

Safety Data Sheet according to Regulation (EC) No. 453/2010

according to Regulation (EC) No. 453/2010 Revision date: 26/02/2011

Supersedes: 26/02/2011

SECTION 1: Identification of the subs	stance/mixture and of the company/undertaking	
1.1. Product identifier		
Chemical type	: Substance	
Substance name	: Tartaric acid	
Trade name	: TARTARIC ACID NATURAL	
EC no	: 201-766-0	
CAS No.	: 87-69-4	
REACH registration No.	: 01-2119537204-47	
Product code	: SC/232	
IUPAC name	: tartaric acid	
Chemical name	: (+)-tartaric acid	
Formula	: C4H6O6	
Synonyms	: Acid (2R,3R)-2,3-dihydroxybutane, Butanedioic acid, 2,3-dihydroxy- [R-(R,R)]-	
1.2. Relevant identified uses of the subst	ance or mixture and uses advised against	
1.2.1. Relevant identified uses		
Use of the substance/preparation	: Manufacture of substances Formulation [mixing] of preparations and/or re-packaging Construction application Ceramic application	
1.2.2. Uses advised against		
None known		
1.3 Details of the supplier of the safety of	lata sheet	
Caviro Distillerie s.r.l. Via Convertite, 8 I-48018 Faenza (Ravenna) - Italy T (+39) 0546 627 611 <u>roberto.zama@caviro.it</u>		
1.4. Emergency telephone number		
Emergency number	: (+39) 0546 627 611 (+39) 0422 304 653	
SECTION 2: Hazards identification		
2.1. Classification of the substance or m	ixture	
Classification according to Regulation (EC) No Eye Dam. 1 H318	o. 1272/2008 [CLP]	
Full text of n-philases. see section 16.		
Xi; R41 Full text of R-phrases: see section 16.	EC or 1999/45/EC	
Adverse physicochemical, human health and environmental effects		
2.2 Label elements		
Hazard pictograms (CLP)		
Signal word (CLP)	: Danger	
Hazard statements (CLP)	: H318 - Causes serious eve damage	
Precautionary statements (CLP)	<ul> <li>P280 - Wear eye protection, protective gloves, protective clothing.</li> <li>P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minuts. Remove contact lenses, if present and easy to do. Continue rinsing</li> <li>P310 - Immediately call a POISON CENTER or doctor/physician</li> </ul>	

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#### 2.3. **Other hazards**

other hazards which do not result in classification	: No da	ta available.		
SECTION 3: Composition/informatio	n on in	gredients		
Name		Product identifier	%	Classification according to Directive 67/548/EEC
(+)-tartaric acid		(CAS No.) 87-69-4 (EC no) 201-766-0	99 - 100	Eye Damage 1. H318
Name		Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
(+)-tartaric acid		(CAS No.) 87-69-4 (EC no) 201-766-0	99 - 100	Xi, R41
Full text of R-, H- and EUH-phrases: see section	16.			
3.2. Mixtures				
Not applicable				
SECTION 4: First aid measures				
4.1. Description of first aid measures				
First-aid measures after inhalation : Remove victim to fresh air. In case of breathing difficulties administer oxygen. In case of irregula breathing or respiratory arrest provide artificial respiration. If exposure symptoms persist, seek medical attantion.				
First-aid measures after skin contact : Remove immediately contaminated clothing. Wash off immediately with soap and plenty of water. Rinse immediately with plenty of water for 15 minutes. If skin irritation persists, take medical advice.			ately with soap and plenty of If skin irritation persists, take	
First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). If eye irritation persists, take medical advice.			ay from the eye (15 minutes	
First-aid measures after ingestion : Do not induce vomiting. If swallowed, rinse mouth with water (only if the person is conscious). the person is fully conscious, make him/her drink water. Never give an unconscious person anything to drink.			only if the person is conscious). If r give an unconscious person	
4.2. Most important symptoms and effect	ts, both a	acute and delayed		
Symptoms/injuries after inhalation	: May c	ause irritation to the respiratory tract and	d to other mucou	us membranes.
Symptoms/injuries after skin contact	: May c	ause slight temporary irritation.		
Symptoms/injuries after eye contact	: Cause	es serious eye irritation.		
Symptoms/injuries after ingestion	: May c	ause irritation to the respiratory tract and	d to other mucou	us membranes.
4.3. Indication of any immediate medical	attentio	n and special treatment needed		
Treat symptomatically.				
SECTION 5: Firefighting measures				
5.1. Extinguishing media				
Suitable extinguishing media:	Suitable extinguishing media: : carbon dioxide (CO2), dry chemical powder, foam. Water.			
Insuitable extinguishing media : None known.				
5.2. Special hazards arising from the sul	ostance o	or mixture		
Fire hazard	: Not fla	ammable. in presence of intense heat ma	ay generate acri	d fumes. It stops burning if heat

Not flammable. in presence of intense heat may generate acrid fumes. It stops source is cleared away. On combustion forms: carbon oxides (CO and CO2).

- Explosion hazard : not explosive. Reactivity : None known.
- 5.3. **Advice for firefighters** Protective equipment for firefighters
- : Extra personal protection: complete protective clothing including self-contained breathing apparatus.

SECTIC	SECTION 6: Accidental release measures			
6.1.	Personal precautions, protective equipment and emergency procedures			
6.1.1.	. For non-emergency personnel			
Protective	equipment	: Refer to section 8.		
6.1.2.	For emergency responders			
Protective	equipment	: Refer to section 8.		
Emergency procedures		: Keep away from heat/sparks/open flames/hot surfaces No smoking.		

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#### 6.2. Environmental precautions

Avoid discharge to the environment. Do not discharge into drains or the environment. Do not discharge into surface water. Relevant water authorities should be notified of any large spillage to water course or drain.

