings, Industrial and Professional

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in paints and coatings, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in paints and coatings, Consumer
Product category	PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints. PC18 Ink and toners. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids.
Article category	AC4 Stone, plaster, cement, glass and ceramic articles AC11 Wood articles
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC10b Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing). ERC11a Wide dispersive indoor use of long-life articles and materials with low release. ERC11b Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing).

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Annual amount used in the EU: 300 tonnes

Frequency and duration of use

Use in paints and coatings, Consumer

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0%
Emission factor - water	Release fraction to wastewater from wide dispersive use: 2%
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m ³ /day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Solid in solution
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Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor/outdoor use.
Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario

Use in photography, Industrial and Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in photography, Industrial and Professional
Product category	PC30 Photochemicals.
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU20 Health services

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems.
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Worker

Process category	PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC13 Treatment of articles by dipping and pouring.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 200 tonnes

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
Waste treatment	pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

Use in photography, Industrial and Professional

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid in solution

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in photography, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in photography, Consumer
Product category	PC30 Photochemicals.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Annual amount used in the EU: 200 tonnes

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Solid in solution
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Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Ventilation rate	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.
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Use in photography, Consumer

3. Exposure estimation (Environment 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario Use as a laboratory agent

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use as a laboratory agent
Product category	PC21 Laboratory chemicals.
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC7 Industrial use of substances in closed systems.
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Worker

Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1000 tonnes

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
Waste treatment	pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Use as a laboratory agent

Product characteristics

Physical state Solid , or: Solid in solution

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in water treatment

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in water treatment
Product category	PC4 Anti-freeze and de-icing products. PC7 Base metals and alloys. PC14 Metal surface treatment products, including galvanic and electroplating products. PC16 Heat transfer fluids. PC17 Hydraulic fluids. PC20 Products such as ph-regulators, flocculants, precipitants, neutralization agents PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products). PC37 Water treatment chemicals.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging
<u>Environment</u>	
Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC6b Industrial use of reactive processing aids. ERC7 Industrial use of substances in closed systems.
<u>Worker</u>	

Use in water treatment

Process category	<p>PROC1 Use in closed process, no likelihood of exposure.</p> <p>PROC2 Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3 Use in closed batch process (synthesis or formulation).</p> <p>PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC13 Treatment of articles by dipping and pouring.</p> <p>PROC18 Greasing at high energy conditions.</p> <p>PROC20 Heat and pressure transfer fluids in dispersive use but closed systems.</p> <p>PROC25 Other hot work operations with metals</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Concentration of substance in product: 25%

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Emission factor to air: 0%

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 100%

Emission factor - soil Not applicable - no direct release to soil.

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 10000 m³/day

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid in solution

Concentration details Concentration of substance in product: 25%

Human factors not influenced by risk management

Use in water treatment

Potentially exposed body parts

PROC1 Use in closed process, no likelihood of exposure. PROC3 Use in closed batch process (synthesis or formulation). Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. Hands and forearms. Covers skin contact area up to 1500 cm².

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in metal surface treatment, Industrial and Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in metal surface treatment, Industrial and Professional
Product category	PC7 Base metals and alloys. PC14 Metal surface treatment products, including galvanic and electroplating products. PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products).
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU14 Manufacture of basic metals, including alloys SU15 Manufacture of fabricated metal products, except machinery and equipment SU16 Manufacture of computer, electronic and optical products, electrical equipment SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
<u>Environment</u>	
Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC6b Industrial use of reactive processing aids.
<u>Worker</u>	

Use in metal surface treatment, Industrial and Professional

Process category	<p>PROC2 Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3 Use in closed batch process (synthesis or formulation).</p> <p>PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.</p> <p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC13 Treatment of articles by dipping and pouring.</p> <p>PROC17 Lubrication at high energy conditions and in partly open process.</p> <p>PROC18 Greasing at high energy conditions.</p> <p>PROC23 Open processing and transfer operations with minerals/metals at elevated temperature</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

Waste treatment pH adjustment Dispose of waste in accordance with environmental legislation. Central biological waste water treatment

2. Conditions of use affecting exposure (Workers - Health 1)

Human factors not influenced by risk management

Potentially exposed body parts PROC3 Use in closed batch process (synthesis or formulation). Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Use in closed, continuous process with occasional controlled exposure PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. Hands and forearms. Covers skin contact area up to 1500 cm².

