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

1.1 Product identifier

Trade name/designation	Elma Steam Descaler
Substance name	citric acid, monohydrate
EC No.	201-069-1
REACH No.	01-2119457026-42
CAS No.	5949-29-1
Unique Formula Identifier	UFI: RK70-Q0H0-W00X-1QFJ
Product category	PC-CLN-4 Descaling products

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

Sector of uses [SU]
SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process categories [PROC]
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)
PROC13 Treatment of articles by dipping and pouring

Environmental release categories [ERC]
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Product Categories [PC]
PC35 Washing and cleaning products

Use of the substance/mixture
Descaling product for devices.

Uses advised against
Do not use for injecting or spraying.

1.3 Details of the supplier of the safety data sheet

Supplier
Elma Schmidbauer GmbH
Gottlieb-Daimler-Str. 17
D-78224 Singen (Htwl.)
Telephone +49 7731 882-0
Telefax +49 7731 882-266
E-mail info@elma-ultrasonic.com
Website www.elma-ultrasonic.com

Department responsible for information:
Chemie/Labor: Email: chemlab@elma-ultrasonic.com

1.4 Emergency telephone number

Vergiftungs-Informations-Zentrale Freiburg (Sprache/Language: DE, EN) +49 761 19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]	Classification procedure
Eye Irrit. 2, H319	Harmonised (legal) classification.
STOT SE 3, H335	Harmonised (legal) classification.

Hazard statements for health hazards
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms

GHS07

Signal word
Warning

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

Precautionary statements
P261 Avoid breathing dust/mist/spray.
P280 Wear eye protection.
P312 Call a POISON CENTER/doctor if you feel unwell.
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.
P302 + P352 IF ON SKIN: Wash with plenty of water.

Other labelling
Labelling for contents according to regulation (EC) No. 648/2004:
none

2.3 Other hazards

Adverse human health effects and symptoms
Acute Tox. 5 (oral + dermal + inhalation) H303 + H313 + H333: May be harmful if swallowed, in contact with skin or if inhaled.
This substance does not have endocrine disrupting properties with respect to humans.

Adverse environmental effects
Aquatic Acute 2 H401: Toxic to aquatic life.
This substance does not have endocrine disrupting properties with respect to non-target organisms.

Results of PBT and vPvB assessment
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

SECTION 3: Composition / information on ingredients

3.1 Substances

Substance name	citric acid, monohydrate
EC No.	201-069-1
REACH No.	01-2119457026-42
CAS No.	5949-29-1

3.2 Mixtures

not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
In the event of persistent symptoms receive medical treatment.

Following inhalation
Provide fresh air.
In the event of symptoms refer for medical treatment.
In case of inhaling spray mist, consult a physician.

Following skin contact
In case of contact with skin wash off with water.
In case of skin irritation, consult a physician.

After eye contact
After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Following ingestion
Rinse mouth thoroughly with water.
Do NOT induce vomiting.
In the event of persistent symptoms receive medical teatment.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms
No further informations available.

4.3 Indication of any immediate medical attention and special treatment needed

Notes for the doctor
No further informations available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water spray jet
Extinguishing powder
Foam
Carbon dioxide (CO_2)

Unsuitable extinguishing media
Full water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products
In case of fire formation of dangerous gases possible.
In the event of fire the following can be released:
Carbon monoxide

5.3 Advice for firefighters

Special protective equipment for firefighters
Do not inhale explosion and combustion gases.
In case of fire: Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Avoid dust formation.
Use personal protection equipment.

For emergency responders
Use personal protection.
Use breathing apparatus if exposed to vapours/dust/aerosol.

6.2 Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.

6.3 Methods and material for containment and cleaning up

For containment
Take up mechanically and send for disposal.
Flush away residues with water.

6.4 Reference to other sections

Safe handling: see section 7
Personal protection equipment: see section 8
Disposal: see section 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures
Avoid the formation of dust.
Avoid:
generation/formation of aerosols
Do not inhale dust.
Do not inhale aerosols
Avoid contact with eyes and skin.
Take the usual precautions when handling with chemicals.
Keep the packing dry and well sealed to prevent contamination and absorbtion of humidity.
The product is:
Combustible

Advices on general occupational hygiene
Make available sufficient washing facilities
Keep away from food and drink.
Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels
Keep only in unopened original container.