6.3. Methods and material for containme	ent and cleaning up
For containment	: contain the discharged material.
Methods for cleaning up	: Sweep or shovel spills into appropriate container for disposal. Collect up the product and place it in a spare container: - suitably labelled. Flush residue with large amounts of water.
6.4. Reference to other sections	
Refer to sections 8 and 13.	
SECTION 7: Handling and storage	
7.1. Precautions for safe handling	
Precautions for safe handling	: Avoid contact with skin and eyes. Avoid inhalation of product. Wear recommended personal protective equipment.
Hygiene measures	: Wash hands thoroughly after handling. Wash contaminated clothing prior to re-use. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product.
7.2. Conditions for safe storage, includi	ng any incompatibilities
Storage condition(s)	: Keep in original containers. Keep container tightly closed. Store in a cool dry place. Keep away from heat. Protect from sunlight.
Incompatible materials	: Strong oxidizing agents. Acids. Bases. Silver.
7.3. Specific end use(s)	
No data available.	
SECTION 8: Exposure controls/pers	onal protection
8.1. Control parameters	
There is not any exposure limit listed for this sub Inhalation dust: 10 mg/m <sup>3</sup> Breathable dust: 5 mg/m <sup>3</sup> DNEL- dermal DNEL - inhalation	<ul> <li>bstance. However, it is advisable not to exceed the following exposure on the basis of 8 hours:</li> <li>2.9 mg/kg bw/day- worker</li> <li>5.2 mg/m<sup>3</sup>-worker</li> </ul>
DNEL- milation	: 8.1 mg/kg bw/day- general population
DNEL dermal	: 1.5 mg/kg bw/day- general population
DNEL- inhalation	: 1.3 mg/m <sup>3</sup> - general population
PNEC- agua (fresh water)	: 0.3125 mg/l
PNEC- aqua (marine water)	: 0.3125 mg/l
PNEC- aqua (intermittent releases)	: 0.514 mg/l
PNEC- sewage treatment plant	: 10 mg/l
PNEC- sediment (fresh water)	: 1.141 ppm
PNEC- sediment (marine water)	: 1.141 ppm
PNEC- soil	: 0.0449 ppm
PNEC- oral	: No potential bioaccumulation
8.2. Exposure controls	
Appropriate engineering controls	: Provide local exhaust or general room ventilation to minimize exposure to dust. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Personal protective equipment	: Protective goggles. Gloves. Protective clothing. Dust formation: dust mask.
Hand protection	: Protective gloves made of rubber or PVC. Use barrier cream if hypersensitive.
Eye protection	: Protective goggles.
Skin and body protection Respiratory protection	<ul><li>Wear long sleeves. Wear suitable protective clothing.</li><li>Dust mask.</li></ul>
SECTION 9: Physical and chemical	properties

SECTION 9: Physical and chemical properties			
9.1. Information on basi	c physical and chemical properties		
Physical state	: Solid		

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Appearance	Crystalline powder.		
Colour	white. colourless.		
Odour : odourless.			
Odour threshold : No data available			
pH : 2.2 (1470 g/l solution in water at 25 °C)			
Melting point : 169 °C			
Solidification point	No data available		
Boiling point	179.1 °C ASTM E537/07		
Flash point	> 100 °C ASTM D93/07		
Relat. evapor. rate comp. to butylacetate	No data available		
Flammability (solid, gas)	Non flammable.		
Explosive limits	No data available		
Vapour pressure	< 5 Pa at 20 ℃ NTF 20-048		
Density	1.76 g/cm <sup>3</sup>		
Solubility	Water: 1390 g/l at 20 ℃ Ethanol: 33 g/100ml 25 ℃ Ether: 0.4 g/100ml 25 ℃		
Log Pow	-1.91 OECD 107		
Self ignition temperature	375 ℃ at 1013 hPa NFT 20-036		
Decomposition temperature	425 ℃		
Viscosity, kinematic	not applicable		
Viscosity, dynamic	not applicable		
Surface tension	not applicable		
Explosive properties	Non explosive.		
Oxidising properties	Non oxidizing.		
9.2 Other information	,		
No data available			
SECTION 10: Stability and reactivity			
10.1. Reactivity			
None known.			
10.2. Chemical stability			
Stable.	Stable.		
10.3. Possibility of hazardous reactions			
No data available.			
10.4 Conditions to avoid			
avoid heat source, it may generate acrid fumes			
avoid field source. It may generate actid fumes.			
10.5. Incompatible materials			
Strong oxidizing agents. acids. Bases. Sliver.			
10.6. Hazardous decomposition products			
Carbon oxides (CO, CO2).			
SECTION 11: Toxicological information			
11.1. Information on toxicological effects			
Acute toxicity : Not classified (Conclusive but not sufficient for classification)			
TARTARIC ACID NATURAL (87-69-4)			
LD50 oral rat	> 2000 ma/kg bw OECD 423		
LD50 dermal rat	> 2000 mg/kg bw OECD 402		
LD50 inhalation Not tested			
Skin corrosion/irritation (in vivo) : Not irritating OECD 404			
Serious eye damage/irritation (in vitro) : Causes serious eye damage OECD 437			
Skin sensitisation : Not sensitizing OECD 429			
Respiratory sensitisation : Not tested			
Germ cell mutagenicity (in vitro) : Negative			
Germ cell mutagenicity (in vivo)	Negative		
Carcinogenicity : Not tested			
Developmental toxicity/ teratogenicity : No teratogenic effects			

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Developmental toxicity/ teratogenicity: NOAEL	: 181 mg/kg bw/day
TARTARIC ACID NATURAL (87-69-4)	
NOAEL (chronic,oral, rat/ male)	2460 mg/kg bw/day OECD 453, read across substance: monosodium L(+)-tartrate
NOAEL (chronic,dermal)	Not tested
NOAEL (chronic,inhalation)	Not tested
Aspiration hazard	: Not applicable

