L(+) TARTARIC ACID

Material Safety Data Sheet

according to 1907/2006/EC, article 31and 453/2010/EC

1- Identification of the substance/preparation and of the company

Identification of the substance/preparation	Natural L(+) Tartaric acid Reach registered N° : 01-2119537204-47
Cross formula	$C_4H_6O_6$
Supplier identification	TARTRIC-MED **SAS** Distillerie des Costières 431 rue Philippe Lamour 30600 VAUVERT
Reach Correspondant	Emilie Deborne emilie.deborne@groupeudm.com Tél : +33 (0)4 75 88 84 51 Fax : +33 (0)4 75 37 18 19
Emergency phone	(33) (0) 1 45 42 59 59 (I.N.R.S / ORFILA)
Use	Food additive, pharmaceutical industry, plaster and gypsum, acidification of wine musts, polishing and cleaning of metals…

2- Hazards identification

GHS Classification N° 1272/2008/EC **Label elements : Hazard pictograms**  **CORROSION** **GHS05**	**GHS Classification N° 1272/2008/EC** **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.
An excessive dose may be effect harmful for inhalation or ingestion. Warning. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. For any other information related to regulatory SEE SECTION 15	

3- Compositions, informations on ingredients

Chemical characterization	(2R,3R) – 2,3 - dihydroxybutanedioïque Acid
Synonyms	Natural Tartaric Acid (IUPAC name) d-tartaric acid (+) Tartaric acid Butanedioic acid, 2, 3-dihydroxy-[R-(R, R)]
CE index	E 334
N° CAS, N° EINECS, CE	CAS N°: 87-69-4 (99+%) EINECS N°: 201-766-0 EC N° : 201-766-0
Molecular weight	150.09 g/mol
Formula	$C_4H_6O_6$
Chemical formula	HOOCCH(OH)CH(OH)COOH
Component contributing to the hazard	Tartaric acid

4- First aid measures

Inhalation	Move to fresh air. Get medical attention for any breathing difficulty.
Skin contact	Wash off with soap and plenty water. Remove contaminated clothing. If skin irritation persist consult a specialist
Eye contact	Rinse immediately witch plenty of water and seek medical advise. If eye irritation persists, consult a specialist.
Ingestion	Take medical advice.

5- Fire-fighting measures

Extinguishing media	Suitable extinguishing media : CO2, powder or water spray
Special hazards	In case of fire, gas and hazardous vapours may be formed
Advice for fire fighters	Protective equipment : Do not stay in the hazardous area without a self-contained breathing apparatus

6- Accidental release measures

Personal precautions	Avoid generation of dust, do not inhale dust. Avoid contact with the substance. Ensure the supply of fresh air in closed rooms.
Environmental protections	Avoid penetration into sewerage system. Neutralise with Carbonate of Calcium in presence of water
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.

7- Handling and storage

Handling	Use appropriate work clothes, wash hand and face after manipulation, violent reactions with concentrated acid or alkaline solutions..
Storage	Preserve in airtight containers, containers of origin.
Specific end uses	See paragraph 1

8- Exposure controls/personal protection

- **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: 145.0 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: 150.0 mg/kg bw/day (based on AF of 100)
Long-term - systemic effects	Inhalation	DNEL (Derived No Effect Level)	1.3 mg/m³	NOAEC: 130.0 mg/m³ (based on AF of 100)
Long-term - systemic effects	Oral	DNEL (Derived No Effect Level)	8.1 mg/kg bw/day	NOAEL: 810.0 mg/kg bw/day (based on AF of 100)

Suitable technical controls	Ensure adequate ventilation, especially in confined areas
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 aplly cream for the skin. Wash hands after handling this substance.
Eyes/face protection	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.
Environment exposure controls	Do not pour waste waters directly into the environment.

9- Physical and chemical properties

Physical state	Powder
Colour	White
Odour	Odourless
Odour threshold	No information available
pH	2.2 (solution à 0.1 N)
Relative density	1,76 g/cm^3 at 20°C
Viscosity	No information available
Melting point	169°C at 1013 hPa (mbar)
Boiling point	179.1°C at1013 hPa (mbar)
Temperatures of - décomposition - auto-flammability	 No information available 490°C à 1013 hPa (mbar)
Flash point	> 100°C at 1023 hPa (mbar)
Evaporation rate	No information available
Flammability (solids, gases)	Non-flammable
Oxidising properties	Not oxidising
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/eau : Log Kow (Pow) : -1.91 at 20°C

10- Stability and reactivity

Réactivity	Stable under normal conditions
Chemical stability	The product is chemically stable under standard environmental conditions
Possible hazardous reactions	Fluorine, metals, silver
Conditions to avoid	Strong heating
Incompatible materials	No information available
Hazardous decomposition products	No information available