Storage class
11 Combustible solids that cannot be assigned to any of the above storage classes

Materials to avoid
Do not store together with:
Strong alkali
Oxidising agent
Keep away from:
Food and feedingstuffs

Further information on storage conditions
Protect from heat and direct solar radiation.
Protect from atmospheric moisture and water
Storage time: 24 months.
Keep locked up and out of reach of children.

7.3 Specific end use(s)

Recommendation
See section 1.2
Observe instructions for use of the device.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

No data available

8.2 Exposure controls

Personal protection equipment

Eye/face protection
tightly fitting goggles

Hand protection
By long-term hand contact
chemical-resistant gloves
Glove material specification [make/type, thickness, permeation time/life]: NR, 0,5mm, >=8h.
Glove material specification [make/type, thickness, permeation time/life]: NBR, 0,35mm, >=8h.

Respiratory protection
In case of dust formation wear micro dust mask.
Particle filter P2
Respiratory protection necessary at:
aerosol or mist formation
dust formation
Short term: filter apparatus, Filter P2

Environmental exposure controls

Technical measures to prevent exposure
Do not discharge into surface waters.
Neutralization is necessary before a waste water is discharged into sewage treatment plants.
Avoid penetration into the subsoil/soil.

Additional information
Occupational exposure limits for citric acid.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state
solid
Granulate

Colour
white

Odour
odourless

Safety relevant basis data

	Value	Method	Source, Remark
Odour threshold:	not determined		
Melting point/freezing point	135- 152 °C		

	Value	Method	Source, Remark
Boiling point or initial boiling point and boiling range	> 170 °C		decomposition
flammability	gaseous		not applicable
flammability	solid		Not classified as flammable solid.
Lower and upper explosion limit			not applicable
Flash point			not applicable
Auto-ignition temperature	345 °C		Value of citric acid.
Decomposition temperature	> 170 °C		
pH	in aqueous solution 2.2 (20°C) Concentration 10 g/L		
Viscosity			not applicable
Solubility(ies)	Water solubility 676 g/L (25°C)		
Partition coefficient n-octanol/water (log value)	-1.72		Value of citric acid.
Vapour pressure	0.0000022 Pa (25°C)		Value of citric acid.
Density and/or relative density	Density 1.54 g/cm³ (20°C)		
Density and/or relative density	Bulk density 550- 950 kg/m³ (20°C)		
Relative vapour density			not applicable
particle characteristics	mass median diameter (MMD) 31.99 µm		CAS No.77-92-9 citric acid European Chemicals Agency, http://echa.europa.eu/.

9.2 Other information

Information with regard to physical hazard classes

Explosives

Assessment/classification
This product does not contain any explosive substances (CLP I 2.1.4.3 a).
CLP I 2.1.4.3 a: The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with explosive properties.

flammable gases

Assessment/classification
not applicable (solid).

Aerosols

Assessment/classification
not relevant - no aerosol.
The classification criteria for this hazard class are not met by definition.

Oxidising gas

Assessment/classification
not applicable (solid).

Gases under pressure

Assessment/classification
not applicable (solid).

flammable liquids

Assessment/classification
not applicable (solid).

flammable solids

Assessment/classification
Not classified as flammable solid.

Self-reactive substances and mixtures

Assessment/classification
This product does not contain any self-reactive substances (CLP I 2.8.4.2 a).
CLP I 2.8.4.2 a: There are no chemical groups present in the molecule associated with explosive or self reactive properties.

Pyrophoric liquids

Assessment/classification
not applicable (solid).

Pyrophoric solids

Assessment/classification
Not pyrophoric.

self-heating substances and mixtures

Assessment/classification
No self-heating substance.

Substances or mixtures which, in contact with water, emit flammable gases

Assessment/classification
not relevant - in contact with water releases no flammable gases (CLP I 2.12.4.1).
CLP I 2.12.4.1: The classification procedure for this class need not be applied if: (a) the chemical structure of the substance or mixture does not contain metals or metalloids; or (b) experience in production or handling shows that the substance or mixture does not react with water, e.g. the substance is manufactured with water or washed with water; or (c) the substance or mixture is known to be soluble in water to form a stable mixture.

Oxidising liquids

Assessment/classification
not applicable (solid).

Oxidising solids

Assessment/classification
Not oxidising.

