



SAFETY DATA SHEET

1. Identification

Product identifier	Emergen-C Super Orange
Other means of identification	
Product code	WH-1558-0003, H00EC46200, H00EC46250, MF-453, 04003171
Synonyms	Emergen-C Super Orange (Product Enhancement Formula No. 2) * EMC Super Orange Bulk Powder
Recommended use	Dietary Supplement This safety data sheet is written to provide health, safety and environmental information for people handling this formulated product in the workplace. It is not intended to provide information relevant to medicinal use of the product. In this instance patients should consult prescribing information/package insert/product label or consult their pharmacist or physician. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate safety data sheet for each ingredient.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
COMPANY NAME	GlaxoSmithKline US
Address:	5 Moore Drive Research Triangle Park, NC 27709 USA
Telephone:	+1-888-825-5249 (General Inquiries)
Email:	msds@gsk.com
Website:	www.gsk.com

EMERGENCY CONTACTS

Telephone:	VERISK 3E GLOBAL INCIDENT RESPONSE +(1) 760 476 3971 (In country) +(1) 760 476 3962 or +(1) 866 519 4752 (International) 24/7; multi-language response
Contract Number:	334878

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
Environmental hazards	Not classified.	
OSHA defined hazards	Combustible dust	
Label elements		



Signal word	Warning
Hazard statement	May form combustible dust concentrations in air. Causes skin irritation. Causes serious eye irritation.
Precautionary statement	
Prevention	Prevent dust accumulation to minimize explosion hazard. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Wash thoroughly after handling. Wear eye protection/face protection. Wear protective gloves.

Response	If on skin: Wash with plenty of water/. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment (see on this label). If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Not available.
Disposal	Not available.
Hazard(s) not otherwise classified (HNOC)	This material will support combustion. Ignition of dust clouds can produce explosions. Dust clouds are of very low sensitivity to electrostatic ignition.
Supplemental information	72.8% of the mixture consists of component(s) of unknown acute oral toxicity. 80.7% of the mixture consists of component(s) of unknown acute dermal toxicity. 89.93% of the mixture consists of component(s) of unknown acute inhalation toxicity. 92.33% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 92.33% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
D-FRUCTOSE	FRUCTOSE FRUIT SUGAR FRUCTOFIN C FRUCTOFIN CM	57-48-7	60.4
L-ASCORBIC ACID	VITAMIN C L-XYLOASCORBIC ACID ASCORBUTINA ANTISCORBUTIC VITAMIN CEVITAMIC ACID ASCORIN (+)-ASCORBIC ACID L-(+)-ASCORBIC ACID L-LYXOASCORBIC ACID 3-KETO-L-GULOFURANOLACTONE L-THREO-HEX-2-ENONIC ACID, GAMA-LACTONE L-3-KETOTHREOHURONIC ACID LACTONE 3-OXO-L-GULOFURANOLACTONE	50-81-7	11.5
MALTODEXTRIN	MALTRIN MALTRIN M 100 OHS13581 MALTODEXTRIN	9050-36-6	5.6
CITRIC ACID ANHYDROUS	BETA-HYDROXYTRICARBALLYLIC ACID ANHYDROUS D ANHYDROUS CITRIC ACID 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID CITIRIC ACID	77-92-9	5.1
POTASSIUM BICARBONATE	POTASSIUM ACID CARBONATE POTASSIUM CARBONATE, HYDROGEN CARBONIC ACID, MONOPOTASSIUM SALT POTASSIUM HYDROGEN CARBONATE HYDROGEN POTASSIUM CARBONATE MONOPOTASSIUM CARBONATE	298-14-6	3.6
MALIC ACID	HYDROXYSUCCINIC ACID HYROXYBUTANEDIOIC ACID	6915-15-7	2.4

