

Citric acid Anhydrous EXTENDED SAFETY DATA SHEET

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH); 1272/2008 & 453/2010 (CLP)

Version: 1 Date: 28/02/2011

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

1.2

Chemical Name Citric acid

Trade name Citric acid Anhydrous

CAS No. 77-92-9 EINECS No. 201-069-1

REACH Registration No. 01-2119457026-42-0006 Relevant identified uses of the substance or mixture and uses advised against

Identified use(s)

Used as a sour agent, buffering agent and antioxidant in the food industry; a

correctant in pharmaceutical industry; used in detergents, buffering and

chelating, sizing and as a sequestrant.

Uses advised against No uses advised against

1.3 Details of the supplier of the Safety Data Sheet

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Opening hours

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP) Warning. H319: Causes serious eye irritation

2.1.2 Directive 67/548/EEC & Directive Xi; Irritant. R36

1999/45/EC

2.2 Label elements

2.2.1 According to Regulation (EC) No. 1272/2008 & 453/2010 (CLP)

Hazard Pictogram

Signal word(s) Warning

Hazard statement(s) H319: Causes serious eye irritation

Precautionary statement(s) P264. Wash hands thoroughly after handling.

P280 Wear eye protection.

P305 + P351 + P338. IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313: If eye irritation persists: Get medical advice/attention.

2.2.2 According to Directive 67/548/EEC & Directive 1999/45/EC

Hazard Symbol

×

Irritant

Risk Phrases R36. Irritating to eye

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Safety Phrases S26. Avoid contact with eyes. In case of contact with eyes, rinse immediately with

plenty of water and seek medical advice

2.3 Other hazards Not known 2.4 **Additional Information** Not known

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Composition	%W/W	EC No.	CAS No
Citric acid	99.5 to 100.5	201-069-1	77-92-9

SECTION 4: FIRST AID MEASURES



Description of first aid measures 4.1

> Inhalation Move to fresh air.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If irritation

persists, call a physician.

Rinse thoroughly with plenty of water for at least 15 minutes and consult a **Eye Contact**

Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything Ingestion

by mouth to an unconscious person. Consult a physician.

4.2 Most important symptoms and Serious eye damage/eye irritation: Eye Irrit. 2

effects, both acute and delayed

4.3 Indication of immediate medical

attention and special treatment needed

Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 **Extinguishing Media**

> Use alcohol-resistant foam, carbon dioxide, dry powder or water fog. 5.1.1 Suitable Extinguishing Media

5.1.2. Unsuitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

5.2 Special hazards arising from the substance or

mixture

Oxides of carbon

5.3 Advice for fire-fighters In the event of fire, wear self-contained breathing apparatus and wear suitable

protective clothing.

Fire residues and contaminated fire extinguishing water must be disposed of in

accordance with local regulations

5.4 Additional information Explosion hazard from the generation of dust.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment Use personal protective equipment.

and emergency procedures **Environmental precautions**

Do not flush substance into surface water or sewage system.

Methods and material for containment and 6.3

Sweep up or vacuum up spillage and collect in suitable container for disposal.

cleaning up

6.2

6.4 Reference to other sections Section 8 Not known 6.5 **Additional Information**

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling Avoid contact with skin and eyes. Use only in well-ventilated areas. Do not

breathe vapours/dust

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7.2 Conditions for safe storage, including

any incompatibilities

Storage Store in tightly closed original container in a dry, cool and well ventilated

place. Keep in original container.

Keep locked up or in an area accessible only to qualified staff

Incompatible materials Strong oxidising substances, strong alkalis.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits No values assigned
 8.1.2 Biological limit values No values assigned

8.2 PNECs and DNELs

DNELs - Health No true DNEL for systemic toxicity can be derived. Local effects, eye

irritation should be considered.

PNEC/PEC - Environment

Compartment	PNEC
Aquatic PNECaqua – freshwater (mg/l)	0.44
PNECaqua - marine water (mg/l)	0.044
PNECfreshwater-sediment (mg/kg d.w.)	3.46. (Equivalent to 0.752 mg/kg wwt)
The PNECmarine-sediment mg/kg d.w.	34.6. (Equivalent to 7.52 mg/kg wwt)
Terrestrial (PNECsoil mg/kg d.w.)	33.1
Sewage treatment plant PNEC STP (mg/l)	>1000
Atmospheric Compartment	Not applicable

8.3 Exposure controls

8.3.1 Appropriate engineering controls

Minimise the risk of dust inhalation. Provide adequate ventilation.

8.3.2 Personal protection equipment

Eye/face protection Safety glasses with side-shields



Skin protection (Hand protection/ Other)

Avoid contact with skin, eyes and clothing. Wash hands before breaks and at the end of workday. Protective gloves must satisfy the specifications of EU

Directive 89/686/EEC and EN 374

Respiratory protection Provide adequate ventilation. Wear respirator where dust level exceeds 10

mg/m3.



Thermal hazards Not applicable

8.3.3 Environmental Exposure Controls Do not allow to enter drains, sewers or watercourses

8.3.4 Hygiene measures Do not smoke in the work area. Wash at the end of each work shift and before

eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated.