#### SECTION 12: Ecological information

12.1. Toxicity		
TARTARIC ACID NATURAL (87-69-4)		
LC50 fishes	>100 mg/l 96 h OECD203	
LC50 fishes	506 g/l 96 h ECOSAR	
LC50 fishes	884 g/l 96 h ECOSAR	
LC50 fishes	488 g/l 14d ECOSAR	
ChV fishes	43,141 M/L ECOSAR	
ChV fishes	13,137 M/L ECOSAR	
EC50 Daphnia magna	93.31 mg/l 48 h OECD 202	
EC50 Daphnia magna	135 mg/l 32 h	
EC50 Daphnia	183 mg/l 48 h ECOSAR	
LC50 Mysid Shrimp (SW) 4300 g/l 96 h ECOSAR		
ChV Daphnia 13,201 M/L 16 day ECOSAR		
ChV Mysid Shrimp (SW)	904 M/L 16 day ECOSAR	
EC50 algae	51.4 mg/l 72 h OECD201	
NOEC algae	3.125 mg/l 72 h OECD201	
EC50 algae	236.16 g/l 96 h ECOSAR	
ChV algae	5,471 M/L ECOSAR	
EC50 Activated Sludge	>1000 mg/l 3h OECD209	
EC10 Activated Sludge	>1000 mg/l 3h OECD209	
LC50 Earthworm	5,343 g/l 14 day ECOSAR	
12.2. Persistence and degradability		
TARTARIC ACID NATURAL (87-69-4)		
Hydrolysis as a function of (OECD 111) Hydrolytically stable		
Biodegradability (28 days, OECD 306) Readily biobigradable		
BOD5/COD	45%	
Half life in soil	9.6 h	
12.3. Bioaccumulative potential		
TARTARIC ACID NATURAL (87-69-4)		
Log Kow	-1.91	

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment	Results of PBT and vPvB assessment		
TARTARIC ACID NATURAL (87-69-4)			
Results of PBT and vPvB assessment This substance does not fulfill the criteria for PBT or vPvB properties			
12.6. Other adverse effects			
No data available.			
SECTION 13: Disposal considerations			

13.1. Waste treatment methods	
Regional legislation (waste)	: Dispose of contents/container to comply with applicable local, national and international regulations.
Waste treatment methods	: Small quantities may be washed with water and conveyed to controlled discharges and then to water conditioner. If well diluted these flows will cause no damages to the biological treatments. For larger amounts it is advisable to neutralize it by calcium hydrate or carbonate and to recover the obtained calcium tartrate, insoluble in water, for digestion/authorized regeneration.
Waste disposal recommendations	<ul> <li>Clean completely the emptied packings, preferably with water, better before sending them to recycling, incineration or discharges. Washing waters must be handled as per point 13.2.</li> <li>Washing waters must be handled as per waste treatment methods.</li> </ul>

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#### **SECTION 14: Transport information**

Not a dangerous good in sense of transport regulations.

### SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

No data available.

#### 15.1.2. National regulations

No data available.

#### 15.2. Chemical safety assessment

CSA has been carried out

#### **SECTION 16: Other information**

#### Full text of R-, H- and EUH-phrases:

Eye Dam. 1	Serious Eye Damage/Irritation Category 1
H318	Causes serious eye damage
R41	Risk of serious damage to eyes.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Exposure scenarios for Tartaric Acid

Summary of Parameters used for assessing safe use:		
DNELs:	Inhalation:	5.2 mg/m <sup>3</sup> for long-term systemic effects
	Dermal:	2.9 mg/kg bw/day for long-term systemic effects
	Oral:	8.1 mg/kg bw/day for long-term systemic effects
(please also refer to section 8 SDS)		
PNECs:	Freshwater:	0.3125 mg/L
	Marine water:	0.3125 mg/L
	Sewage treatment plants:	10 mg/L
	Freshwater sediments:	1.141 mg/kg sediment dw
	Marine water sediments:	1.141 mg/kg sediment dw
	Soil:	0.0449 mg/kg soil dw
(please also refer to section 12 SDS)		DS)

The following exposure scenarios have been assessed for the product mentioned above:

