



SAFETY DATA SHEET CITRIC ACID SOLUTION

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

1.1. Product identifier

Product name	CITRIC ACID SOLUTION
Product number	10141
Synonyms; trade names	2 HYDROXY 1,2,3 PROPANE TRICARBOXYLIC ACID, LIQUINAT L50, LIQUINAT L50 FG, CITRIC ACID 50%, DEGNA 50 AC, CITRIC ACID SOL 46%, CITRIC ACID 40% SOL, PC 16143895, CITRIC ACID 50% SOL MCS ZW

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

Identified uses	Industry For further information, see attached Exposure Scenario.
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1.3. Details of the supplier of the safety data sheet

Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	10141

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 STOT SE 3 - H335
Environmental hazards	Not Classified

2.2. Label elements

Hazard pictograms



Signal word	Warning
Hazard statements	H319 Causes serious eye irritation. H335 May cause respiratory irritation.

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Precautionary statements	P271 Use only outdoors or in a well-ventilated area.
	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
	P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P501 Dispose of contents/ container in accordance with national regulations.

Contains	CITRIC ACID
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2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB. The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

CITRIC ACID			> 35
CAS number: 5949-29-1	EC number: 201-069-1	REACH registration number: 01-2119457026-42-XXXX	
Classification Eye Irrit. 2 - H319 STOT SE 3 - H335			

The full text for all hazard statements is displayed in Section 16.

Composition comments	The data shown are in accordance with the latest EC Directives.
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SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly with water. Do not induce vomiting. Get medical attention if any discomfort continues.
Skin contact	After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Get medical attention if any discomfort continues.
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 if any discomfort continues.

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

Inhalation	May cause respiratory irritation.
Eye contact	Causes serious eye irritation.

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

Notes for the doctor	No specific recommendations. Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
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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 When heated and in case of fire, toxic vapours/gases may be formed.

Hazardous combustion products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Oxides of the following substances: Carbon.

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 Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes.

6.2. Environmental precautions

Environmental precautions 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 Stop leak if safe to do so. Absorb spillage with inert, damp, non-combustible material. Collect and place in suitable waste disposal containers and seal securely. Label the containers containing waste and contaminated materials and remove from the area as soon as possible. Flush contaminated area with plenty of water. 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

Usage precautions Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Store away from the following materials: Strong oxidising agents. Strong alkalis. Store at temperatures above 5°C. Suitable container materials: Stainless steel. Plastics

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Ingredient comments No exposure limits known for ingredient(s).

CITRIC ACID (CAS: 5949-29-1)

Ingredient comments No exposure limits known for ingredient(s).

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PNEC

- 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. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimise worker exposure.

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

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacture, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene measures

When using do not eat, drink or smoke. Wash after use and before eating, smoking and using the toilet. Remove contaminated clothing and protective equipment before entering eating areas. Eye wash facilities and emergency shower must be available when handling this product.

Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. If ventilation is inadequate, suitable respiratory protection must be worn. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Odourless.
Odour threshold	Not applicable.
pH	No information available.
Melting point	Not applicable.
Initial boiling point and range	>100°C
Flash point	No information available.
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.

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Upper/lower flammability or explosive limits	No information available.
Other flammability	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	1.23 - 1.25 @ 20°C
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	log Pow: -1.8 - -0.2
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	7 - 10 mPa s @ 25°C
Explosive properties	No information available.
Explosive under the influence of a flame	No information available.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information	No information required.
Refractive index	No information available.
Particle size	No information available.
Molecular weight	No information available.
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	There are no known reactivity hazards associated with this product.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Strong alkalis. Strong oxidising agents.
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10.4. Conditions to avoid

Conditions to avoid	Avoid excessive heat for prolonged periods of time.
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10.5. Incompatible materials

Materials to avoid	Strong alkalis. Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Oxides of the following substances: Carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Notes (oral LD₅₀) No information available.

Acute toxicity - dermal

Notes (dermal LD₅₀) No information available.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) No information available.

Skin corrosion/irritation

Animal data No information available.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye irritation.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

Germ cell mutagenicity

Genotoxicity - in vitro No information available.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility No information available.

Specific target organ toxicity - single exposure

STOT - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

Inhalation

May cause respiratory irritation.

Ingestion

May cause discomfort if swallowed.

Skin contact

Liquid may irritate skin.

Eye contact

Causes serious eye irritation.

Toxicological information on ingredients.