Organic peroxides

Assessment/classification
No organic peroxide.

Corrosive to metals

Assessment/classification
not applicable (solid).
Based on available data, the classification criteria are not met.

Desensitised explosives

Assessment/classification
Not classified as a desensitized explosive.

Other safety characteristics

	Value	Method	Source, Remark
Explosive properties			Not classified as explosive. Dust can form an explosive mixture with air.

	Value	Method	Source, Remark
Oxidising properties			none

SECTION 10: Stability and reactivity

10.1 Reactivity

Exothermic reaction with alkalies.
No further hazardous reactions known if used as directed.

10.2 Chemical stability

Stable at ambient temperature.

10.3 Possibility of hazardous reactions

Reactions with strong alkalies.

10.4 Conditions to avoid

Heat and direct solar radiation.

10.5 Incompatible materials

Reactions with strong alkalies.
Oxidising agent

10.6 Hazardous decomposition products

No decomposition if used as directed.

SECTION 11: Toxicological information

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

Acute toxicity

Animal data

	Effective dose	Method,Evaluation	Source, Remark
Acute oral toxicity	LD50: 2409 mg/kg Species Mouse		Value of citric acid.
Acute dermal toxicity	LD50: > 2000 mg/kg Species Rat	OECD 402	
Acute inhalation toxicity	Acute inhalation toxicity (dust/mist) 6.25 mg/L	ATE: Acute Toxicity Estimate	
	Acute inhalation toxicity (vapour)		not relevant

Assessment/classification
May be harmful if swallowed, in contact with skin or if inhaled.

Skin corrosion/irritation

Animal data

Result / Evaluation	Method	Source, Remark
slightly irritant Species Rabbit	OECD 404	

Serious eye damage/irritation

Animal data

Result / Evaluation	Method	Source, Remark
Irritant. Species Rabbit	OECD 405	

Sensitisation to the respiratory tract

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

Skin sensitisation

Animal data

Result / Evaluation	Dose / Concentration	Method	Source, Remark
not sensitising.			

Germ cell mutagenicity

	Value	Method	Result / Evaluation	Remark
In vitro mutagenicity/genotoxicity		OECD 471 (Ames test)	negative.	
In vivo mutagenicity/genotoxicity		OECD 475	negative	No experimental indications of in vitro mutagenicity exist.

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

Carcinogenicity

Animal data

	Value	Method	Result / Evaluation	Remark
Carcinogenicity				No indication of human carcinogenicity.

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

Reproductive toxicity

Practical experience/human evidence
No indications of human reproductive toxicity exist.

Animal data

	Value	Method	Result / Evaluation	Remark
Reproductive toxicity				No evidence for reproductive toxicity in experimental animals.

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

Overall Assessment on CMR properties

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

STOT-single exposure

STOT SE 1 and 2

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

STOT SE 3

Irritation to respiratory tract

Assessment/classification
Respiratory irritant effect: STOT SE 3 H335: May cause respiratory irritation.

Narcotic effects

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

STOT-repeated exposure

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

Aspiration hazard

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

11.2 Information on other hazards

Symptoms related to the physical, chemical and toxicological characteristics

	Effective dose	Method,Evaluation	Source, Remark
Endocrine disrupting properties			This substance does not have endocrine disrupting properties with respect to non-target organisms.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity

	Effective dose	Method,Evaluation	Source, Remark
Acute (short-term) fish toxicity	LC50: 440 mg/L Species Leuciscus idus (golden orfe) Test duration 48 h	OECD 203	
Chronic (long-term) fish toxicity	not determined		
Acute (short-term) toxicity to crustacea	EC50 34 mg/L Species Daphnia magna (Big water flea) Test duration 48 h	OECD 202	
Chronic (long-term) toxicity to aquatic invertebrate	not determined		
Acute (short-term) toxicity to algae and cyanobacteria	EC50 1.9 mg/L Species Scenedesmus subspicatus Test duration 72 h	OECD 201	
Chronic (long-term) toxicity to aquatic algae and cyanobacteria	NOEC: 1.4 mg/L Species Desmodesmus subspicatus Test duration 72 h	OECD 201	
Toxicity to other aquatic plants/organisms	not determined		
Toxicity to microorganisms	not determined		

Assessment/classification
Toxic to aquatic life.