2.         Description of activities/process(es) ovvered in the Exposure Scenario           SU 3         Industrial use: Uses of substances as such or in preparations at industrial sites           SU 9         Manufacture of line chemicals PROC 1         Use in closed process, no likelihood of exposure PROC 2         Use in closed process, no likelihood of exposure PROC 3         Use in closed process, no likelihood of exposure PROC 4         Use in closed batch process (synthesis or formulation) PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities           PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities           PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         Duration of use for vinich the Es ensures control of risk           0         Operational conditions         Duration of use for which the ES ensures control of risk         Duration of use for which the ES ensures control of risk         Duration of use for which the ES ensures control of risk         Not restricted           1.1         Duration of use for which the ES ensures control of risk         Not restricted         Not restricted           2.2         Frequency of use for which the ES ensures control of risk         Not restricted         Not restricted           3.3	1.	Exposure scenario title	ES 1: Manufacture
2.       Description of activities/process(es) covered in the Exposure Scenario         SU 3       Industrial uses: Uses of substances as such or in preparations at industrial sites         SU 8       Manufacture of fine chemicals         PROC 1       Use in closed process, no likelihood of exposure         PROC 2       Use in closed process, no likelihood of exposure         PROC 3       Use in closed batch process (synthesis or formulation)         PROC 4       Use in batch and other process (synthesis or formulation)         PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 9a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substances or preparation into small containers (dedicated filling line, including weighing)         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.1       Duration of use for which the ES ensures control of risk       Duration of use of row which the ES ensures control of risk         3.2       Frequency of use for which the ES ensures control of risk       Solid         4.1       Substance properties and use parameters       Solid         4.2       Concentration of substance in use       100%         4.3       Amount used part time or per activity       Not			
SU 3       Industrial uses: Uses of substances as such or in preparations at industrial sites         SU 8       Manufacture of buik, large scale chemicals (including petroleum products)         SU 9       Manufacture of line chemicals (including petroleum products)         PROC 1       Use in closed process, no like-lihood of exposure         PROC 2       Use in closed batch process (synthesis or formulation)         PROC 3       Use in closed batch process (synthesis or formulation)         PROC 4       Use in slosed batch process (synthesis or formulation)         PROC 7       Use in closed batch process (synthesis or formulation)         PROC 8       Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 8       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         State Total State Control of risk       Not restricted         State Sta	2.	Description of activities/process(es)	covered in the Exposure Scenario
SU 8       Manufacture of buik, large scale chemicals (including petroleum products)         SU 9       Manufacture of fine chemicals         PROC 1       Use in closed process, no likelihood of exposure         PROC 2       Use in closed process, no likelihood of exposure         PROC 3       Use in closed process, no likelihood of exposure         PROC 4       Use in closed process, no likelihood of exposure of mulation)         PROC 4       Use in closed process, no likelihood of exposure arises         PROC 5       Use in closed process, no likelihood of exposure arises         PROC 6       Use in batch and other process (synthesis) where opportunity for exposure arises         PROC 7       Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 8       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 6       Industrial use resulting in manufacture of another substance (use of intermediates)         3.1       Duration of use for which the ES ensures control of risk       Duration of use for which the ES ensures control of risk         3.2       Frequency of use for which the ES ensures contained       Not restricted         4.1       Substance is contained       Not applicable         containing the substance       Io0%         4.2       Concentratio		SU 3 Industrial uses: Uses of sub	stances as such or in preparations at industrial sites
SU9       Manufacture of fine chemicals         PROC 1       Use in closed process, no likelihood of exposure         PROC 2       Use in closed process, no likelihood of exposure         PROC 3       Use in closed batch process (synthesis or formulation)         PROC 4       Use in batch and other process (synthesis where opportunity for exposure arises         PROC 80 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substances or preparation into small containers (dedicated filling line, including weighing)         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use for which the ES ensures control of risk         3.2       Frequency of use for which the ES ensures control of risk       Solid         4.1       Physical form of product in which the ES ensures control of risk       Solid         4.2       Concentration of substance in use       100%         4.3       Arnount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified <td< td=""><td></td><td>SU 8 Manufacture of bulk, large s</td><td>cale chemicals (including petroleum products)</td></td<>		SU 8 Manufacture of bulk, large s	cale chemicals (including petroleum products)
PROC 1       Use in closed processs, no likelihood of exposure         PROC 2       Use in closed, continuous process (with occasional controlled exposure         PROC 3       Use in closed batch process (synthesis) where opportunity for exposure arises         PROC 8       Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 8       Btransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substances         ERC 6       Industrial use resulting in manufacture of another substance (use of intermediates)         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         ensures control of risk       Not restricted         4.1       Physical form of product in which the ES ensures control of risk       Solid         4.1       Substance properties and use parameters       Not applicable         4.1       Physical form of product in which the ES ensures control of risk       Solid         4.2       Concentration of substance in use       100%         4.3       Armourt used per time or per activity for which the RMs, in combination of use ensure control of risk       Not specified		SU9 Manufacture of fine chemica	als
PROC 2       Use in closed, continuous process with occasional controlled exposure         PROC 3       Use in closed batch process (synthesis) where opportunity for exposure arises         PROC 4       Use in batch and other process (synthesis) where opportunity for exposure arises         PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 8bTransfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substances or preparation into small containers (dedicated filling line, including weighing)         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3. <b>Operational conditions</b> 3.1       Duration of use for which the ES ensures control of risk       Not restricted         4. <b>Substance properties and use parameters</b> Not restricted         4.1       Surface area per amount of article containing the substance in or parativity for which the BMMs, in combination with the substance is contained       Solid         4.3       Amount used per time or per activity for which the PRMs, in combination with exposure control of risk       Not specified         5. <b>Other operational conditions determined</b> not restricted       Not specified         iwith other operational conditions continuer       not restricted       Not specified		PROC 1 Use in closed process, no lil	kelihood of exposure
PROC 3       Use in blased batch process (synthesis) where opportunity for exposure arises         PROC 4       Use in blast hand other process (synthesis) where opportunity for exposure arises         PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 8bTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.1       Duration of use for which the ES ensures control of risk       Duration of use for which the ES ensures control of risk         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.1       Substance properties and use parameters       Solid         4.1       Substance in use       100%         4.3       Amount used per time or per activity for which the ES ensures control of risk       Not specified         4.3       Amount used per time or per activity for which the Results in contained       Not applicable         containing the substance       In on f restricted         vith other operational conditions determine       Not specified         for which the RMMs, in combinating       Not specified <t< td=""><td></td><td>PROC 2 Use in closed, continuous p</td><td>rocess with occasional controlled exposure</td></t<>		PROC 2 Use in closed, continuous p	rocess with occasional controlled exposure
PROC 4       Use in batch and other process (synthesis) where opportunity for exposure arrises         PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities         PROC 8 BTransfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substances         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         ensures control of risk       Solid         4.       Substance properties and use parattrist         4.1       Physical form of product in which the ES ensures control of risk       Not restricted         4.1       Substance properties and use parattrist       Solid         4.1       Subface area per amount of article containing the substance       Not applicable         containing the substance in combination with other operational conditions of use specified       Not specified         4.3       Amount used per time or per activity for which the RMMs, in combination of use specified       Not specified         Yentilation rate:       not restricted       not restricted         Ventilation rate:       not restricted       not restricted      <		PROC 3 Use in closed batch process	s (synthesis or formulation)
PROC 8bTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         2.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parametrs       Solid         4.1       Physical form of product in which the substance       Solid         4.1.1       Surface area per amount of article containing the substance       Not applicable         containing the substance       100%         4.3       Amount used per time or per activity for which ther operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure       not restricted         Ventilation rate:       not restricted       not restricted         Water flow rate:       not restricted       note specified         Temperature:		PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8aTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated	
PROC 8D transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities         PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ER 6 a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Not restricted         4.1       Substance is ontained       Solid         4.1       Substance in out of substance       Not applicable         containing the substance       Not applicable         containing the substance       100%         4.3       Amount used per time or per activity for which the containion of use ensure control of risk       Not applicable         5.       Other operational conditions of use perspective       not restricted         Ventilation rate:       not specified       not restricted         Temperature:       not restricted       not restricted         Water flow rate:       not imited       not         Other operational conditions:       not		facilities	