When using do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance Solid, crystalline

 Colour
 White

 Odour
 Odourless

 pH (Value)
 1.7 (100g/l)

Melting Point Approx.153 °C at 1,013 hPa Boiling point/boiling range (°C): Decomposes before boiling

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Flash Point (°C)

Flammability

Non flammable

Density

1.665 g/cm³ at 20°C

Solubility (Water)

Solubility (Other)

Partition Coefficient (Log Kow: -n
-0.2 to -1.8

Octanol/water)

Decomposition Temperature (°C)

Explosive properties

Oxidising properties

Not explosive

Not oxidising

9.2 Other information The fraction below 100 μ m = 84.1%; the D50 of the fraction below 100 μ m

Granulometry = at 31.99 μ m.

Dissociation constant pKa: 3.13, 4.76 and 6.4 at 25°C

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity Reacts with alkaline materials
 10.2 Chemical stability Stable under normal conditions
 10.3 Conditions to avoid Exposure to heat and moisture.
 10.4 Incompatible materials Sodium nitrite, potassium nitrite

10.5 Hazardous Decomposition Product(s) Oxides of carbon.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Substances

Acute toxicity

Ingestion LD50 (mouse) 5400 mg/kg bw
Inhalation No data

Skin Contact. LD50 (dermal): >2000 mg/kg bw
Skin corrosion/irritation Mild skin irritant
Eye Contact Irritating

Respiratory or skin sensitization –skin Not a sensitizer

Respiratory or skin sensitization –skin

Mutagenicity

Carcinogenicity

Reproductive toxicity

Not a sensitizer

Not a mutagen

Not a carcinogen

Not a reproductive toxin

STOT - single exposure
STOT - repeated exposure
Aspiration hazard
Not known
Not known
Not known
Not known

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

12.2

Fish LC50 (48hr) 440 mg/l
D. Magna LC 50 (24hr) 1535 mg/l
Algae (8 d mat. (nominal) based on cell density 425 mg/l
Persistence and degradability Biodegradable

12.3 Bioaccumulative potential No expected to bioaccumulate

12.4 Mobility in soil Not applicable
 12.5 Results of PBT and vPvB assessment Not a PBT or a vPvB

12.6 Other adverse effects Not known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Disposal to licensed waste disposal site in accordance with local Waste

Disposal Authority.

13.2 Additional Information Not known

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SECTION 14: TRANSPORT INFORMATION

14.1 Land transport (ADR/RID)
 14.2 Sea transport (IMDG)
 14.3 Air transport (ICAO/IATA)
 Not subject to transport regulations.
 Not subject to transport regulations.
 Not subject to transport regulations.

14.4 Transport in bulk according to Annex II of

MARPOL73/78 and the IBC Code

SECTION 15: REGULATORY INFORMATION

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

Not known

15.1.1 EU regulations User to follow EU directives and regulations

Authorisations and/or restrictions on use Not applicable

15.1.2 National regulations User to follow national regulations

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Version 1.

LEGEND

LTELLong Term Exposure LimitSTELShort Term Exposure LimitSTOTSpecific Target Organ ToxicityDNELDerived No Effect Level

PNEC Predicted No Effect Concentration

References:

Chemical Safety Report for citric acid and citrates Regulation (EC) No. 1272/2008 & 453/2010 (CLP) Directive 67/548/EEC & Directive 1999/45/EC

Risk Phrases and Safety Phrases

R36: Irritating to eyes

S26: Avoid contact with eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

$Hazard\ statement(s)\ and\ Precautionary\ statement(s)$

H319: Causes serious eye irritation

P264: Wash hands thoroughly after handling.

P280: Wear eye protection.

P305 + P351 + P338. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention.

Training advice: Ensure staff and workers receive adequate training with regular updates in the handling of chemicals

Additional Information. Not known

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Annexes

- I. Exposure scenarios
- II. Use descriptors

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Annexes I. Exposure scenarios

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- 1. Intermediate
- 2. Formulation
- 3. Personal care products
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- 5. Paper industry
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- 8. Oil industry
- 9. Paints and coatings
- 10. Photography products
- 11. Textile industry
- 12. Laboratory reagents
- 13. Water treatment
- 14. Treatment of metal surfaces
- 15. Agricultural applications
- 16. Medical devices

1. Exposure Scenario		
Use of citric acid as an intermediate. In	dustrial	
2. Processes and activities covered by the	ne exposure scenario	
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures industrial sites	
	09. Manufacture of fine chemicals	
Chemical product category (PC):	19. Intermediate	
Process category (PROC):	01. Use in closed process, no likelihood of exposure	
	02. Use in closed, continuous process with occasional controlled exposure	
	04. Use in batch and other process (synthesis) where opportunity for exposure arises	
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Article Categories [AC]:	Not applicable	
Environmental release category (ERC):	06a. Industrial use resulting in manufacture of another substance (use of intermediates)	
3. Operational conditions of use		
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory	
	protection to be taken in areas where workers may come into contact with dust.	
	Implement basic standards of occupational hygiene	
Duration and frequency of use:	Users to specify	
Maximum amount per time or	Users to specify	
activity:		
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.	
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known	
Other protective equipment:	Good hygiene and housekeeping	
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged	
Hand protection:	Rubber or PVC gloves	
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to workstation location.	
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of equipment	
	and work area, good personal hygiene, staff training and management/supervision are in place.	
4. Physical form of substance / preparation / mixture or article		
Information on basic physical and	Solid, crystalline, acidic as a liquid	
chemical properties:		
5. Product specification	•	
Physical form of the product:	Not applicable	
Concentration of substance in	Users to specify	
preparation / mixture or article:		
Service life of substances in articles:	Users to specify	

