t á r t a r o s
GONZALO CASTELLÓ, S.L.

Concepción Arenal, 32
P.O. BOX 159
Tels.: +34 96 560 24 89 • +34 96 560 63 50
Fax: +34 96 560 64 91
03660 **Novelda** (Alicante - Spain)
VAT NR: ES/B-03528916
http://www.tartaric.com
E-mail:sales@tartaric.com

SAFETY DATA SHEET

in compliance with EC Regulation No. 1907/2006 and EC Regulation No. 453/2010

1 IDENTIFICATION OF SUBSTANCE AND COMPANY

1.1 *PRODUCT IDENTIFIER*

Name of the substance: L (+) Tartaric Acid (99+%)
Trade name: Natural Tartaric Acid

1.2 IDENTIFIED RELEVANT USES OF THE SUBSTANCE

Acidifier, antioxidant, flavour enhancer and stabilising agent.
Food industry (production of tinned food, jam, jelly, confectionery and biscuits in general, soft drinks and table waters; acidifyer in wine-making field). Pharmaceutical and Cosmetic Industry (preparation of medicines, effervescent tablets and soluble drubs; excipient and acidifier in syrups and antibiotics; production of natural beauty cream for face and body) and Technical (retarding agent in the preparation of gypsum, used in the formulation of waterproof cements and heat-insulator; it is also used in textiles, tannings, ceramics, galvanoplastics and cleaning agents).

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Company: Tartaros Gonzalo Castello S.L.- Calle Concepcion Arenal, 32 03660 Novelda – SPAIN
Tel. +34 96 560 24 89 www.tartaric.com sales@tartaric.com
Person responsible for the sheet drafting: vabad@tartaric.com

1.4. EMERGENCY TELEPHONE NUMBER

Tel: +34 96 560 63 50

2 HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification pursuant to EC REG. No. 1272/2008
GHS05: corrosion
H318: Causes serious eye damage
P280: Wear protective gloves/protective clothing/eye protection/face 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.

Classification pursuant to REG. 67/54/EC, 1999/45/EC
Xi – IRRITANT
R41 - Risk of serious damage to eyes
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
For the complete text about hazard statements and R phrases, refer to section 16.

2.2. LABEL ELEMENTS

Classification pursuant to EC REG. No. 1272/2008
Hazard pictograms

CORROSION

Signal Word:
Danger

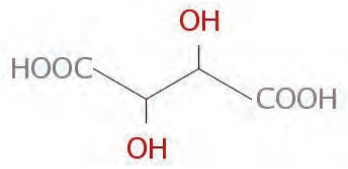
Hazard statements:
Causes serious eye damage

Precautionary statements:
Wear protective gloves/protective clothing/eye protection/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. OTHER HAZARDS
No information available.

3 COMPOSITION / INFORMATION ON INGREDIENTS

CAS Number:	87-69-4 (99+%)
IUPAC Name:	Tartaric Acid
CAS Name:	Butanedioic acid, 2,3-dihydroxy- [R-(R,R)]-
EC Number:	201-766-0
Molecular weight:	150.09 g/mol
Formula:	$C_4H_6O_6$
Chemical formula:	HOOCCH(OH)CH(OH)COOH



4 FIRST AID MEASURES

4.1. FIRST AID MEASURES DESCRIPTION

Inhalation:	Remove victim from exposure and to open air. Seek medical advice, if necessary.
Skin contact:	Wash off with soap and plenty of water. Take off contaminated garments. If skin irritation persists, consult a specialist.
Eye contact:	Rinse immediately with running water with eyelids held open, for at least 10 minutes. Call an eye specialist, if necessary.
Ingestion:	Make the victim drink plenty of water. Call a doctor, if necessary.

4.2. MAIN SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED
Irritating effects.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED
Call a doctor in case of exposure.

5 FIRE FIGHTING MEASURES

5.1. EXTINGUISHING MEDIA
Suitable extinguishing media: Water, CO_2, Foam, Powder.
Extinguishing media not to be used: No limits.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE
In case of fire, gas and hazardous vapours may be formed.

5.3. ADVICE FOR FIRE-FIGHTERS
Protective equipment: Do not stay in the hazardous area without a self-contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTION DEVICES AND PROCEDURES IN CASE OF EMERGENCY
Avoid generation of dust, do not inhale dust. Avoid contact with the substance. Ensure the supply of fresh air in closed rooms.

6.2. ENVIRONMENTAL PRECAUTIONS
Avoid penetration into the sewerage system.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP
Collect and place them in a container suitable for recovery. Avoid generation of dust. After collection, flush away traces with water.