CITRIC ACID

Acute toxicity - oral

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

Species Mouse

ATE oral (mg/kg) 5,400.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 2,000.0

Species Rat

Skin corrosion/irritation

Skin corrosion/irritation No information available.

Serious eye damage/irritation

Serious eye damage/irritation Irritating to eyes.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

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 May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

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

Toxicokinetics

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Inhalation May cause respiratory irritation.

Ingestion May cause discomfort if swallowed.

Skin contact Powder may irritate skin.

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Eye contact

Irritating to eyes.

SECTION 12: Ecological information

Ecotoxicity

The product is not expected to be hazardous to the environment. However, large or frequent spills may have hazardous effects on the environment.

Ecological information on ingredients.

CITRIC ACID

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

Toxicity

Not considered toxic to fish.

Ecological information on ingredients.

CITRIC ACID

Toxicity

Not considered toxic to fish.

Acute aquatic toxicity

Acute toxicity - fish

LC₅₀, 96 hours: 440 - 706 mg/l, Fish

Acute toxicity - aquatic invertebrates

EC₅₀, 24 hours: 1535 mg/l, Daphnia magna

12.2. Persistence and degradability

Persistence and degradability The product is biodegradable.

Ecological information on ingredients.

CITRIC ACID

Persistence and degradability

The product is biodegradable.

Biological oxygen demand

0.526 g O₂/g substance

Chemical oxygen demand

0.728 g O₂/g substance

12.3. Bioaccumulative potential

Bioaccumulative potential

No data available on bioaccumulation.

Partition coefficient

log Pow: -1.8 - -0.2

Ecological information on ingredients.

CITRIC ACID

Bioaccumulative potential

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

Partition coefficient

log Pow: -1.8 - -0.2

12.4. Mobility in soil

Mobility

The product is soluble in water.

Ecological information on ingredients.

CITRIC ACID SOLUTION

CITRIC ACID

Mobility The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

CITRIC ACID

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 No information available.

Ecological information on ingredients.

CITRIC ACID

Other adverse effects The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

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Not applicable.

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

Transport in bulk according to Not applicable.

Annex II of MARPOL 73/78
and the IBC Code

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.

Restrictions (Annex XVII Regulation 1907/2006)

This product is/contains a substance that is included in REGULATION (EC) No 1907/2006 (REACH) ANNEX XVII - RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES. Entry number: 3

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

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.

Classification procedures according to Regulation (EC) 1272/2008

Eye Irrit. 2 - H319: Calculation method. STOT SE 3 - H335: Calculation method.

Revision comments

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

Revision date

11/07/2022

CITRIC ACID SOLUTION

Version number	5.000
Supersedes date	13/01/2022
SDS number	10141
SDS status	Approved.
Hazard statements in full	H319 Causes serious eye irritation. H335 May cause respiratory irritation.
Signature	Jitendra Panchal

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.



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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Use of intermediate
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) 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

Use as intermediate

Annual site tonnage: 3000 tonnes

Daily amount per site: 10000 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): 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

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 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.

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 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 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

Use as intermediate

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 0.0154 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 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

Environment

Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture ERC3 Formulation into solid matrix ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Formulation of preparations

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact
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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 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tableting, compression, extrusion, pelletisation, granulation Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Both hands. Covers skin contact area up to 960 cm². PROC7 Industrial spraying 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC11a Widespread use of articles with low release (indoor)
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Worker

Process category	PROC10 Roller application or brushing PROC11 Non industrial spraying PROC19 Manual activities involving hand contact
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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

Use in personal care products

Daily amount for wide dispersive uses: 1.03 kg

Regional use tonnage: 750 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: 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 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 into mixture ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
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Worker

Use in cleaning products, Industrial

Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.
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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 mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC7 Industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm².
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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.
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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.
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Additional advice	Avoid splashing.
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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. The use is assessed to be safe.
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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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 PC36 Water softeners. PC37 Water treatment chemicals.
Article category	AC8 Paper articles AC35 Scented paper articles
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
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Worker

Use in cleaning products, Professional

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC19 Manual activities involving hand contact
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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
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Concentration details	Covers concentrations up to 100 %.
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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	PROC9 Transfer of substance or mixture 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC11 Non industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm². PROC19 Manual activities involving hand contact Both hands and main part of the arms. Covers skin contact area up to 1980 cm².
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Other given operational conditions affecting workers exposure

Setting	Indoor/outdoor use.
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Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
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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.
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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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 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 Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
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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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Use in cleaning products, Consumer