6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by dust
	inhalation.
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not known
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

2. Exposure Scenario	
Use of citric acid formulation into pre	parations/mixtures –industrial
2. Processes and activities covered by	the exposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites
	10. Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
	05. Manufacture of textiles, leather, fur
	13. Manufacture of other non-metallic mineral products, e.g. plasters, cement
	20. Health services
Chemical product category (PC):	0. Other
	01 Adhesives, sealants
	03. Air care products
	09a. Coatings and paints, thinners, paint removers
	09b. Fillers, putties, plasters, modelling clay
	12. Fertilizers
	18. Ink and toners
	30. Photo-chemicals.
	31. Polishes and wax blends
	35. Washing and cleaning products (including solvent based products)
	39. Cosmetics, personal care products
Process category (PROC):	01. Use in closed process, no likelihood of exposure
	02. Use in closed, continuous process with occasional controlled exposure
	03. Use in closed batch process (synthesis or formulation)
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	05. Mixing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact)
	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large

	containers at dedicated facilities
	09. Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	13. Treatment of articles by dipping and pouring
	14. Production of preparations/mixtures or articles by tabletting, compression, extrusion, pelletisation
	15. Use as laboratory reagent
	19. Hand-mixing with intimate contact and only PPE available
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	01. Manufacture of substances
	02. Formulation of preparations/mixtures
	03. Formulation in materials
	04. Industrial use of processing aids in processes and products, not becoming part of articles
3. Operational conditions of use	· · · · · · · · · · · · · · · · · · ·
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
COMP of purumeters.	protection to be taken in areas where workers may come into contact with dust. Implement
	basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Industrial professional - ensure eyewash and showers are
	in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and management/supervision are in place.
4. Physical form of substance / preparatio	1
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Users to specify
preparation / mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by dust inhalation.
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
R.O.	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	

Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

3. Exposure Scenario	
Use of citric acid in personal care product	s. Industrial, professional and consumer users.
ose of clare acta in personal care product	3. Hudstrat, professional and consumer users.
-	respect of human health, formulation is also covered under Citric acid –formulation
2. Processes and activities covered by the	, ^
Sector of end use (SU):	20. Health services
	21. Consumer uses: Private households (= general public = consumers)
	22. Professional uses: Public domain (administration, education, entertainment, services,
	craftsmen)
Chemical product category (PC):	02. Adsorbents
	03. Air care products
Process category (PROC):	10. Roller application or brushing
	11. Non industrial spraying
	19. Hand-mixing with intimate contact and only PPE available
Article Categories [AC]:	08. Paper articles
Environmental release category (ERC):	08a. Wide dispersive indoor use of processing aids in open systems
	11a. Wide dispersive indoor use of long-life articles and materials with low release
3. Operational conditions of use	1 5
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
.	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Industrial & professional - ensure eyewash and showers
•	are in the proximity to workstation location.
Other information:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust. Implement
	basic standards of occupational hygiene
4. Physical form of substance / preparatio	n / mixture or article
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Users to specify
preparation / mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
7. Consumer use:	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate. Good hygiene and housekeeping
8. Waste management measures	Good hygicale and nousekeeping
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	in accordance with focus, state of matorial registation.
Human exposure prediction:	
raman caposure prediction.	

Workers:	Long term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Long term exposure to low concentrations during application/use.
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

4. Exposure Scenario	
Use of citric acid in detergents and cleaning	ng products. Industrial, professional and consumer users
2. Processes and activities covered by the	exposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites
	21 Consumer uses: Private households (= general public = consumers)
	22 Professional uses: Public domain (administration, education, entertainment, services,
	craftsmen)
Chemical product category (PC):	03. Air care products
	28. Perfumes, fragrances
	31. Polishes and wax blends
	35. Washing and cleaning products (including solvent based products)
	36. Water softeners
	37. Water treatment chemicals
Process category (PROC):	01. Use in closed process, no likelihood of exposure
	02. Use in closed, continuous process with occasional controlled exposure
	04 Use in batch and other process (synthesis) where opportunity for exposure arises
	05. Mixing or blending in batch processes for formulation of preparations/mixtures/mixtures and articles (multistage and/or significant contact)
	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	09. Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	10. Roller application or brushing
	11. Non industrial spraying
	13. Treatment of articles by dipping and pouring
	19. Hand-mixing with intimate contact and only PPE available
Article Categories [AC]:	08. Paper articles
Environmental release category (ERC):	02. Formulation of preparations/mixtures
	04. Industrial use of processing aids in processes and products, not becoming part of articles
	08a. Wide dispersive indoor use of processing aids in open systems
	8d. Wide dispersive outdoor use of processing aids in open systems
	09a. Wide dispersive indoor use of substances in closed systems
	09b. Wide dispersive outdoor use of substances in closed systems
3. Operational conditions of use	. ,
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory protection to be taken in areas where workers may come into contact with dust. Implement basic standards of occupational hygiene

Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Industrial professional - ensure eyewash and showers are
	in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and management/supervision
	are in place.
4. Physical form of substance / preparatio	n / mixture or article
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Formulators information
preparation / mixture or article:	
Service life of substances in articles:	In use 2 to 12 months
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
_	sewers.
	The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Good hygiene and housekeeping
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	-
Human exposure prediction:	
Workers:	Short term during formulation. Long term exposure during application. Use of PPE will to
	minimise handling and contact.
Consumers:	Long term exposure to low concentrations during application/use
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
_	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

5. Exposure Scenario	
Use of citric acid in paper industry. Industrial	
2. Processes and activities covered by t	he exposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures industrial sites
	06a. Manufacture of pulp, paper and paper products
Chemical product category (PC):	26. Paper and board dye, finishing and impregnation products: including bleaches and other
	processing aids
Process category (PROC):	05. Mixing or blending in batch processes for formulation of preparations/mixtures/mixtures
	and articles (multistage and/or significant contact)
	8a. Transfer of substance or preparation (charging/discharging) from/to vessels/large
	containers at non-dedicated facilities.
Article Categories [AC]:	Not applicable

Environmental release category (ERC):	04. Industrial use of processing aids in processes and products, not becoming part of articles
3. Operational conditions of use	•
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to
	workstation location.
Other information:	
4. Physical form of substance / preparation	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Users to specify
preparation / mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated.
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Long term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

6. Exposure Scenario	
Use of citric acid in construction pro-	ducts. Industrial, professional and consumer
2. Processes and activities covered by	the exposure scenario
Sector of end use (SU):	02. Mining, (without offshore industries)
	03. Industrial uses: Uses of substances as such or in preparations/mixtures industrial sites
	10. Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
	19. Building and construction work
	21. Consumer uses: Private households (= general public = consumers)
	22 .Professional uses: Public domain (administration, education, entertainment, services,
	craftsmen)
Chemical product category (PC):	0. Other

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Process category (PROC):	02. Use in closed, continuous process with occasional controlled exposure
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	05. Mixing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact)
	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	10. Roller application or brushing
	11. Non industrial spraying
	13. Treatment of articles by dipping and pouring
	14. Production of preparations/mixtures or articles by tabletting, compression, extrusion, pelletisation
	19. Hand-mixing with intimate contact and only PPE available
	21. Low energy manipulation of substances bound in materials and/or articles
	24. High (mechanical) energy work-up of substances bound in materials and/or articles
Article Categories [AC]:	04. Stone, plaster, cement, glass and ceramic articles
Environmental release category (ERC):	05. Industrial use resulting in inclusion into or onto a matrix
	08c. Wide dispersive indoor use resulting in inclusion into or onto a matrix
	08f. Wide dispersive outdoor use resulting in inclusion into or onto a matrix
	10a. Wide dispersive outdoor use of long-life articles and materials with low release
	10b. Wide dispersive outdoor use of long-life articles and materials with high or in-tended release (including abrasive processing)
	11a. Wide dispersive indoor use of long-life articles and materials with low release
	11b. Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)
	12a. Industrial processing of articles with abrasive techniques (low release)
3. Operational conditions of use	
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust.
D	Implement basic standards of occupational hygiene
Duration and frequency of use: Maximum amount per time or activity:	Users to specify Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Industrial/professional, ensure eyewash and showers are
	in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and management/supervision are in place.
4. Physical form of substance / preparatio	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	*
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Users to specify
preparation / mixture or article:	II
Service life of substances in articles:	Users to specify
6. Risk Management Measures Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
Entra official Exposure Controls.	111016 dispersal of spinor material and ranon and contact with son, waterways, trains and

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	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Good hygiene and housekeeping
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Long term exposure during application.
Consumers:	Long term exposure to low concentrations during application/use.
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

7. Exposure Scenario		
Use of citric acid Polymers and plastics. In	ndustrial	
2. Processes and activities covered by the		
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites	
Chemical product category (PC):	32. Polymer preparations and compounds	
Process category (PROC):	03. Use in closed batch process (synthesis or formulation)	
	05. Mixing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact)	
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Article Categories [AC]:	Not applicable	
Environmental release category (ERC):	06b. Industrial use of reactive processing aids	
3. Operational conditions of use		
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory	
	protection to be taken in areas where workers may come into contact with dust. Implement	
	basic standards of occupational hygiene	
Duration and frequency of use:	Users to specify	
Maximum amount per time or activity:	Users to specify	
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.	
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known	
Other protective equipment:	Good hygiene and housekeeping	
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged	
Hand protection:	Rubber or PVC gloves	
Eye protection:	Wear safety goggles or face shield. Industrial professional - ensure eyewash and showers are	
	in the proximity to workstation location.	
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of	
	equipment and work area, good personal hygiene, staff training and management/supervision	
	are in place.	
	4. Physical form of substance / preparation / mixture or article	
Information on basic physical and	Solid, crystalline, acidic as a liquid	
chemical properties:		
5. Product specification		
Physical form of the product:	Part of a preparation can be a liquid or solid.	