6.4. REFERENCES TO OTHER SECTIONS
For instructions on waste treatment, see section 13.

7 HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Use with adequate ventilation system. Minimise dust generation and accumulation. Avoid contact with eyes, skin and clothing. Keep the container tightly closed. Avoid ingestion and inhalation.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING POSSIBLE INCOMPATIBILITIES

Store in a tightly closed container. Store in a fresh and dry area.

7.3. SPECIFIC END USES

See paragraph 1.2

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

DN(M)ELs for workers

EXPOSURE PATTERN	*ROUTE*	*DESCRIPTOR*	*DNEL / DMEL*	*(CORRECTED) DOSE DESCRIPTOR*
Long-term - systemic effects	Dermal	DNEL (Derived No Effect Level)	2.9 mg/kg bw/day	NOAEL: 145 mg/kg bw/day (based on AF of 50)
Long-term - systemic effects	Inhalation	DNEL (Derived No Effect Level)	5,2 mg/m³	NOAEC: 260.0 mg/m³ (based on AF of 50)

DN(M)ELs for the general population

EXPOSURE PATTERN	*ROUTE*	*DESCRIPTOR*	*DNEL / DMEL*	*(CORRECTED) DOSE DESCRIPTOR*
Long-term - systemic effects	Dermal	DNEL (Derived No Effect Level)	1.5 mg/kg bw/day	NOAEL: 150 mg/kg bw/day (based on AF of 100)
Long-term - systemic effects	Inhalation	DNEL (Derived No Effect Level)	1.3 mg/m³	NOAEC: 130 mg/m³ (based on AF of 100)
Long-term - systemic effects	Oral	DNEL (Derived No Effect Level)	8.1 mg/kg bw/day	NOAEL: 810 mg/kg bw/day (based on AF of 100)

8.2. EXPOSURE CONTROLS

8.2.1. *Suitable technical controls*

Ensure adequate ventilation, especially in confined areas.

8.2.2. *Personal protection measures*

Protective clothing should be selected specifically for the working place and type of work. Take off any contaminated garments. It is advisable to apply protective cream for the skin. Wash hands after handling this substance.

Eyes/face protections

Wear protective goggles against chemicals.

Hands protection

If hands contact is likely to occur, wear suitable gloves tested according to EN374. Suitable gloves and protection garments should be worn.

Respiratory protection

Wear a protective mask in the presence of dust. Use the P2 Filter for solid particles.

8.2.3. Environment exposure controls

Do not pour waste waters directly into the environment.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON THE MAIN PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	White solid crystalline
Colour:	*White*
Odour:	Odourless
Odour threshold:	*No information available*
pH:	2.2 (Solution 0.1 N)
Melting point:	169 °C at 1013 hPa (mbar)
Boiling point:	179.1 °C at 1013 hPa (mbar)
Flash point:	> 100 °C at 102.3 kPa (mbar)
Evaporation rate:	*No information available*
Flammability (solids, gases):	*Non-flammable*

Lower flash point:	*No information available*
Upper flash point:	*No information available*
Vapour pressure:	< 5 Pa at 20 °C
Vapour density:	*No information available*
Relative density (water=1):	1.76 g/cm^3 at 20°C
Solubility:	1,390 g/L at 20 °C.
Partition coefficient:	n-Octanol/water: Log Kow (Pow): - 1.91 at 20 °C
Autoflammability:	375 °C at 1,013 hPa
Decomposition temperature:	*No information available.*
Viscosity:	*No information available.*
Explosive properties:	*Not explosive.*
Oxidising properties:	*Not oxidising.*

10 STABILITY AND REACTIVITY

10.1. REACTIVITY
Stable under normal conditions.

10.2. CHEMICAL STABILITY
The product is chemically stable under standard environmental conditions.

10.3. POSSIBLE HAZARDOUS REACTIONS
Fluorine, metals, silver

10.4. CONDITIONS TO AVOID
Strong heating.

10.5. INCOMPATIBLE MATERIALS
No information available.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS
No information available.

11 TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

ACUTE TOXICITY

Oral: LD50: > 2000 mg/kg bw for rat
Dermal: LD50: > 2000 mg/kg bw for rat
Value used for CSA:
LD50 (oral): 2000 mg/kg bw
LD50 (dermal): 2000 mg/kg bw
Justification for classification or non classification
According to Official Journal of the European Union 1272/2008 (CLP) dated December 16th 2008, tartaric acid is non-classified in the acute toxicity hazard categories. But it is necessary to emphasize that tartaric acid is classified in category 5 of acute oral toxicity in the GHS classification system.

SKIN IRRITATION:

A test of the registered substance was performed on skin irritation/corrosion *in vivo* according to OECD Guideline 404: acute dermal irritation/corrosion in a certified GLP lab. The study can be ranked according to the klimisch code as 1: reliable without restrictions. The results showed that no toxic effect was found. And other two *in vitro* studies also support this result. So the irritating effect of tartaric acid can be concluded as no irritating.
Value used for CSA: Skin irritation / corrosion: not irritating.