Chemical name	Common name and synonyms	CAS number	%
SODIUM BICARBONATE	BAKING SODA BICARBONATE OF SODA CARBONIC ACID MONOSODIUM SALT CARBONIC ACID SODIUM SALT (1:1) MONOSODIUM CARBONATE MONOSODIUM HYDROGEN CARBONATE RTECS VZ0950000 SODIUM ACID CARBONATE SODIUM HYDROGEN CARBONATE	144-55-8	2.3
MAGNESIUM CARBONATE	CARBONIC ACID, MAGNESIUM SALT CARBONATE MAGNESIUM	546-93-0	1.4
CALCIUM CARBONATE	CARBONIC ACID, CALCIUM SALT CALCIUM MONOCARBONATE PRECIPITATED CALCIUM CARBONATE CHALK	471-34-1	1.3
POTASSIUM PHOSPHATE MONOBASIC	POTASSIUM ACID PHOSPHATE POTASSIUM DIPHOSPHATE POTASSIUM BIPHOSPHATE POTASSIUM ORTHOPHOSPHATE MONOPOTASSIUM PHOSPHATE POTASSIUM DIHYDROGEN PHOSPHAT E POTASSIUM DIHYDROGEN ORTHOPHOSPHATE POTASSIUM PHOSPHATE, MONOBASIC	7778-77-0	1.2
POTASSIUM CARBONATE	CARBONIC ACID, DIPOTASSIUM SALT CARBONIC ACID POTASSIUM SALT (1:2) DIPOTASSIUM CARBONATE POTASSIUM CARBONATE (2:1) POTASSIUM CARBONATE (K ₂ (CO ₃)) POTASSIUM CARBONATE (K ₂ CO ₃) SALT OF TARTAR POTASH PEARL ASH CK ₂ O ₃ OHS19290 RTECS TS7750000 CARBONATE OF POTASH 4 (GW ACN)	584-08-7	1
MAGNESIUM HYDROXIDE	MAGNESIA HYDRATE MILK OF MAGNESIA	1309-42-8	0.9
CALCIUM PHOSPHATE, MONOBASIC	PHOSPHORIC ACID, CALCIUM SALT (2:1) CALCIUM SUPERPHOSPHATE MONOCALCIUM PHOSPHATE ACID CALCIUM PHOSPHATE CALCIUM BIPHOSPHATE CALCIUM BIS(DIHYDROGEN PHOSPHATE) CALCIUM DIHYDROGEN ORTHOPHOSPHATE CALCIUM DIHYDROGEN PHOSPHATE CALCIUM DIORTHOPHOSPPHATE CALCIUM MONOBASIC PHOSPHATE CALCIUM TETRAHYDROGEN PHOSPHATE MONOBASIC CALCIUM PHOSPHATE CALCIUM BIOPHOSPHATE PHOSPHORIC ACID, CALCIUM SALT OHS04065 RTECS TB8527000	7758-23-8	0.4

Chemical name	Common name and synonyms	CAS number	%
SILICON DIOXIDE	SILICA SILICA GEL AMORPHOUS SILICA DIATOMACEOUS EARTH INFUSORIAL EARTH CAB-O-SIL M-5 SILICA, AMORPHOUS HYDRATED	7631-86-9	0.3
SODIUM PHOSPHATE, MONOBASIC	MONOSODIUM PHOSPHATE SODIUM DIHYDROGEN PHOSPHATE MONOSODIUM DIHYDROGEN PHOSPHATE SODIUM BIPHOSPHATE MONOSODIUM ORTHOPHOSPHATE PHOSPHORIC ACID, MONOSODIUM SALT MONOBASIC SODIUM PHOSPHATE MONOSODIUM HYDROGEN PHOSPHATE SODIUM DIPHOSPHATE ANHYDROUS SODIUM PRIMARY PHOSPHATE SODIUM PHOSPHATE	7558-80-7	0.3
PYRIDOXINE HYDROCHLORIDE	5-HYDROXY-6-METHYL-3,4-PYRIDINED IMETHANOL, HYDROCHLORIDE PYRIDOXOL, HYDROCHLORIDE PYRIDOXINE HYDROGEN CHLORIDE PYRIDOXINE MONOHYDROCHLORIDE VITAMIN B6 HYDROCHLORIDE	58-56-0	0.2
CALCIUM PHOSPHATE, TRIBASIC	PHOSPHORIC ACID, CALCIUM SALT (2:3) CALCIUM ORTHOPHOSPHATE CALCIUM PHOSPHATE CALCIUM PHOSPHATE (3:2) CALCIUM TERTIARY PHOSPHATE TERTIARY CALCIUM PHOSPHATE TRIBASIC CALCIUM PHOSPHATE TRICALCIUM DIPHOSPHATE TRICALCIUM ORTHOPHOSPHATE TRICALCIUM PHOSPHATE ALPHA-TRICALCIUM PHOSPHATE BETA-TRICALCIUM PHOSPHATE TRICALCIUM PHOSPHATE (CA3(PO4)2) BETA-TCP PHOSPHORIC ACID CALCIUM(2+) SALT (2:3) OHS04064	7758-87-4	0.08
NICOTINIC ACID	NIACIN 3-PYRIDINECARBOXYLIC ACID VITAMIN B	59-67-6	0.06
MANGANESE GLUCONATE	MANGANESE, BIS(D-GLUCONATO-O1-O2-,(T-4)-	6485-39-8	0.05
GLYCINE	AMINOACETIC ACID 2-AMINOACETIC ACID AMINOETHANOIC ACID GLYCOCOLL GLYCOSTHENE	56-40-6	0.04
BETA-CAROTENE	BETA, BETA-CAROTENE β , β -carotene PROVITAMIN A CI FOOD ORANGE 5 FOOD ORANGE 5 NATURAL YELLOW 26 C.I. Food Orange 5	7235-40-7	0.01
RIBOFLAVIN	RIBOFLAVINE VITAMIN B2 VITAMIN G FOOD YELLOW 15	83-88-5	0.008