Concentration of substance in	Users to specify
preparation / mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by dust
	inhalation.
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	·
Human exposure prediction:	
Workers:	Long term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	·
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

8. Exposure Scenario	
Use of citric acid in oil industry. Industria	ıl.
2. Processes and activities covered by the	exposure scenario
Sector of end use (SU):	02. Offshore industries
	03. Industrial uses: Uses of substances as such or in preparations/mixtures industrial sites
Chemical product category (PC):	20. Products such as ph-regulators, flocculants, precipitants, neutralization agents
	40. Other
Process category (PROC):	03. Use in closed batch process (synthesis or formulation)
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	05. Mixing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact)
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	8d. Wide dispersive outdoor use of processing aids in open systems
3. Operational conditions of use	
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory protection to be taken in areas where workers may come into contact with dust. Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves

Eye protection:	Wear safety goggles or face shield. Industrial/professional, ensure eyewash and showers are
	in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and management/supervision
	are in place
4. Physical form of substance / preparation	on / mixture or article
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Users to specify
preparation / mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
handling of surplus or waste:	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Long term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the
	handling of chemicals

9. Exposure Scenario	
Use of citric acid in paints and coatings. Industrial, professional and consumer users	
2. Processes and activities covered by	the exposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites
	17. General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
	18. Manufacture of furniture
	19. Building and construction work
	21. Consumer uses: Private households (= general public = consumers)
	22. Professional uses: Public domain (administration, education, entertainment, services,
	craftsmen)
Chemical product category (PC):	09a. Coatings and paints, thinners, paint removers
	9b. Fillers, putties, plasters, modelling clay
	18. Ink and toners
	34. Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Process category (PROC):	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at nondedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	10. Roller application or brushing
	11. Non industrial spraying

	10 Hand winds with indicate and a dark DDF and India
	19. Hand-mixing with intimate contact and only PPE available
Antinto Cotomorios [A Cit	24. High (mechanical) energy work-up of substances bound in materials and/or articles 04. Stone, plaster, cement, glass and ceramic articles
Article Categories [AC]:	11. Wood articles
E	
Environmental release category (ERC):	O5. Industrial use resulting in inclusion into or onto a matrix O8c. Wide dispersive indoor use resulting in inclusion into or onto a matrix
	08c. Wide dispersive indoor use resulting in inclusion into or onto a matrix 08f. Wide dispersive outdoor use resulting in inclusion into or onto a matrix
	10a. Wide dispersive outdoor use of long-life articles and materials with low release
	10b. Wide dispersive outdoor use of long-life articles and materials with high or in-tended release (including abrasive processing)
	11a. Wide dispersive indoor use of long-life articles and materials with low release
	11b. Wide dispersive indoor use of long-life articles and materials with high or intended
	release (including abrasive processing)
3. Operational conditions of use	
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Industrial professional - ensure eyewash and showers are
	in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and management/supervision
	are in place.
4. Physical form of substance / preparatio	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	T
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in	Formulators information
preparation / mixture or article:	
Service life of substances in articles:	
6. Risk Management Measures	T
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
- 0	sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Good hygiene and housekeeping
8. Waste management measures	Number 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
Description and information on safe handling of surplus or waste:	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should be
	in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction: Workers:	Short term during formulation. Long term exposure during application. Use of PPE will to
workers:	minimise handling and contact.
Congumora	Exposure to low concentrations during application/use
Consumers:	Exposure to low concentrations during application/use
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs
	followed. Ensure staff and workers receive adequate training with regular updates in the

10. Exposure Scenario	
Use of citric acid in photography products.	Professional and consumer users
2. Processes and activities covered by the ex	posure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial
	sites
	20. Health services
	21. Consumer uses: Private households (= general public = consumers)
	22. Professional uses: Public domain (administration, education, entertainment, services,
	craftsmen)
Chemical product category (PC):	30. Photo-chemicals
Process category (PROC):	05. Mixing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact)
	13. Treatment of articles by dipping and pouring
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	08a Wide dispersive indoor use of processing aids in open systems
3. Operational conditions of use	1 3 1. 3
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Professional - ensure eyewash and showers are in the
	proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and
	management/supervision are in place.
4. Physical form of substance / preparation	mixture or article
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in preparation	Formulators information
/ mixture or article:	
Service life of substances in articles:	
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and
	sewers. The substance is biodegradable, has a low Kow and is not expected to
	bioaccumulate.
7. Consumer use:	Good hygiene and housekeeping
8. Waste management measures	North link for the transfer of the link of
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	Short term during formulation Long term avacques during application
Workers:	Short term during formulation. Long term exposure during application
Consumers:	Exposure to low concentrations during application/use
Method:	Not applicable Not known
Exposure estimation:	INOU KHOWH

Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and
	OCs followed. Ensure staff and workers receive adequate training with regular updates in
	the handling of chemicals

11. Exposure Scenario	
Use of citric acid in textiles. Industrial	
2. Processes and activities covered by the exp	osure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures industrial sites
	05. Manufacture of textiles, leather, fur
Chemical product category (PC):	20. Products such as ph-regulators, flocculants, precipitants, neutralization agents
	23. Leather tanning, dye, finishing, impregnation and care products
	24. Lubricants, greases, release products
Process category (PROC):	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	10. Roller application or brushing
	13. Treatment of articles by dipping and pouring
	22. Potentially closed processing operations with minerals/metals at elevated temperature
Article Categories [AC]:	05. Fabrics, textiles and apparel
	06. Leather articles
Environmental release category (ERC):	04. Industrial use of processing aids in processes and products, not becoming part of articles
3. Operational conditions of use	
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory protection to be taken in areas where workers may come into contact with dust. Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to
	workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area, good personal hygiene, staff training and Management/ supervision are in place.
4. Physical form of substance / preparation /	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in preparation	Users to specify
/ mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to

	bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Long term exposure during application.
	Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the Esds
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and
	OCs followed. Ensure staff and workers receive adequate training with regular updates in
	the handling of chemicals