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

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in paper industry
Product category	PC26 Paper and board treatment products
Main sector	SU3 Industrial uses
Sector of use	SU6b Manufacture of pulp, paper and paper products

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) 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%
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 2%

Use in paper industry

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 Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or mixture (charging and discharging) 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Use at industrial site leading to inclusion into/onto article ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor) ERC10a Widespread use of articles with low release (outdoor) ERC10b Widespread use of articles with high or intended release (outdoor) ERC11a Widespread use of articles with low release (indoor) ERC11b Widespread use of articles with high or intended release (indoor) ERC12a Processing of articles at industrial sites with low release
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Worker

Use in construction products, Industrial and Professional

Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC19 Manual activities involving hand contact PROC21 Low energy manipulation and handling of substances bound in/on materials or articles PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles
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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 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

Use in construction products, Industrial and Professional

Potentially exposed body parts	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm ² . PROC7 Industrial spraying PROC11 Non industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm ² . PROC19 Manual activities involving hand contact 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Widespread use leading to inclusion into/onto article (indoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor) ERC10a Widespread use of articles with low release (outdoor) ERC10b Widespread use of articles with high or intended release (outdoor) ERC11a Widespread use of articles with low release (indoor) ERC11b Widespread use of articles with high or intended release (indoor) ERC12a Processing of articles at industrial sites with 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

Emission days: 365 days/year

Use in construction products, Consumer

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Use of reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) 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 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm ² . PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or mixture (charging and discharging) 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in textile industry
Product category	PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC23 Leather treatment products PC34 Textile dyes and impregnating products
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 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature
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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
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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
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Human factors not influenced by risk management

Potentially exposed body parts	PROC8b Transfer of substance or mixture (charging and discharging) 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing 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 textile industry

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Use at industrial site leading to inclusion into/onto article ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor) ERC10a Widespread use of articles with low release (outdoor) ERC10b Widespread use of articles with high or intended release (outdoor) ERC11a Widespread use of articles with low release (indoor) ERC11b Widespread use of articles with high or intended release (indoor)
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Worker

Use in paints and coatings, Industrial and Professional

Process category	PROC7 Industrial spraying
	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC10 Roller application or brushing
	PROC11 Non industrial spraying
	PROC19 Manual activities involving hand contact
	PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
	PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles

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	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm ² . PROC7 Industrial spraying PROC11 Non industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm ² . PROC19 Manual activities involving hand contact 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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Use in paints and coatings, Industrial and Professional

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 and impregnating products
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 Widespread use leading to inclusion into/onto article (indoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor) ERC10a Widespread use of articles with low release (outdoor) ERC10b Widespread use of articles with high or intended release (outdoor) ERC11a Widespread use of articles with low release (indoor) ERC11b Widespread use of articles with high or intended release (indoor)

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

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Use in paints and coatings, Consumer

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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Worker

Process category	PROC5 Mixing or blending in batch processes PROC9 Transfer of substance or mixture 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
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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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC7 Use of functional fluid at industrial site
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) 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

Use as a laboratory agent

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

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 PC16 Heat transfer fluids. PC17 Hydraulic fluids. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning 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 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC7 Use of functional fluid at industrial site
<u>Worker</u>	

Use in water treatment

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC18 General greasing/lubrication at high kinetic energy conditions PROC20 Use of functional fluids in small devices PROC25 Other hot work operations with metals
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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 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC7 Industrial spraying 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning 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

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Use in metal surface treatment, Industrial and Professional

Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions PROC23 Open processing and transfer operations at substantially elevated temperature
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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 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) 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 mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC7 Industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm².
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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)

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 PC25 Metal working fluids. PC31 Polishes and wax blends. PC35 Washing and cleaning products
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
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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.
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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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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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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 into mixture ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
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Worker

Use in agriculture, Industrial and Professional

Process category	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC11 Non industrial spraying PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact
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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 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC7 Industrial spraying PROC11 Non industrial spraying Hands and forearms. Covers skin contact area up to 1500 cm². PROC19 Manual activities involving hand contact 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.

Additional advice Avoid splashing.

Use in agriculture, Industrial and Professional

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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.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
<u>Environment</u>	
Environmental release category	ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

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)

Use in agriculture, Consumer

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 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 Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in medical devices
Product category	PC20 Processing aids 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 Use of functional fluid at industrial site
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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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.

Use in medical devices

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.

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.