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Use in metal surface treatment, Industrial and Professional

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in metal surface treatment, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in metal surface treatment, Consumer
Product category	PC7 Base metals and alloys. PC14 Metal surface treatment products, including galvanic and electroplating products. PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning products (including solvent-based products).
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC6b Industrial use of reactive processing aids.

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid in solution

Use in metal surface treatment, Consumer

Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Ventilation rate Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario

Use in agriculture, Industrial and Professional

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in agriculture, Industrial and Professional
Product category	PC8 Biocidal products. PC12 Lawn and garden preparations (- fertilizers). PC21 Laboratory chemicals.
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU1 Agriculture, forestry, fishery

Environment

Environmental release category	ERC2 Formulation of preparations. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC8b Wide dispersive indoor use of reactive substances in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.
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Worker

Use in agriculture, Industrial and Professional

Process category	<p>PROC3 Use in closed batch process (synthesis or formulation).</p> <p>PROC7 Spraying in industrial settings and applications.</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).</p> <p>PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.</p> <p>PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.</p> <p>PROC10 Roller application or brushing of adhesive and other coating.</p> <p>PROC11 Spraying outside industrial settings and/or applications.</p> <p>PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.</p> <p>PROC15 Use as laboratory reagent.</p> <p>PROC19 Hand-mixing with intimate contact and only PPE available.</p>
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1500 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - water Release fraction to wastewater from wide dispersive use: 10%

Emission factor - soil Release fraction to soil from wide dispersive use (regional only): 90%

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Solid in solution

Human factors not influenced by risk management

Potentially exposed body parts PROC3 Use in closed batch process (synthesis or formulation). PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. Both hands. Covers skin contact area up to 960 cm². PROC7 Spraying in industrial settings and applications. PROC11 Spraying outside industrial settings and/or applications. Hands and forearms. Covers skin contact area up to 1500 cm². PROC19 Hand-mixing with intimate contact and only PPE available. Both hands and main part of the arms. Covers skin contact area up to 1980 cm².

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Risk management measures

Use suitable eye protection and gloves.
Wear suitable working clothes.

Use in agriculture, Industrial and Professional

Additional advice Avoid splashing.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in agriculture, Consumer

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in agriculture, Consumer
Product category	PC8 Biocidal products. PC12 Lawn and garden preparations (- fertilizers). PC21 Laboratory chemicals.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8b Wide dispersive indoor use of reactive substances in open systems. ERC8d Wide dispersive outdoor use of processing aids in open systems.
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1500 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - water	Release fraction to wastewater from wide dispersive use: 10%
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 90%

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Other given operational conditions affecting Non-industrial exposure

Use in agriculture, Consumer

Ventilation rate

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.



Exposure scenario Use in medical devices

Identification

Product name	Citric Acid
REACH registration number	01-2119457026-42-XXXX
CAS number	77-92-9
EC number	201-069-1
Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 sds@univar.com

1. Title of exposure scenario

Main title	Use in medical devices
Product category	PC20 Products such as ph-regulators, flocculants, precipitants, neutralization agents
Main sector	SU3 Industrial uses
Sector of use	SU22 Professional uses SU20 Health services

Environment

Environmental release category ERC7 Industrial use of substances in closed systems.

Worker

Process category PROC1 Use in closed process, no likelihood of exposure.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 1000 tonnes

Other given operational conditions affecting environmental exposure

Low environmental release

2. Conditions of use affecting exposure (Workers - Health 1)

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system.

Organisational measures to prevent/limit releases, dispersion and exposure

Use in medical devices

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

3. Exposure estimation (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Qualitative approach used to conclude safe use. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.