12. Exposure Scenario	
Use of citric acid in laboratory agents. Indu	strial users
2. Processes and activities covered by the ex	xposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial
	sites
Chemical product category (PC):	04. Anti-Freeze and de-icing products
	16. Heat transfer fluids
	20. Products such as ph-regulators, flocculants, precipitants, neutralization agents
	37. Water treatment chemicals
Process category (PROC):	01. Use in closed process, no likelihood of exposure
	02. Use in closed, continuous process with occasional controlled exposure
	03. Use in closed batch process (synthesis or formulation)
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large
	containers at non-dedicated facilities
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	04. Industrial use of processing aids in processes and products, not becoming part of
	articles 07. Industrial use of sub-stances in closed systems
3. Operational conditions of use	07. Industrial use of suo-stances in closed systems
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
Control parameters.	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills.
Engineering control measures:	Keep area well ventilated. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to
Lye protection:	wear safety goggles of race shield. Ensure eyewash and showers are in the proximity to workstation location.
Other information:	
Ошег ппогтацоп:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area; good personal hygiene, staff training and management/supervision are in place.
	management/supervision are in place.

4. Physical form of substance / preparation / mixture or article	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in preparation	Formulators information
/ mixture or article:	
Service life of substances in articles:	
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Short term during formulation. Long term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and OCs followed. Ensure staff and workers receive adequate training with regular updates in the handling of chemicals

13. Exposure Scenario	
Use of citric acid in water treatment. Industrial	
2. Processes and activities covered by the ex	xposure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites
	14. Manufacture of basic metals, including alloys
	15. Manufacture of fabricated metal products, except machinery and equipment
	16. Manufacture of computer, electronic and optical products, electrical equipment
	17. General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category (PC):	04. Anti-Freeze and de-icing products
	07. Base metals and alloys
	14. Metal surface treatment products, including galvanic and electroplating products
	16. Heat transfer fluids
	17. Hydraulic fluids
	20. Products such as ph-regulators, flocculants, precipitants, neutralization agents
	25. Metal working fluids
	26. Paper and board dye, finishing and impregnation products: including bleaches and other processing aids

	35. Washing and cleaning products (including solvent based products)
	37. Water treatment chemicals
Process category (PROC):	01. Use in closed process, no likelihood of exposure
	02. Use in closed, continuous process with occasional controlled exposure
	03. Use in closed batch process (synthesis or formulation)
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	09. Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	10. Roller application or brushing
	13. Treatment of articles by dipping and pouring
	18. Greasing at high energy conditions
	20. Heat and pressure transfer fluids in dispersive, professional use but closed systems
	25. Other hot work operations with metals
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	04. Industrial use of processing aids in processes and products, not becoming part of articles
	07. Industrial use of sub-stances in closed systems
3. Operational conditions of use	
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area; good personal hygiene, staff training and management/
4. Physical form of substance / preparation /	supervision are in place.
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	Sond, organismo, actato as a niquita
5. Product specification	1
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in preparation	Users to specify
/ mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by dust inhalation.
Environmental Exposure Controls:	Avoid dispersal of spilled material and run off and contact with soil, waterways, drains
	and sewers. The substance is biodegradable, has a low Kow and is not expected to
	bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	

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Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Use of PPE will to minimise handling and contact.
Consumers:	Not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and
	OCs followed. Ensure staff and workers receive adequate training with regular updates
	in the handling of chemicals

14. Exposure Scenario	
1. Use of citric acid in treatment of metals & surfaces. Industrial	
2. Processes and activities covered by the ex	posure scenario
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites
	14. Manufacture of basic metals, including alloys
	15. Manufacture of fabricated metal products, except machinery and equipment
	16. Manufacture of computer, electronic and optical products, electrical equipment
	17. General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category (PC):	07. Base metals and alloys
	14. Metal surface treatment products, including galvanic and electroplating products
	25. Metal working fluids
	31. Polishes and wax blends
	35. Washing and cleaning products (including solvent based products)
Process category (PROC):	02. Use in closed, continuous process with occasional controlled exposure
	03. Use in closed batch process (synthesis or formulation)
	04. Use in batch and other process (synthesis) where opportunity for exposure arises
	07. Industrial spraying
	08a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	08b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	09. Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	10. Roller application or brushing
	13. Treatment of articles by dipping and pouring
	17. Lubrication at high energy conditions and in partly open process
	18. Greasing at high energy conditions
	23. Open processing and transfer operations with minerals/metals at elevated temperature
Article Categories [AC]:	Not applicable
Environmental release category (ERC):	04. Industrial use of processing aids in processes and products, not becoming part of articles