PROC 9       Transfer of substance or preparation into small containers (dedicated filling line, including weighing)         ERC 1       Manufacture of substances         ERC 6a       Industrial use resulting in marutecture of another substance (use of intermediates)         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Solid         4.1       Substance in contained       Not applicable         4.1       Substance in or product in which the substance is contained       Not applicable         4.2       Concentration of substance in use torther operational conditions of use ensure control of risk       Not applicable         5.       Other operational conditions of use ensure control of risk       Not specified         6.       Risk Management Measures that, in contination of the operational conditions:       not estricted non restricted         7.       Cher operational conditions:       not restricted not restricted         8.       Room volume Not restricted       not is pecified not restricted         9.       Roit enditions:       not is pecified non restricted         9.       Risk Management Measures that, in combination       not is mite non restricted		PROC 8bTransfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
ERC 1       Manufacture of substances         ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Solid         4.1       Physical form of product in which the substance is contained       Solid         4.1a       Surface area per amount of article containing the substance       Not applicable         4.1a       Surface area per amount of article containing the substance       Not specified         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions determine exposure         Room volume       not restricted         Ventilation rate:       not restricted         Vater flow rate:       not inwited         Other operational conditions:       none         Other operational conditions:       none         6.       Risk Management Measures that, in combination with the different target groups:         6.1.1       Ocupational measures       Wea		PROC 9 Transfer of substance or pre	eparation into small containers (dedicated filling line, including weighing)
ERC 6a       Industrial use resulting in manufacture of another substance (use of intermediates)         3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Solid         4.1       Physical form of product in which the substance is contained       Solid         4.1.a       Surface area per amount of article containing the substance in use       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determing exposure       not restricted         Ventilation rate:       not restricted       not specified         Temperature:       not restricted       not estricted         Water flow rate:       not ilmited       one         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk       watering of chemically resistant gloves (tested to EN374)		ERC 1 Manufacture of substances	
3.       Operational conditions         3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Solid         4.1       Surface area per amount of article containing the substance is contained       Not applicable         4.1.a       Surface area per amount of article containing the substance in use       100%         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determities exposure       not restricted         Recom volume       not restricted       not specified         Temperature:       not restricted       not specified         Ventilation rate:       not is specified       not restricted         Water flow rate:       not ilmited       none         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups       Wearing of chemically resistant gloves (tested to EN374)		ERC 6a Industrial use resulting in ma	anufacture of another substance (use of intermediates)
3.1       Duration of use for which the ES ensures control of risk       Duration of use: 8 h/day (all PROCs)         3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parameters       Solid         4.1       Physical form of product in which the substance is contained       Solid         4.1a       Surface area per amount of article containing the substance in use       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine environmentation of use restricted       not restricted         Mount nate:       not restricted       not restricted         Yentilation rate:       not restricted       not restricted         Ventilation rate:       not instricted       not restricted         Water flow rate:       not instricted       not restricted         Other operational conditions:       none       none         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups       Solid	3.	Operational conditions	
3.2       Frequency of use for which the ES ensures control of risk       Not restricted         4.       Substance properties and use parametere         4.1       Physical form of product in which the substance is contained       Solid         4.1a       Surface area per amount of article containing the substance in use       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure       Not restricted         Room volume       not restricted       not restricted         Ventilation rate:       not specified       not restricted         Temperature:       not restricted       not restricted         Other operational conditions:       not instricted       none         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk       none         6.1.1       Occupational measures       Waring of chemically resistant gloves (tested to EN374)	3.1	Duration of use for which the ES ensures control of risk	Duration of use: 8 h/day (all PROCs)
4.       Substance properties and use parameters         4.1       Physical form of product in which the substance is contained       Solid         4.1a       Surface area per amount of article containing the substance in use       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure       not restricted         Room volume       not restricted       not specified         Ventilation rate:       not specified       not restricted         Water flow rate:       not limited       not imited         Other operational conditions:       none          6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk         6.1.1       Occupational measures       Wearing of chemically resistant gloves (tested to EN374)	3.2	Frequency of use for which the ES ensures control of risk	Not restricted
4.1       Physical form of product in which the substance is contained       Solid         4.1a       Surface area per amount of article containing the substance       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure       not restricted         Room volume       not restricted         Ventilation rate:       not restricted         Temperature:       not imited         Other operational conditions:       not restricted         Temperature:       not restricted         Road to the different target groups       none         6.       Risk Management Measures that, in use that the operational conditions of use, ensure control of risk	4.	Substance properties and use parameters	eters
4.1a       Surface area per amount of article containing the substance       Not applicable         4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure       Not restricted         Room volume       not restricted       not specified         Ventilation rate:       not restricted       not restricted         Water flow rate:       not limited       not limited         Other operational conditions:       not limited       note         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk       Wearing of chemically resistant gloves (tested to EN374)	4.1	Physical form of product in which the Solid substance is contained	
4.2       Concentration of substance in use       100%         4.3       Amount used per time or per activity for which the RMMs, in combination or use ensure control of risk       Not specified         5.       Other operational conditions determite exposure         6.       Other operational conditions determite exposure         7.       Not specified         800m volume       not restricted         7.       Not specified         7.       Not specified         7.       Not restricted         7.       Not specified         8.       Not specified         8.       Not specified         9.       Not restricted         9.       Not restricted         9.       Not imited         9.       Not imited         9.       Not restricted         9.       Not imited         9.       Not imited         9.       Note         9.       Risk Management Measures that, in termination with the operational conditions of use, ensure control of risk         9.       Risk Management Measures that, in termination with the operational conditions of use, ensure control of risk         9.1.1       Occupational measures	4.1a	Surface area per amount of article containing the substance	Not applicable
4.3       Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk       Not specified         5.       Other operational conditions determine exposure         Room volume       not restricted         Ventilation rate:       not specified         Temperature:       not restricted         Water flow rate:       not imited         Other operational conditions:       note         6.       Risk Management Measures that, in vieth the operational conditions of use, ensure control of risk         6.1.1       Occupational measures	4.2	Concentration of substance in use	100%
5.       Other operational conditions determing exposure         Room volume       not restricted         Ventilation rate:       not specified         Temperature:       not restricted         Water flow rate:       not limited         Other operational conditions:       none         6. Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups         6.1.1 Occupational measures	4.3	Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk	
Room volume       not restricted         Ventilation rate:       not specified         Temperature:       not restricted         Water flow rate:       not limited         Other operational conditions:       none         6.1.1 Occupational measures	5.	Other operational conditions determi	ning exposure
Ventilation rate:       not specified         Temperature:       not restricted         Water flow rate:       not limited         Other operational conditions:       none         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups         6.1.1 Occupational measures       Wearing of chemically resistant gloves (tested to EN374)	R	oom volume	not restricted
Temperature:       not restricted         Water flow rate:       not limited         Other operational conditions:       none         6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups         6.1.1 Occupational measures       Wearing of chemically resistant gloves (tested to EN374)	V	entilation rate:	not specified
Water flow rate:     not limited       Other operational conditions:     none       6.     Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups       6.1.1 Occupational measures     Wearing of chemically resistant gloves (tested to EN374)	Т	emperature:	not restricted
Other operational conditions:     none       6.     Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups       6.1.1     Occupational measures       Wearing of chemically resistant gloves (tested to EN374)	v	/ater flow rate:	not limited
6.       Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups         6.1.1       Occupational measures       Wearing of chemically resistant gloves (tested to EN374)	C	ther operational conditions:	none
6.1.1 Occupational measures Wearing of chemically resistant gloves (tested to EN374)	6.	Risk Management Measures that, in c related to the different target groups	combination with the operational conditions of use, ensure control of risk
	6.1.1	Occupational measures	Wearing of chemically resistant gloves (tested to EN374)