EYE IRRITATION:

An in vitro test of the registered substance was performed on eye irritation complying with OECD Guideline 437: Bovine Corneal Opacity and Permeability Test Method for identifying ocular corrosives and severe irritants. This study is regarded as key study as it can be ranked according to the klimisch code as 1: reliable without restrictions. And the test result showed that tartaric acid is highly irritating.
Value used for CSA: Eye irritation: highly irritating

SKIN SENSITISATION

The following information is taken into account for any hazard / risk assessment:
Skin sensitisation (OECD 429): not sensitising.
Value used for CSA: Not sensitising.

RESPIRATORY SENSITISATION

Values used for CSA: No data available.

REPEATED DOSE TOXICITY

NOAEL of repeated oral dose toxicity of tartaric acid is derived from the key study 004 through read across. In this study, Monosodium L(+) -tartrate was fed to rats in their diet for a total of two years at levels of 25600, 42240, 60160 and 76800 ppm and no adverse effect was observed in the highest concentration of L(+) -tartrate. So it is reasonable to choose 76800 ppm tartrate, which is equal to 2460 mg/kg bw/day, as NOAEL of tartaric acid. Furthermore, in the key study, the test material used was Monosodium L (+) -tartrate, a sodium salt of tartaric acid. It can be served as a read across study, because the basic chemical structures are the same in such two chemicals.

The following information is taken into account for any hazard / risk assessment:

No evidence of an adverse effect was seen in the dose of 3.1 g/kg bw/day and 4.1 g/kg bw/day L(+) -tartrate for male and female rats respectively, corresponding to 2.46 g/kg bw/day and 3.2 g/kg bw/day L(+) -tartaric acid for male and female rats respectively.

Value used for CSA (route: oral):

NOAEL: 2460 mg/kg bw/day (chronic; rat)

Justification for classification or non classification

The DNEL of repeated oral dose toxicity of tartaric acid is 2460 mg/kg bw/day, no specific organ toxicity was found here, so non-classification will be justified.

MUTAGENICITY

The FDA report, mutagenic evaluation of compound FDA 71-55, comprises several studies investigating genotoxicity of this substance in vitro and in vivo. In the in vitro studies, 4 host-mediated assays including two bacteria (S. typhimurium) and two yeast (Saccharomyces cerevisiae) tests, and a mammalian chromosome aberration test (Human embryonic lung cultures) were conducted at different concentration levels. In the in vivo studies, two dominant lethal tests and two mammalian bone marrow chromosome aberration tests were carried out in different series of concentrations in rats. No genetic toxicity was found in those tests in all investigated concentrations. So it can be concluded that L(+) -tartaric acid is non-mutagenic.

The following information is taken into account for any hazard / risk assessment: no genetic toxicity of tartaric acid was found through in vitro and in vivo experiments.

Value used for CSA: Genetic toxicity: negative

CARCINOGENICITY

No data available.

Combined chronic Toxicity/Carcinogenicity study equivalent or similar to OECD Guideline 453 is available under repeated dose toxicity.

REPRODUCTIVE TOXICITY

The FDA report, teratologic evaluation of FDA 71-55, summarised studies of the teratogenicity of tartaric acid in different species: mouse, rat, hamster and rabbit, using prenatal developmental toxicity test. It is found that administrations of the highest dosage, 274 mg/kg bw in mice, 181 mg/kg bw in rats, 225 mg/kg bw in hamsters and 215 mg/kg bw in rabbits, did not generate any teratogenic effects on tested animals. So these dose levels could be set as NOAELs in each individual test. In order to guarantee safety, also considering that the toxicokinetics of tartaric acid in rat is well studied, NOAEL of rat is chosen as the dose descriptor starting point for further calculation.

The following information is taken into account for any hazard/risk assessment: The FDA report, teratologic evaluation of FDA 71-55, includes 4 key studies carried out in different species investigating the developmental toxicity/teratogenicity. No teratogenic effect was found in these studies.

Value used for CSA (route: oral): NOAEL: 181 mg/kg bw/day

HAZARD IN CASE OF INHALATION

No inhalation toxicity classification.

12 ECOLOGICAL INFORMATION

12.1 TOXICITY

ACUTE AQUATIC TOXICITY

The fish, daphnia, and algae acute aquatic toxicity levels are greater than 1 mg/L (96h LC50 (fish) > 100 mg/L, 48h EC50 (daphnia) = 93.3mg/L, and 72h ErC50 (algae) =51.4 mg/L). As a result, the substance does not meet the criteria for acute classification according to Regulation (EC) No. 1272/2008, Annex I section 4.1.