	06b. Industrial use of reactive processing aids
3. Operational conditions of use]
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory
Control parameters.	protection to be taken in areas where workers may come into contact with dust.
	Implement basic standards of occupational hygiene.
Duration and frequency of use:	Users to specify
Maximum amount per time or activity:	Users to specify
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known
Other protective equipment:	Good hygiene and housekeeping
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged
Hand protection:	Rubber or PVC gloves
Eye protection:	Wear safety goggles or face shield. Ensure eyewash and showers are in the proximity to
	workstation location.
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of
	equipment and work area; good personal hygiene, staff training and
	management/supervision are in place.
4. Physical form of substance / preparation /	
Information on basic physical and	Solid, crystalline, acidic as a liquid
chemical properties:	
5. Product specification	
Physical form of the product:	Part of a preparation can be a liquid or solid.
Concentration of substance in preparation	Users to specify
/ mixture or article:	
Service life of substances in articles:	Users to specify
6. Risk Management Measures	
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by
	dust inhalation.
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains
	and sewers. The substance is biodegradable, has a low Kow and is not expected to
	bioaccumulate.
7. Consumer use:	Not applicable
8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	Chart town are come during application Has of DDF will to wishing how His
Workers:	Short term exposure during application. Use of PPE will to minimise handling and
Consumers:	contact. Not applicable
Consumers;	i not applicable
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	-
10. Other information	•
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and
_	OCs followed. Ensure staff and workers receive adequate training with regular updates
	in the handling of chemicals

15. Exposure Scenario	
1. Use of citric acid agricultural applications. Industrial, professional & consumer	
2. Processes and activities covered by the exposure scenario	
Sector of end use (SU):	01. Agriculture, forestry, fishery

sites 21. Consumer uses: Private households (= general public = consumers) 22. Professional uses: Public domain (administration, education, entertainment, services, craftsmen) 32. Fertilizers 32. Laboratory chemicals 33. Use in closed batch process (synthesis or formulation) 34. Fertilizers 35. Laboratory chemicals 36. Missing or blending in batch processes for formulation) 36. Missing or blending in batch processes for formulation of preparations/mixtures and articles (multistage and/or significant contact) 36. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at toon-dedicated facilities 36. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated inclinites 36. Use of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated inclinites 36. Use of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated inclinites 36. Use of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated inclinites 36. Use of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated inclinites 36. User application or brushing 36. User application or brushing 37. Production of preparations/mixtures or articles by tabletting, compression, extrusion, pelletisation 38. User a laboratory reagent 39. Production of preparations/mixtures or articles by tabletting, compression, extrusion, pelletisation 39. Furniture or articles articles 38. Wide dispersive indoor use of reactive substances in open systems 30. Practicion of preparation or preparations/mixtures 39. Wide dispersive indoor use of processing aids in processes and products, not becoming part of articles 30. Wide dispersive outdoor use of processing aids in open systems 30. Wide dispersive outdoor use of processing aids in open systems 30. Wide dispersive outdoor use of processing aids in open systems 30. Wide dispersive outdoor use of processing a		02 Indicated 1 II of collaboration and collaboration (with the collaboration)
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6. Risk Management Measures Occupational exposure controls: Keep area well ventilated. Precautions against dust explosion and irritation caused by dust inhalation. Environmental Exposure Controls: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.		
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sewers. The substance is biodegradable, has a low Kow and is not expected to bioaccumulate.		Keep area well ventilated. Precautions against dust explosion and irritation caused by dust inhalation.
	Environmental Exposure Controls:	
7. Consumer use: Good hygiene and housekeeping		
1 0	7. Consumer use:	Good hygiene and housekeeping

8. Waste management measures	
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should
handling of surplus or waste:	be in accordance with local, state or national legislation.
9. Exposure assessment	
Human exposure prediction:	
Workers:	Short term exposure during application. Use of PPE will to minimise handling and contact.
Consumers:	Short term exposure during application.
Method:	Not applicable
Exposure estimation:	Not known
Secondary Poisoning:	Not expected
Indirect exposure to humans via the	Not expected
environment:	
10. Other information	
Control parameters:	Refer to the eSDS
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and
	OCs followed. Ensure staff and workers receive adequate training with regular updates in
	the handling of chemicals. They must also ensure the substance is in compliance with
	directives and regulations concerned with the placing on the marketing of pesticidal
	products