Chemical name	Common name and synonyms	CAS number	%
THIAMINE HYDROCHLORIDE	VITAMIN B1 HYDROCHLORIDE	67-03-8	0.007
TARTARIC ACID	DEXTROTARTARIC ACID 2,3-DIHYDROXYBUTANEDIOIC ACID NATURAL TARTARIC ACID L-TARTARIC ACID L-THREOIC ACID L-2,3-DIHYDROXYBUTANEDIOIC ACID DIHYDROXYSUCCINIC ACID D-TARTARIC ACID 1,2-DIHYDROXYETHANE-1,2-DICARBOXYLIC ACID D-ALPHA,BETA-DIHYDROXYSUCCINIC ACID THREARIC ACID	87-69-4	0.006
TOCOPHEROL	ALPHA-TOCOPHEROL TOCOFEROL	1406-66-2	0.004
CYANOCOBALAMIN	VITAMIN B12 B-12	68-19-9	0.0003
Other components below reportable levels			1.8347

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water. Foam. Dry chemical powder.
Unsuitable extinguishing media	Carbon dioxide (CO2).
Specific hazards arising from the chemical	Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Apply extinguishing media carefully to avoid creating airborne dust.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	This material will support combustion.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Use only non-sparking tools. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Wear appropriate protective equipment and clothing during clean-up. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and storage

Precautions for safe handling

Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Ground/bond container and receiving equipment. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Keep containers tightly closed in a dry, cool and well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

GSK

Components	Type	Value	Note
BETA-CAROTENE (CAS 7235-40-7)	OHC	2	>100 - ≤1000 mcg/m3 SKIN
CALCIUM PHOSPHATE, MONOBASIC (CAS 7758-23-8)	OHC	1	
CALCIUM PHOSPHATE, TRIBASIC (CAS 7758-87-4)	OHC	1	
CITRIC ACID ANHYDROUS (CAS 77-92-9)	8 HR TWA	5000 mcg/m3	
	OHC	1	
CYANOCOBALAMIN (CAS 68-19-9)	8 HR TWA	5 mg/m3	
	OHC	1	
D-FRUCTOSE (CAS 57-48-7)	8 HR TWA	5000 mcg/m3	
	OHC	1	
GLYCINE (CAS 56-40-6)	8 HR TWA	5000 mcg/m3	
	OHC	1	
L-ASCORBIC ACID (CAS 50-81-7)	8 HR TWA	5000 mcg/m3	
MAGNESIUM HYDROXIDE (CAS 1309-42-8)	OHC	1	>1000 - ≤5000 mcg/m3
MALTODEXTRIN (CAS 9050-36-6)	OHC	1	>1000 - ≤5000 mcg/m3
NICOTINIC ACID (CAS 59-67-6)	8 HR TWA	500 mcg/m3	