12.2 Persistence and degradability

	Value	Method	Source, Remark
Biodegradation	Degradation rate 97 % Test duration 28 d	OECD 301B/ ISO 9439/ EEC 92/69/V, C.4-C	CAS No.5949-29-1 citric acid, monohydrate
Biodegradation	Degradation rate 100 %	Neutralization, pH-measurement	Acid properties can be eliminated up to 100% by neutralization.

12.3 Bioaccumulative potential

Assessment/classification
citric acid: Accumulation in organisms is not expected.

12.4 Mobility in soil

Assessment/classification
citric acid: Weak adsorption on soil, mobile in soil.

12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6 Endocrine disrupting properties

	Effective dose	Method,Evaluation	Source, Remark
Endocrine disrupting properties			This substance does not have endocrine disrupting properties with respect to non-target organisms.

12.7 Other adverse effects

	Value	Method	Source, Remark
Ozone depletion potential (ODP):			The substance has no ozone depleting potential. Based on available data, the classification criteria are not met.

Additional ecotoxicological information

	Value	Method	Source, Remark
Chemical oyxgen demand (COD)	665 mgO2/g		
Biochemical oxygen demand	481 mgO2/g Test duration 5 d		
AOX			The product does not contain any organically bound halogens according to the recipe.

Additional information
Acute aquatic environmental hazards: Aquatic Acute 2 H401: Toxic to aquatic life. After neutralization: not classified as acute hazardous to the aquatic environment.
The mixture is not classified as chronic hazardous to the aquatic environment.
Do not allow uncontrolled discharge of product into the environment.
No further relevant informations available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste codes/waste designations according to EWC/AVV

Waste code product	Waste name
200114 *	Acids

Appropriate disposal / Product
Do not dispose with household waste.
Undiluted product rests: take to local special waste collecting point.
Neutralize with alkalies or lime.
Product is allowed to discharge into sewage treatment plants, but in accordance with official regulations.

Appropriate disposal / Package
Non-contaminated packages may be recycled.

SECTION 14: Transport information

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1 UN number or ID number	-	-	-
14.2 UN proper shipping name	-	-	-
14.3 Transport hazard class(es)	-	-	-
14.4 Packing group	-	-	-
14.5 Environmental hazards	-	-	-

14.6 Special precautions for user

No data available

14.7 Maritime transport in bulk according to IMO instruments

No data available

Land transport (ADR/RID)

Remark
Not classified for this transport carrier.

Sea transport (IMDG)

Remark
No hazardous material as defined by the prescriptions.

Air transport (ICAO-TI / IATA-DGR)

Remark
No hazardous material as defined by the prescriptions.

SECTION 15: Regulatory information

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

EU legislation

Authorisations
not relevant

Restrictions on use
Regulation (EC) No 1907/2006 (REACH), Annex XVII No 75 - not relevant if used as directed.

Restrictions of occupation
Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC).

Other regulations (EU)

To follow:
Directive 2012/18/EU, Annex I: not mentioned.

15.2 Chemical Safety Assessment

National regulations

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

Abbreviations and acronyms
For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
AGW: Occupational Exposure Limit Value
AOX: Adsorbable Organic halogen compounds
ATE: Acute Toxicity Estimate
AVV: Waste Shipment Ordinance (DE)
CSB: Chemical Oxygen Demand (DE)
DGR: Dangerous Goods Regulations (IATA)
DNEL: derived no-effect level
DOC: Dissolved Organic Carbon
EmS: emergency procedures
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
JArbSchG: Youth Labor Protection Act (DE)
MuSchRiV: Maternity Protection Guideline Ordinance (DE)
OECD: Organisation for Economic Cooperation and Development
PBT: persistent and bioaccumulative and toxic
RID: Dangerous goods regulations for transport by rail
TI: Technical Instruction
TRGS: Technical Rules for Hazardous Substances
VOC: Volatile organic compounds
vPvB: very persistent, very bioaccumulative

Key literature references and sources for data
Informations from our suppliers.
European Chemicals Agency, http://echa.europa.eu/.

Additional information
National and local regulations concerning chemicals shall be observed.
These data are given according to our actual knowledge about this product.This data sheet does not correspond to an assurance by virtue of a contract for properties of the product.

Relevant H- and EUH-phrases (Number and full text)

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