16. Exposure Scenario					
1. Use of citric acid in medical devices. Indu	strial & consumer				
2. Processes and activities covered by the ex	xposure scenario				
Sector of end use (SU):	03. Industrial uses: Uses of substances as such or in preparations/mixtures at industrial sites				
	20. Health services				
	22. Professional uses: Public domain (administration, education, entertainment, services, craftsmen)				
Chemical product category (PC):	20 Products such as ph-regulators, flocculants, precipitants, neutralization agents				
Process category (PROC):	01. Use in closed process, no likelihood of exposure				
Article Categories [AC]:	07. Industrial use of sub-stances in closed systems				
Environmental release category (ERC):	8d. Wide dispersive outdoor use of processing aids in open systems				
3. Operational conditions of use					
Control parameters:	Precautionary measures against electrostatic discharge to be taken. LEV and respiratory				
	protection to be taken in areas where workers may come into contact with dust. Implement				
	basic standards of occupational hygiene.				
Duration and frequency of use:	Users to specify				
Maximum amount per time or activity:	Users to specify				
Other operational conditions of use:	Avoid splashes and spills. Minimise manual handling.				
Engineering control measures:	Local exhaust ventilation. Exposure limit values: Not known				
Other protective equipment:	Good hygiene and housekeeping				
Respiratory protection:	Required where ventilation is insufficient or exposure is prolonged				
Hand protection:	Rubber or PVC gloves				
Eye protection:	Wear safety goggles or face shield. Industrial professional - ensure eyewash and showers				
	are in the proximity to workstation location.				
Other information:	Avoid contact with the substance or contaminated objects, Ensure regular cleaning of				
	equipment and work area; good personal hygiene, staff training and				
	management/supervision are in place.				
4. Physical form of substance / preparation	/ mixture or article				
Information on basic physical and	Solid, crystalline, acidic as a liquid				
chemical properties:					
5. Product specification					
Physical form of the product:	Part of a preparation can be a liquid or solid.				

Concentration of substance in preparation	Users to specify				
/ mixture or article:					
Service life of substances in articles:	Users to specify				
6. Risk Management Measures					
Occupational exposure controls:	Keep area well ventilated. Precautions against dust explosion and irritation caused by dust				
	inhalation.				
Environmental Exposure Controls:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and				
	sewers. The substance is biodegradable, has a low Kow and is not expected to				
	bioaccumulate.				
7. Consumer use:	Good hygiene and housekeeping				
8. Waste management measures					
Description and information on safe	Neutralise before treatment in a sewage treatment plant. Disposal untreated waste should				
handling of surplus or waste:	be in accordance with local, state or national legislation.				
9. Exposure assessment					
Human exposure prediction:					
Workers:	Use of PPE will to minimise handling and contact.				
Consumers:	Good hygiene and housekeeping				
Method:	Not applicable				
Exposure estimation:	Not known				
Secondary Poisoning:	Not expected				
Indirect exposure to humans via the	Not expected				
environment:					
10. Other information					
Control parameters:	Refer to the eSDS				
Method to check compliance:	Management/supervision to check that the RMMs in place are being used correctly and				
	OCs followed. Ensure staff and workers receive adequate training with regular updates in				
	the handling of chemicals				

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Annex II Use descriptors

Identified use	Sector of Use - main user groups	Sector of Use – sectors of end-use	Preparation Category (PC)	Process category (PROC)	Article category (AC)	Environmental Release Category (ERC)
	(SU)					
Manufacture	SU3	SU3	PC19	PROC1, 2, 3, 8b		ERC1
Intermediate	SU3	SU3, 9	PC19	PROC1, 2, 3, 4, 8b		ERC6a
Formulation	SU3, 10	SU5, 13, 20	PC0, 1, 3, 9, 12, 18, 30, 31, 35, 39	PROC 2, 3, 4, 5, 7, 8a, 8b, 9, 13, 14, 15, 19		ERC1, 2, 3, 4
Personal care products	SU21, 22	SU20	PC2, 39	PROC 10, 11, 19	AC8	ERC 8a, 11a
Detergent and	SU3, 21,		PC3, 28, 31, 35, 36,	PROC1, 2, 4, 5, 7, 8a, 8b, 9,	AC8	ERC2, 4, 8A, 8D,
cleaning products	22		37	10, 11, 13, 19	AC35	9A, 9B
Paper industry	SU3	SU6	PC26	PROC 5, 8a		ERC4
Construction	SU3, 21,	SU2, 10, 19	PC10	PROC 2, 4, 5, 7, 8a, 8b, 10,	AC4, 12-	ERC5, 8c, 8f, 10a,
products	22			11. 13, 14, 19, 21, 24	1, 12-2	10b, 11a, 11b, 12a
Polymers and plastics	SU3	SU11, 12	PC32	PROC 3, 5, 8a, 8b		RC6b
Oil industry	SU3	SU2	PC20, 40	PROC 3, 4, 5, 8a, 8b,		ERC8d
Paints and coatings	SU3, 21, 22	SU17, 18,	PC9, 18, 34	PROC 7, 8a, 8b, 10, 11, 19, 21, 24	AC4, 11	ERC5, 8c, 8f, 10a, 10b, 11a, 11b
Photography products	SU3, 21, 22	SU20	PC30	PROC 5, 13		ERC8a
Textile industry	SU3	SU5	PC20, 23, 24	PROC 8a, 8b, 10, 13, 22	AC5, 6	ERC4
Laboratory reagents	SU3		PC4, 16, 20, 37	PROC 1, 2, 3, 4, 8a,		ERC4, 7
Water treatment	SU3	SU14, 15, 16, 17	PC4, 7, 14, 16, 17, 20, 25, 31, 35, 37	PROC 1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 18, 20, 25, xyz1		ERC4, 7
Treatment of metal surfaces SU3	SU3	SU14, 15, 16, 17	PC7, 14, 25, 31, 35	PROC 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18, 23		ERC4, 6b
Agricultural applications	SU3, 21, 22	SU1	PC8, 12, 21	PROC 3, 5, 8a, 8b, 10, 11, 14, 15, 19		ERC2, 4, 8b, 8d
Medical devices	SU3	SU22 SU20	PC20	PROC1		ERC7

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