CHRONIC AQUATIC TOXICITY

The fish, daphnia, and algae acute aquatic toxicity levels are greater than 10 mg/l and lower than 100 mg/L (96h LC50 (fish) > 100 mg/L, 48h EC50 (daphnia) = 93.3mg/L, and 72h ErC50 (algae) =51.4 mg/L). As well, the

substance is very soluble, ready biodegradable and has a Log Kow of -1.91. As a result, the substance does not meet the criteria for chronic classification according to Regulation (EC) No. 1272/2008, Annex I section 4.1.

12.2 PERSISTENCE ASSESSMENT

According to Annex XIII of regulation 1907/2006/EC and according to the Guidance on information requirements and chemical safety assessment Chapter R.11 PBT assessment, a substance does not fulfil the criterion "persistent (P)" and "very persistent (vP)" if it is readily biodegradable. As the substance is shown to be readily biodegradable with a biodegradation of above 80% it is not regarded as persistent or very persistent.

12.3 BIOACCUMULATION ASSESSMENT

According to Annex XIII of regulation 1907/2006/EC and according to the Guidance on information requirements and chemical safety assessment Chapter R.11 PBT assessment, a substance does not fulfil the criterion "bioaccumulative (B)" or "very bioaccumulative (vB)" if the BCF is below 2000 or the log Kow is below 4.5.

There is no experimental data on BCF. However, the log Kow is negative and below the criterion for bioaccumulation (log Kow 4.5). Therefore, it can be concluded that the substance is neither bioaccumulative nor very bioaccumulative.

12.4 TOXICITY ASSESSMENT

According to Annex XIII of regulation 1907/2006/EC and according to the Guidance on information requirements and chemical safety assessment Chapter R.11 PBT assessment, a substance does not fulfil the criterion if there is no evidence of chronic toxicity and no classification as carcinogenic (Cat. 1, 2), mutagenic (Cat. 1, 2) or toxic for reproduction (Cat 1, 2, 3) considering human health. As the substance is not toxic and not classified for human health, these criteria are not fulfilled. Furthermore, the substance is not toxic for aquatic organisms.

12.5 SUMMARY AND FINAL CONCLUSIONS ON PBT OR VPVB PROPERTIES

The substance does not fulfil the criteria for PBT or vPvB properties.

12.6 EMISSION CHARACTERISTICS

As the substance does not fulfil the criteria for PBT or vPvB, no emission assessment is required.

13 DISPOSAL CONSIDERATIONS

13.1. METHODS FOR WASTE TREATMENT

In general, the disposal of chemical residues is regulated in each European country by specific laws and regulations.

In Spain, the disposal must occur according to the laws in force and in compliance with local laws. Therefore, it is recommended to contact the Authorities in charge or specialised Companies authorised to provide indications on how to arrange the disposal.

Packing material must be disposed of in accordance with national regulations. Contaminated packing material must be handled with the same caution used for dangerous substances. Non-contaminated packing material can be treated or recycled as normal residues, unless otherwise indicated.

14 TRANSPORT INFORMATION

ADR/RID ROAD/RAILWAY TRANSPORT

Not classified as dangerous goods for transport.

IMDG SEA TRANSPORT

Not classified as dangerous goods for transport.

ICAO AND IATA AIR TRANSPORT

Not classified as dangerous goods for transport.

15 REGULATORY INFORMATION

15.1. STANDARDS AND LAWS ON HEALTH, SAFETY AND ENVIRONMENT SPECIFIC FOR THE SUBSTANCE

Authorisation pursuant to REACH Regulations:

It is not on the list of substances of very high concern (SVHC) applicable for the authorisation.

Restrictions on use pursuant to REACH Regulations:

It is not subject to restrictions pursuant to Title VII (Annex XVII, Appendix 2, paragraph 28)

15.2 CHEMICAL SAFETY ASSESSMENT

An assessment of the chemical safety has been carried out

16 OTHER INFORMATION

List of the relevant H hazard indications:
H318: Causes serious eye damage

List of the relevant R phrases:
R41 - Risk of serious damage to eyes

EXPOSURE ASSESSMENT
Overview of Exposure Scenarios for Tartaric Acid ES # Exposure Scenario

1 Manufacture of Substance-Industrial
2 Formulation & (Re)packing of Substances and Mixtures – Industrial
3 Use at industrial site - Intermediate
4 Uses in Construction applications – Professional
5 Uses in Construction applications – Consumer
6 Uses in Ceramics applications – Professional
7 Uses in Ceramics applications – Consumer
8 Uses in cleaning agents – Consumet