11- Toxicological information

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
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 needs to be emphasized that tartaric acid is classified in category 5 of acute oral toxicity in the GHS classification system.
Skin irritation/corrosion	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 labs. The study can be ranked as klimisch code 1: reliability 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.
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 as klimisch code 1: reliability without restrictions. And the test result showed that tartaric acid is highly irritating **Value used for CSA:** Skin irritation / corrosion: not irritating Eye irritation: highly irritating
Skin sensibilisation	The following information is taken into account for any hazard / risk assessment: Skin sensitisation (OECD 429): not sensitizing **Justification for classification or non classification** Not classified as skin sensitizer **Value used for CSA:** not sensitising
Resopiratory sensitisation	No data available
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, correspond 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.
Carcinogenicity	Non-human information Data waiving **Justification:** Combined Chronic Toxicity / Carcinogenicity Study equivalent or similar to OECD Guideline 453 is available under IUCLID endpoint 7.5.1 (Repeated dose toxicity: oral). No rubust study summary is provided here.
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. **Justification for classification or non classification** non-classification

12- Ecological information

Aquatic acute toxicity	The fish, daphnia and algae acute aquatic toxicity are greater than 1 mg/L (96h LC50 (fish) > 100mg/L,48h EC50 (daphnia) = 93.3 mg/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) N° 1272/2008, Annex I section 4.1
Aquatic chronic toxicity	The fish, daphnia and algae acute aquatic toxicity are greater than 10mg/L and lower than 100mg/L (96h LC50 (fish) > 100mg/L,48h EC50 (daphnia) = 93.3 mg/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) N° 1272/2008, Annex I section 4.1
Persistance 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 fulfill 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.
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 fulfill the criterion “bioaccumulative (B)” and “very bioaccumulative (vB)”. If the BCF is below 2000 or lof Kow is below 4.5. There is not experimental data on BCF. However, the log Kow is negative and below the criterion for the bioaccumulation (log Kow 4.5).Therefore, it can be concluded that the substance is neither bioaccumulative nor very bioaccumulative.
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 fulfill 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.
Emission characterization	As the substance does not fulfil the criteria for PBT or vPvB no emission assessment is required

13- Disposal considerations

In general, the disposal of chemical residues is regulated in each European country by specific laws and regulations. Packing material must be disposed of in accordance with national regulations. Contaminated packing material must be handled with recycled as normal residues, unless otherwise indicated.

14- Transport information

ADR/RID ROAD/RAILWAY transport	Not classified as dangerous goods for transport
IMDG transport	Not classified as dangerous goods for transport
ICAO AND IATA AIR transport	Not classified as dangerous goods for transport

15- Regulatory information

Standards and laws on health, safety and environment specific for the substance	Authorisation pursuant to REACH Regulations : It's not on the list of substances of very high concern (SVHC) applicable for the authorisation Restrictions on use pursuant to REACH Regulations : It's not subject to restrictions pursuant to Title VII (Annex XVII, Appendix 2, paragraph 28)
Chemical safety assessment	An assessment of the chemical safety has been carried out

16- Other information

- EXPOSURE ASSESSMENT

ES	Exposure scenario
1	**Manufacture of substance and use as intermediate - Industrial**
2	**Formulation & (Re)packing of substances and mixtures - Industrial**
3	**Uses in Construction applications - Professional**
4	**Uses in Construction applications - Consumer**
5	**Uses in Ceramics applications - Professional**
6	**Uses in Ceramics applications - Consumer**

Exposure Scenarios with use descriptors for tartaric acid (attached at this MSDS)

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, 6a
2		X			10	NA	5, 8a, 8b, 9	NA	2
3			X		22	NA	8a, 8b, 9	NA	8c, 8f
4				X	21	NA	NA	4	10a, 11a
5			X		22	NA	8a, 8b, 9	NA	8c, 8f
6				X	21	NA	NA	4	10a, 11a

- **Reference book and principal data source**

  REACH Registration report - Tartaric Acid

- **Caption of abbreviation and acronyms**

NOAEL: No Observable Adverse Effect Level
DNEL: Derived No Effect Level
DMEL: Derived Minimal Effect Level
EC50: half maximal effective concentration
IC50: half maximal inhibitory concentration, 50%
LC50: Lethal Concentration, 50%
LD50: median lethal dose, 50%
PNEC: Predicted No Effect Concentration
PBT: Persistent, bioaccumulative and toxic
TLV®TWA: Threshold limit value - Time weighted average
TLV®STEL: Threshold limit value - Short term exposure limit
vPvB: Very persistent and very Bioaccumulative