Exposure scenarios for Tartaric Acid

		not required (PROC 1, 2 & 3)
		required, effectiveness 90% (PROC4, 8a)
		required, effectiveness 80% (PROC 8b & 9)
		Respiratory protection tested to EN140/143 with Type P1 filter or better: not required (PROC 1, 2 & 3) required, effectiveness 80% (PROC 8a, 8b & 9)
		Provide good standard of general ventilation (PROC 4)
6.1.2	Consumer related measures:	Not applicable for this Exposure Scenario
6.2	Environment related measures	Not applicable as substance is not hazardous to the environment
7.	Waste related measures needed to ensure control of risk at the different life cy-cle stages of the substances (including preparations or articles at the end of service life)	
	Release to environment is controlled by housekeeping and discharging to waste	employing standard practices such as reducing emission to air, good water treatment.
	Waste resulting from manufacturing sho	uld be collected and reused/recycled if possible.
8.	Prediction of exposure resulting from	the conditions described above
	The ECETOC TRA tool has been used t	o estimate workplace exposures unless otherwise indicated.
	Predicted exposures are not expected to operational conditions/risk management	exceed the applicable exposure limits (DNEL as provided above) when the measures described above are implemented
9.	Guidance to DU to evaluate whether h	ne works inside the boundaries set by the ES
	Where other Risk Management Measure managed to at least equivalent levels.	es/Operational Conditions are adopted, then users should ensure that risks are

Exposure scenarios for Tartaric Acid

1.	Exposure	scenario title	ES 2: Formulation & (re)packing of substances and mixtures
2.	Description of activities/process(es) co		covered in the Exposure Scenario
	SU 3 Industrial uses: Uses of substances as such or in preparations at industrial sites		
	SU10	Formulation [mixing] of prep	aration and/ore re-packaging (excluding alloys)
	PROC 5	Mixing or blending in batch p contact)	processes for formulation of preparations and articles (multistage and/or significant
	PROC 8a	Transfer of substance or pre facilities	eparation (charging/discharging) from/to vessels/large containers at non-dedicated
	PROC 8b	Transfer of substance or pre facilities	eparation (charging/discharging) from/to vessels/large containers at dedicated
	PROC 9	Transfer of substance or pre	eparation into small containers (dedicated filling line, including weighing)
	ERC 2	Formulation of preparations	
3.	Operation	al conditions	
3.1	Duration of ensures co	of use for which the ES ontrol of risk	Duration of use: 8 h/day (all PROCs)
3.2	Frequency ensures co	of use for which the ES ontrol of risk	Not restricted
4.	Substance	e properties and use parame	eters
4.1	Physical form of product in which the Solid substance is contained		Solid
4.1a	Surface a containing	rea per amount of article the substance	Not applicable
4.2	Concentrat	tion of substance in use	100%
4.3	Amount us for which with other use ensure	ed per time or per activity the RMMs, in combination operational conditions of e control of risk	Not specified
5.	Other ope	rational conditions determin	ning exposure
F	Room volume	e	not restricted
V	entilation ra	te:	not specified
Т	emperature	:	not restricted
v	Water flow rate:		not limited
C	Other operational conditions: none		
6.	Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups		
6.1.1	Occupation	nal measures	Wearing of chemically resistant gloves (tested to EN374) required, effectiveness 90% (PROC5, 8a) required, effectiveness 80% (PROC 8b & 9) Respiratory protection tested to EN140/143 with Type P1 filter or better: required, effectiveness 80% (all PROCs)
6.1.2	Consumer	related measures:	Not applicable for this Exposure Scenario
6.2	Environme	nt related measures	Not applicable as substance is not hazardous to the environment
7.	Waste rela (including	nted measures needed to en preparations or articles at t	sure control of risk at the different life cy-cle stages of the substances the end of service life)
	Release to environment is controlled by employing standard practices such as reducing emission to air, good housekeeping and discharging to waste water treatment. Waste resulting from manufacturing should be collected and reused/recycled if possible.		
8.	Prediction	of exposure resulting from	the conditions described above
	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits (DNEL as provided above) when the operational conditions/risk management measures described above are implemented		
9.	Guidance to DU to evaluate whether he works inside the boundaries set by the ES		
	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.		