ES Number	Manufacture	Identified uses			Sector of Use (SU)	Preparation Category (PC)	Process Category (PROC)	Article Category (AC)	Environmental Release Category (ERC)
		Formulation	End Use	Consumer Use					
1.	X				*3,8,9*	*NA*	1,2,3,4,8a,8b,9	*NA*	1
2.		X			*10*	*NA*	5,8a,8b,9	*NA*	2
3.			*X*		*3,8,9*	*NA*	1,2,3,4,8a,8b,9	*NA*	6a, 6b
4.			X		*22*	*NA*	8a,8b,9	*NA*	8c,8f
5.				X	*21*	*NA*	*NA*	*4*	10a,11a
6.			X		*22*	*NA*	8a,8b,9	*NA*	8c,8f
7.				X	*21*	*NA*	*NA*	*4*	10a,11a
8.				X	*21*	*PC35*	*NA*	*4*	8a

Instructions on training:
Properly train those workers potentially exposed to this substance on the basis of the contents of this safety data sheet.

Main bibliographical references and data sources:
Registration Dossier of Tartaric Acid

Key of abbreviations and acronyms:
DNEL = Derived No Effect Level
DMEL = Derived Minimum Effect Level
EC50 = Median effective concentration
IC50 = Inhibition concentration, 50%
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
PNEC = Predicted No-Effect Concentration
PBT = Persistent, Bioaccumulative and Toxic substance
TLV®/TWA = Threshold limit value – time-weighted average
TLV®STEL = Threshold limit value – short-time exposure limit
vPvB = very Persistent and very Bioaccumulative

Revision date: revision on 09/07/2013
Reason to change the data sheet: Up date of exposure assessment.

9. EXPOSURE ASSESSMENT

Tartaric Acid

Table 46. Overview of Exposure Scenarios for tartaric acid

ES #	Exposure Scenario
1	Manufacture of Substance– Industrial
2	Formulation & (Re)packing of Substances and Mixtures – Industrial
3	Use at industrial site - Intermediate
4	Uses in Construction applications – Professional
5	Uses in Construction applications – Consumer
6	Uses in Ceramics applications – Professional
7	Uses in Ceramics applications – Consumer
8	Uses in cleaning agents - Consumer

See next Page for details

Table 47. Exposure Scenarios with use descriptors for tartaric acid

ES number	Manufacture	Identified uses			Resulting life cycle stage		Linked to Identified Use	Sector of Use (SU)	Preparation Category (PC)	Process category (PROC)	Article category (AC)	Environmental Release Category (ERC)
		Formulation	End use	Consumer use	Service life (for articles)	Waste stage						
1	X							3, 8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	NA	1
2		X						10	NA	5, 8a, 8b, 9	NA	2
3			X					3, 8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	NA	6a, 6b
4			X					22	NA	8a, 8b, 9	NA	8c, 8f
5				X				21	NA	NA	4	10a, 11a
6			X					22	NA	8a, 8b, 9	NA	8c, 8f
7				X				21	NA	NA	4	10a, 11a
8				X				21	PC35	NA	NA	8a

9.1a. Manufacture of Substance – Industrial

9.1.1 Exposure Scenario

Section 1	Exposure Scenario Title
Title	Manufacture of substances, (tartaric acid, CAS 87-69-4)
Sector of Use	Industrial (SU3, SU8, SU9)
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Product Category / Article Category	PC35, PC39, AC4
Environmental Release Category	ERC1
Processes, tasks, activities covered	Manufacture of the substance. Includes, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Solid
Vapour pressure	< 5 Pa at 20 °C
Concentration of substance in product	Covers percentage substance in the product up to 100%
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	not applicable
Other Operational Conditions affecting worker exposure	
Operational Conditions	**Risk management measures**
1 - Use in closed process, no likelihood of exposure	No specific measures identified
2 - Use in closed, continuous process with occasional controlled exposure	No specific measures identified
3 - Use in closed batch process (synthesis or formulation)	No specific measures identified
4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Wear chemically resistant gloves (effectiveness 90% - tested to EN374) in combination with 'basic' employee training
8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear chemically resistant gloves (effectiveness 90% - tested to EN374) in combination with 'basic' employee training PPE16
8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 - effectiveness 80%
9 -Transfer of chemicals into small containers (dedicated filling line)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 - effectiveness 80%
Section 2.2	**Control of environmental exposure**

	No exposure assessment presented for the environment.
Section 3	**Exposure Estimation**
3.1. Health	
Health sub-headings	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	
Health sub-headings	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.1.

9.1.2 Exposure Estimation

9.1.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.1.

9.1.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.2 Formulation & (Re)packing of Substances and Mixtures – Industrial

9.2.1 Exposure Scenario

Section 1	**Exposure Scenario Title**
Title	Formulation & (re)packing of substances and mixtures (tartaric acid, CAS 87-69-4)
Sector of Use	Industrial (SU3, SU10)
Process Category	PROC 5, PROC8a, PROC8b, PROC 9
Product Category / Article Category	PC35, PC39, AC4
Environmental Release Category	ERC2

Processes, tasks, activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, large and small scale packing, sampling, maintenance.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Solid
Vapour pressure	< 5 Pa at 20 °C
Concentration of substance in product	Covers percentage substance in the product up to 100%
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	not applicable
Other Operational Conditions affecting worker exposure	
Operational Conditions	**Risk management measures**
8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear chemically resistant gloves (tested to EN374 – effectiveness 90%) in combination with 'basic' employee training
5 -Mixing or blending in batch processes (multistage and/or significant contact)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear chemically resistant gloves (tested to EN374 – effectiveness 90%) in combination with 'basic' employee training
8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
9 -Transfer of chemicals into small containers (dedicated filling line)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
Section 2.2	**Control of environmental exposure**
	No exposure assessment presented for the environment
Section 3	**Exposure Estimation**
3.1. Health	
Health sub-headings	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	
Health sub-headings	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.2.

9.2.2 Exposure Estimation

9.2.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.2.

9.2.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.3 Use at industrial site – Intermediate

9.3.1 Exposure Scenario

Section 1	**Exposure Scenario Title**
Title	Use as Intermediate, (tartaric acid, CAS 87-69-4)
Sector of Use	Industrial (SU3, SU8, SU9)
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9
Product Category / Article Category	PC35, PC39, AC4
Environmental Release Category	ERC6a, ERC6b
Processes, tasks, activities covered	Use as an intermediate of the substance. Includes, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling.
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Solid
Vapour pressure	< 5 Pa at 20 °C
Concentration of substance in product	Covers percentage substance in the product up to 100%
Amounts used	not applicable
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	not applicable
Other Operational Conditions affecting worker exposure	
Operational Conditions	**Risk management measures**
1 - Use in closed process, no likelihood of exposure	No specific measures identified
2 - Use in closed, continuous process with occasional	No specific measures identified

controlled exposure	
3 - Use in closed batch process (synthesis or formulation)	No specific measures identified
4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Wear chemically resistant gloves (effectiveness 90% - tested to EN374) in combination with 'basic' employee training
8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear chemically resistant gloves (effectiveness 90% - tested to EN374) in combination with 'basic' employee training PPE16
8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 - effectiveness 80%
9 -Transfer of chemicals into small containers (dedicated filling line)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 - effectiveness 80%
Section 2.2	**Control of environmental exposure**
	No exposure assessment presented for the environment.
Section 3	**Exposure Estimation**
3.1. Health	
Health sub-headings	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	
Health sub-headings	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.1.

9.3.2 Exposure Estimation

9.3.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.1.

9.3.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore

according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.4 Uses in Construction application –Professional

9.4.1 Exposure Scenario

Section 1	**Exposure Scenario Title**
Title	**Construction (Professional Application);** tartaric acid, CAS 87-69-4
Use Descriptor	Sector of Use: Professional (SU22)
Process Categories	PROC8a, PROC8b, PROC9
Environmental Release Categories	ERC 8c, ERC 8f
Processes, tasks, activities covered	Covers the use in construction (application of concrete in construction activities)
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Solid
Vapour pressure	< 5 Pa at 20 °C
Concentration of substance in product	Covers percentage substance in the product up to 100 %
Amounts used	*Not applicable*
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	*Not applicable*
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented
Operational Conditions	**Risk Management Measures**
8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear chemically resistant gloves (tested to EN374 – effectiveness 90%) in combination with 'basic' employee training PPE16
8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
9 -Transfer of chemicals into small containers (dedicated filling line)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
Section 2.2	**Control of environmental exposure**
	No exposure assessment presented for the environment.
Section 3	**Exposure Estimation**
3.1. Health	Predicted exposures are not expected to exceed the applicable exposure

	limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.3.

9.4.2 Exposure Estimation

9.4.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.3.

9.4.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.5 Uses in Construction application – Consumer

9.5.1 Exposure Scenario

Section 1		**Exposure Scenario Title**
Title		**Construction (Consumer Application);** tartaric acid, CAS 87-69-4
Sector of Use (SU code)		21
Use Descriptor (AC codes)		AC4
Processes, tasks, activities covered		Covers the use in construction (stone, plaster, cement)
Environmental Release Category		ERC10a, ERC11a
Specific Environmental Release Category		
Section 2		**Operational conditions and risk management measures**
Section 2.1		**Control of consumer exposure**
Product characteristics		

Physical form of product		solid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 1%
Amounts used		Unless otherwise stated, covers use amounts up to130g; covers skin contact area up to 1000 cm2
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times every 3 months; covers exposure up to 2 hour per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation
Section 2.1.1		**Product categories**
AC4: stone, plaster, cement	OC	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; covers skin contact area up to 1000 cm2 for each use event, covers use amounts up to 130g; covers use in room size of 20m3; for each use event, covers exposure up to 2hr/event
	RMM	No specific RMMs identified beyond those OCs stated
Section 2.2		**Exposure Estimation**
	No exposure assessment presented for the environment.	
Section 3		**Exposure Estimation**
3.1. Health		
Health sub-headings		Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.4.