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1.	Exposure scenario title	ES 3: Uses in Construction application –Professional	
2.	Description of activities/process(es) covered in the Exposure Scenario		
	SU 22 Professional uses: Public do PROC 8a Transfer of substance or pre facilities PROC 8b Transfer of substance or p facilities	pmain (administration, education, entertainment, services, craftsmen) paration (charging/discharging) from/to vessels/large containers at non-dedicated preparation (charging/discharging) from/to vessels/large containers at dedicated	
	PROC 9 Transfer of substance or prepa	aration into small containers (dedicated filling line, including weighing)	
	ERC 8c Wide dispersive indoor use res	ulting in inclusion into or onto a matrix	
3.	Operational conditions		
3.1	Duration of use for which the ES	Duration of use: 8 b/day (all PBOCs)	
5.1	ensures control of risk	Duration of use. o fillday (all FHOOS)	
3.2	Frequency of use for which the ES ensures control of risk	Not restricted	
4.	Substance properties and use parame	eters	
4.1	Physical form of product in which the substance is contained	Solid	
4.1a	Surface area per amount of article containing the substance	Not applicable	
4.2	Concentration of substance in use	100%	
4.3	Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk	Not specified	
5.	Other operational conditions determine	ning exposure	
R	oom volume	not restricted	
V	entilation rate:	not specified	
Т	emperature:	not restricted	
v	/ater flow rate:	not limited	
C	Other operational conditions: none		
6.	Risk Management Measures that, in c related to the different target groups	ombination with the operational conditions of use, ensure control of risk	
6.1.1	Occupational measures	Wearing of chemically resistant gloves (tested to EN374) required, effectiveness 90% (PROC 8a) required, effectiveness 80% (PROC 8b & 9) Respiratory protection tested to EN140/143 with Type P1 filter or better: required, effectiveness 80% (all PROCs)	
6.1.2	Consumer related measures:	Not applicable for this Exposure Scenario	
6.2	Environment related measures	Not applicable as substance is not hazardous to the environment	
7.	Waste related measures needed to en (including preparations or articles at	sure control of risk at the different life cy-cle stages of the substances the end of service life)	
	Release to environment is controlled housekeeping and discharging to wast reused/recycled if possible.	by employing standard practices such as reducing emission to air, good e water treatment. Waste resulting from manufacturing should be collected and	
8.	Prediction of exposure resulting from	the conditions described above	
	The ECETOC TRA tool has been used are not expected to exceed the applicat management measures described above	to estimate workplace exposures unless otherwise indicated. Predicted exposures ole exposure limits (DNEL as provided above) when the operational conditions/risk e are implemented	
9.	Guidance to DU to evaluate whether h	ne works inside the boundaries set by the ES	
	Where other Risk Management Measure managed to at least equivalent levels.	es/Operational Conditions are adopted, then users should ensure that risks are	



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1.	Exposure scenario title	ES 4: Uses in Construction application – Consumer
2.	Description of activities/process(es) covered in the Exposure Scenario	
	SU 21 Consumer uses: Private hou	useholds
	AC 4: Stone, plaster, cement, glass and	ceramic articles
	ERC 10a: Wide dispersive outdoor use of	of long-life articles and materials with low release
	ERC 11a: Wide dispersive indoor use of	long-life articles and materials with low release
3.	Operational conditions	
3.1	Duration of use for which the ES ensures control of risk	Duration of use: 1 h/day
3.2	Frequency of use for which the ES ensures control of risk	Frequency of use: 2 events / year
4.	Substance properties and use param	eters
4.1	Physical form of product in which the substance is contained	Solid
4.1a	Surface area per amount of article containing the substance	Not applicable
4.2	Concentration of substance in use	1%
4.3	Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk	130 g / event
5.	Other operational conditions determi	ning exposure
F	Room volume	20 m <sup>3</sup>
Ir	nhalation rate:	1.37 m <sup>3</sup> / hour
Т	emperature:	Unless otherwise stated assumes use at ambient temperatures
C	Contact area:	1000 cm <sup>3</sup>
C	Other operational conditions:	Covers use under typical household ventilation.
6.	Risk Management Measures that, in c related to the different target groups	combination with the operational conditions of use, ensure control of risk
6.1.1	Occupational measures	Not applicable for this Exposure Scenario
6.1.2	Consumer related measures:	Unless otherwise stated, covers concentrations up to 1%;
		covers use up to 4 events / year;
		covers use up to 1 time/on day of use;
		up to 130g;
		covers use in room size of 20m <sup>3</sup> ;
		for each use event, covers exposure up to 2hr/event
6.2	Environment related measures	Not applicable as substance is not hazardous to the environment
7.	Waste related measures needed to er (including preparations or articles at	nsure control of risk at the different life cy-cle stages of the substances the end of service life)
	Release to environment is controlled by housekeeping and discharging to waste Waste resulting from manufacturing sho	employing standard practices such as reducing emission to air, good water treatment. uld be collected and reused/recycled if possible.
8.	Prediction of exposure resulting from	the conditions described above
	The ECETOC TRA tool has been used to are not expected to exceed the applicable management measures described above	to estimate workplace exposures unless otherwise indicated. Predicted exposures le exposure limits (DNEL as provided above) when the operational conditions/risk e are implemented
9.	Guidance to DU to evaluate whether he works inside the boundaries set by the ES	
	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	