These additional measures are presented in the appendix to section 10 and are coded blue. To control risks as described by RCRs presented in section 10.1a only Operational Conditions and Risk Management measures as described in section 2.2 above (coded black in the appendix to section 10) have been taken into account.

9.5.2 Exposure Estimation

9.5.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no

basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.4.

9.6 Uses in Ceramics application – Professional

9.6.1 Exposure Scenario

Section 1	**Exposure Scenario Title**
Title	**Ceramics (Professional Application);** tartaric acid, CAS 87-69-4
Use Descriptor	Sector of Use: Professional (SU22)
Process Categories	PROC8a, PROC8b, PROC9
Environmental Release Categories:	ERC8c, ERC8f
Processes, tasks, activities covered	Covers the application of ceramics in construction activities
Section 2	**Operational conditions and risk management measures**
Section 2.1	**Control of worker exposure**
Product characteristics	
Physical form of product	Solid
Vapour pressure	< 5 Pa at 20 °C
Concentration of substance in product	Covers percentage substance in the product up to 100 %
Amounts used	*Not applicable*
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Human factors not influenced by risk management	*Not applicable*
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented
Risk Management Measures	
8a -Transfer of chemicals from/to vessels/ large containers at non dedicated facilities	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Wear chemically resistant gloves (tested to EN374 – effectiveness 90%) in combination with 'basic' employee training
8b -Transfer of chemicals from/to vessels/ large containers at dedicated facilities	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
9 -Transfer of chemicals into small containers (dedicated filling line)	Wear a respirator conforming to EN140/143 (effectiveness 80%) with Type P1 filter or better Wear suitable gloves tested to EN374 (effectiveness 80%)
Section 2.2	**Control of environmental exposure**
	No exposure assessment presented for the environment.
Section 3	**Exposure Estimation**

3.1. Health	
Health sub-headings	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented.
Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1. Health	
Health sub-headings	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.5.

9.6.2 Exposure Estimation

9.6.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.5.

9.6.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.7 Uses in Ceramics application – Consumer

9.7.1 Exposure Scenario

Section 1		**Exposure Scenario Title**
Title		**Ceramics (Consumer Use);** tartaric acid, CAS 87-69-4
Sector of Use (SU code)		21
Use Descriptor (AC codes)		AC4
Processes, tasks, activities covered		Covers general exposures to consumers arising from the use of ceramic tiles for flooring and walls
Environmental Release Category		ERC 10a, ERC 11a
Specific Environmental Release Category		
Section 2		**Operational conditions and risk management measures**

Section 2.1		**Control of consumer exposure**
Product characteristics		
Physical form of product		solid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 1%
Amounts used		Unless otherwise stated, covers use amounts up to 1350g; covers skin contact area up to 1000 cm2;
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times every 4 months; covers exposure up to 2 hours per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation.
Section 2.1.1		**Product categories**
AC4: ceramics	OC	Unless otherwise stated, covers concentrations up to 1%; covers use up to 3 events/year; covers use up to 1 time/on day of use; 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.
	RMM	No specific RMMs identified beyond those OCs stated
Section 2.2		**Control of environmental exposure - these can be hidden or removed in this consumer GES**
	No exposure assessment presented for the environment.	
3.1. Health		
Health sub-headings		Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.6.

9.7.2 Exposure Estimation

9.7.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of

risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.6.

9.7.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.

9.8 Uses in cleaning agents – Consumer

9.8.1 Exposure Scenario

Section 1		**Exposure Scenario Title**
Title		Uses in cleaning agents – Consumer, tartaric acid, CAS 87-69-4
Sector of Use (SU code)		21
Use Descriptor (PC codes)		PC35
Processes, tasks, activities covered		Covers general exposures to consumers arising from washing and cleaning products.
Environmental Release Category		ERC 8a
Section 2		**Operational conditions and risk management measures**
Section 2.1		**Control of consumer exposure**
Section 2.1.1		**1. Contributing scenario – Laundry hand wash**
Product characteristics		
Physical form of product		liquid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 5%
Amounts used		Unless otherwise stated, covers use amounts up to 7.8g; covers skin contact area up to 35.7 cm2 (finger tips);
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 4 times Per week; covers exposure up to 1 hour per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation.
		Product categories
PC 35 washing and cleaning products – laundry hand wash	OC	Unless otherwise stated, covers concentrations up to 15%; covers use up to 2 events/week; covers skin contact area up to 35.7 cm2 (finger tips); for each use event, covers use amounts up to 7.8g (considering 1% wash solution); covers use in room size of 20m3; for each use event, covers exposure up to 1hr/event.
	RMM	Wear suitable gloves
Section 2.1.2		**2. Contributing scenario – Hand dishwashing**
Product characteristics		
Physical form of product		liquid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 5%

Amounts used		Unless otherwise stated, covers use amounts up to 3g; covers skin contact area up to 35.7 cm2 (finger tips);
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to2 times per day; covers exposure up to 1 hours per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation.
		Product categories
PC 35 washing and cleaning products – hand dishwashing	OC	Unless otherwise stated, covers concentrations up to 5%; covers use up to 2 events/day; covers skin contact area up to 35.7 cm2; for each use event, covers use amounts up to 3g; covers use in room size of 20m3; for each use event, covers exposure up to 1hr/event.
	RMM	Wear suitable gloves
Section 2.1.3		**3. Contributing scenario – surface cleaners (powder)**
Product characteristics		
Physical form of product		solid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 5%
Amounts used		Unless otherwise stated, covers use amounts up to 20g; covers skin contact area up to 35.7 cm2;
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 2 times per week; covers exposure up to 1 hour per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation.
		Product categories
PC 35 washing and cleaning products – surface cleaners (powder)	OC	Unless otherwise stated, covers concentrations up to 1%; covers use up to 2 events/week; covers skin contact area up to 35.7 cm2 (finger tips); for each use event, covers use amounts up to 20g; covers use in room size of 20m3; for each use event, covers exposure up to 1hr/event.
	RMM	Wear suitable gloves.
Section 2.1.4		**3. Contributing scenario – surface cleaners (spray)**
Product characteristics		
Physical form of product		liquid
Vapour pressure		< 5 Pa at 20 °C
Concentration of substance in product		Unless otherwise stated, cover concentrations up to 5%
Amounts used		Unless otherwise stated, covers use amounts up to 5g; covers skin contact area up to 35.7 cm2 (finger tips);
Frequency and duration of use/exposure		Unless otherwise stated, covers use frequency up to 1 times Per week; covers exposure up to 1 hour per event
Other Operational Conditions affecting exposure		Unless otherwise stated assumes use at ambient temperatures; assumes use in a 20 m^3 room; assumes use with typical ventilation.
		Product categories
PC 35 washing and cleaning products – surface cleaners (spray)	OC	Unless otherwise stated, covers concentrations up to 5%; covers use up to 1 events/week; covers skin contact area up to 35.7 cm2 (finger tips); for each use event, covers use amounts up to 5g; covers use in room size of 20m3; for each use event, covers exposure up to 1hr/event.

	RMM	Wear suitable gloves.
Section 2.2		**Control of environmental exposure**
	No exposure assessment presented for the environment.	
3.1. Health		
Health sub-headings		Predicted exposures are not expected to exceed the applicable consumer reference values when the operational conditions/risk management measures given in section 2 are implemented.
Section 4		**Guidance to check compliance with the Exposure Scenario**
4.1. Health		
Health sub-headings		The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. The "Table of habits and practices for consumer products in Western Europe" Developed by A.I.S.E. (2002) has been used to set the operational condition as listed in section 2.1. The table can be found in the A.I.S.E. web site: ***http://www.aise.eu/reach/?page=exposureass_sub3*** Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Additional good practices (Operational Conditions and Risk Management Measures) beyond the REACH Chemical Safety Assessment established within Chemical Industry are also advised and communicated through Safety Data Sheets but are not necessarily required to control risk as laid out in section 10.6.

9.8.2 Exposure Estimation

9.8.2.1 Human Health

The endpoint for which the available data may trigger a qualitative risk characterization includes eye irritation and is described in section 10. This qualitative CSA approach aims to reduce/avoid contact when there is no basis for setting a DNEL or DMEL for a certain human health endpoint, i.e. when the available data for this effect do not provide quantitative dose-response information, but there exist toxicity data of a qualitative nature.

Exposure Estimation for all other human health endpoint covered by DNEL or DMEL is performed in context of risk assessment and set in relation to the respective DNEL/DMEL(s) as shown in the Appendix to section 10. Resulting risk characterization ratios (RCR) are presented in section 10.6.

9.8.2.2 Environment

In the chemical safety assessment performed according to Article 14(3) in connection with Annex I section 3 (Environmental Hazard Assessment) and section 4 (PBT/ vPvB Assessment) no hazard was identified. Therefore according to REACH Annex I (5.0) an exposure estimation and risk characterization is not necessary; however a qualitative risk assessment is provided in section 10.