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1.	Exposure scenario title	ES5: Uses in Ceramics application –Professional	
2.	Description of activities/process(es)	covered in the Exposure Scenario	
	SU 22 Professional uses: Public do PROC 8a Transfer of substance or prepa facilities	omain (administration, education, entertainment, services, craftsmen) aration (charging/discharging) from/to vessels/large containers at non-dedicated	
	PROC 8b Transfer of substance or prepa facilities	aration (charging/discharging) from/to vessels/large containers at dedicated	
	PROC 9 Transfer of substance or prepa	aration into small containers (dedicated filling line, including weighing)	
	ERC 8c Wide dispersive indoor use res	sulting in inclusion into or onto a matrix	
2	Operational conditions		
<b>J</b> .			
3.1	ensures control of risk	Duration of use: 8 h/day (all PROCS)	
3.2	Frequency of use for which the ES ensures control of risk	Not restricted	
4.	Substance properties and use parame	eters	
4.1	Physical form of product in which the substance is contained	Solid	
4.1a	Surface area per amount of article containing the substance	Not applicable	
4.2	Concentration of substance in use	100%	
4.3	Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk	Not specified	
5.	Other operational conditions determined	ning exposure	
F	Room volume	not restricted	
v	entilation rate:	not specified	
Т	emperature:	not restricted	
v	Vater flow rate:	not limited	
Other operational conditions: none		none	
6.	Risk Management Measures that, in c related to the different target groups	combination with the operational conditions of use, ensure control of risk	
6.1.1	Occupational measures	Wearing of chemically resistant gloves (tested to EN374) required, effectiveness 90% (PROC 8a) required, effectiveness 80% (PROC 8b & 9) Respiratory protection tested to EN140/143 with Type P1 filter or better:	
612	Consumer related measures:	required, effectiveness 80% (all PROCs)	
6.2	Environment related measures	Not applicable to this Exposure ocenano	
7	Waste related measures peoded to or		
<i>'</i> .	(including preparations or articles at	the end of service life)	
	Release to environment is controlled by employing standard practices such as reducing emission to air, good housekeeping and discharging to waste water treatment. Waste resulting from manufacturing should be collected and reused/recycled if possible.		
8.	Prediction of exposure resulting from	the conditions described above	
	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Predicted exposures are not expected to exceed the applicable exposure limits (DNEL as provided above) when the operational conditions/risk management measures described above are implemented		
9.	Guidance to DU to evaluate whether h	ne works inside the boundaries set by the ES	
	Where other Risk Management Measure managed to at least equivalent levels.	es/Operational Conditions are adopted, then users should ensure that risks are	



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1.	Exposure scenario title	ES6: Uses in Ceramics application – Consumer	
2.	Description of activities/process(es) covered in the Exposure Scenario		
	SU 21Consumer uses: Private houAC4Stone, plaster, cement, glasERC10aWide dispersive outdoor useERC11aWide dispersive indoor use	useholds s and ceramic articles e of long-life articles and materials with low release of long-life articles and materials with low release	
3.	Operational conditions		
3.1	Duration of use for which the ES ensures control of risk	Duration of use: 1 h/day	
3.2	Frequency of use for which the ES ensures control of risk	Frequency of use: 3 events / year	
4.	Substance properties and use parame	eters	
4.1	Physical form of product in which the substance is contained	Solid	
4.1a	Surface area per amount of article containing the substance (if applicable)	Not applicable	
4.2	Concentration of substance in use	1%	
4.3	Amount used per time or per activity for which the RMMs, in combination with other operational conditions of use ensure control of risk (if applicable)	1350 g / event	
5.	Other operational conditions determined	ning exposure	
R	oom volume	20 m <sup>3</sup>	
Ir	halation rate:	1.37 m <sup>3</sup> / hour	
Т	emperature:	Unless otherwise stated assumes use at ambient temperatures	
С	ontact area:	1000 cm <sup>3</sup>	
0	ther operational conditions:	Assumes use with typical ventilation.	
6.	Risk Management Measures that, in combination with the operational conditions of use, ensure control of risk related to the different target groups		
6.1.1	Occupational measures	Not applicable for this Exposure Scenario	
6.1.2	Consumer related measures:	Unless otherwise stated, covers concentrations up to 1%;	
		covers use up to 3 events/year;	
		covers skin contact area up to 1000 cm2:	
		for each use event, covers use amounts up to 1350g;	
		covers use in room size of 20m3;	
		for each use event, covers exposure up to 2hr/event.	
6.2	Environment related measures	Not applicable as substance is not hazardous to the environment	
7.	Waste related measures needed to en (including preparations or articles at	sure control of risk at the different life cy-cle stages of the substances the end of service life)	
	Release to environment is controlled by housekeeping and discharging to waste reused/recycled if possible.	employing standard practices such as reducing emission to air, good water treatment. Waste resulting from manufacturing should be collected and	
8.	Prediction of exposure resulting from	the conditions described above	
	The ECETOC TRA tool has been used are not expected to exceed the applicat management measures described abov	to estimate workplace exposures unless otherwise indicated. Predicted exposures ble exposure limits (DNEL as provided above) when the operational conditions/risk e are implemented	
9.	Guidance to DU to evaluate whether h	ne works inside the boundaries set by the ES	
	Where other Risk Management Measure managed to at least equivalent levels.	es/Operational Conditions are adopted, then users should ensure that risks are	



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#### Appendix: Abbreviations used in this exposure scenario documen

AC	Article category
DNEL	Derived no effect level
DU	Downstream user
ECETOC TRA	Targeted Risk Assessment Tool provided by ECETOC (European Centre for Ecotoxicology and Toxicology of Chemicals)
ERC	Environmental release category
ES	Exposure scenario
OC	Operational conditions
PC	Product category
PEC	Predicted environmental concentration
PNEC	Predicted no effect concentration
PROC	Process category
RMM	Risk management measures
SU	Sector of use