GSK Components	Type	Value	Note
	OHC	2	SKIN SENSITISER
POTASSIUM BICARBONATE (CAS 298-14-6)	8 HR TWA	5000 mcg/m3	
	OHC	1	
POTASSIUM CARBONATE (CAS 584-08-7)	8 HR TWA	5000 mcg/m3	
	OHC	1	
POTASSIUM PHOSPHATE MONOBASIC (CAS 7778-77-0)	OHC	1	>1000 - <=5000 mcg/m3
PYRIDOXINE HYDROCHLORIDE (CAS 58-56-0)	8 HR TWA	400 mcg/m3	
	OHC	2	
RIBOFLAVIN (CAS 83-88-5)	OHC	1	>1000 - <=5000 mcg/m3
SODIUM BICARBONATE (CAS 144-55-8)	OHC	1	>1000 - <=5000 mcg/m3
SODIUM PHOSPHATE, MONOBASIC (CAS 7558-80-7)	OHC	1	
TARTARIC ACID (CAS 87-69-4)	8 HR TWA	5000 mcg/m3	
THIAMINE HYDROCHLORIDE (CAS 67-03-8)	OHC	1	
TOCOPHEROL (CAS 1406-66-2)	OHC	1	>1000 - ≤5000 mcg/m3

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
CALCIUM CARBONATE (CAS 471-34-1)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
MAGNESIUM CARBONATE (CAS 546-93-0)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
MANGANESE GLUCONATE (CAS 6485-39-8)	Ceiling	5 mg/m3	

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value
SILICON DIOXIDE (CAS 7631-86-9)	TWA	0.8 mg/m3
		20 mppcf

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
CALCIUM CARBONATE (CAS 471-34-1)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total
MAGNESIUM CARBONATE (CAS 546-93-0)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
MANGANESE GLUCONATE (CAS 6485-39-8)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.
SILICON DIOXIDE (CAS 7631-86-9)	TWA	6 mg/m3	

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. Use only appropriately classified electrical equipment and powered industrial trucks. Provide eyewash station and safety shower.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear safety glasses with side shields (or goggles). Face shield is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance**

Physical state	Solid.
Form	Powder.
Color	Light yellow.

Odor Not available.

Odor threshold Not available.

pH 4.9 - 5 (10 % solution, 66.2 °F (19 °C))

Melting point/freezing point 190.4 - 192.2 °F (88 - 89 °C)

Initial boiling point and boiling range Not available.

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Explosive limit - lower (%) Not available.

Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Dust explosion properties	
Group	A
Pmax	7.5 bar
dP/dT	294 bar/s
Kst	80 bar.m/s
St class	1 (Tested at particle size < 75 micron)
Limiting oxygen concentration (LOC)	16 % v/v
Minimum explosible concentration (MEC)	250 g/m ³
Minimum ignition energy (MIE) - dust cloud	> 500 mJ (Tested at particle size < 75 micron)
	> 500 mJ (Tested "as received")
Minimum ignition temperature (MIT) - dust cloud	914 °F (490 °C)
Minimum ignition temperature (MIT) - dust layer	No ignition or exotherm observed up to 400 °C.
Electrostatic properties	
Charge relaxation time at ambient humidity	< 1 s (51 %, 69.8 °F (21 °C))
Charge relaxation time at low humidity	24 s (15 %, 69.8 °F (21 °C))
Resistivity at ambient humidity	1.67E+08 ohm.m (50 %, 69.8 °F (21 °C))
Resistivity at low humidity	1.51E+12 ohm.m (15 %, 68 °F (20 °C))
Explosive properties	Not available.
Temperature rating (T-rating)	
IEC	T2
US	T2
Train fire	Non-combustible. (Supports limited propagating combustion).

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Keep away from heat, sparks and open flame. Contact with incompatible materials. Minimize dust generation and accumulation.

Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Dust may irritate respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin and eyes. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity Not known.

Product	Species	Test Results
Emergen-C Super Orange		
Acute		
Dermal		
LD50	Rabbit	25000 mg/kg, 24 Hours estimated
Oral		
LD50	Mouse	107700 mg/kg estimated
	Rat	27810 mg/kg estimated 108 g/kg estimated
Other		
LD50	Dog	133300 mg/kg estimated
	Rat	117000 mg/kg estimated
Chronic		
Oral		
TD	Human	57530 mg/day, 400 Day estimated
Subchronic		
Oral		
NOAEL	Human	9588 mg/day, 3 months estimated
	Rat	19180 mg/kg/day estimated
Components	Species	Test Results

CALCIUM CARBONATE (CAS 471-34-1)

Acute

Oral

LD50	Rat	6450 mg/kg
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CALCIUM PHOSPHATE, MONOBASIC (CAS 7758-23-8)

Acute

Dermal

LD50	Rabbit	> 2000 mg/kg, 24 Hours
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Inhalation

Dust

LC50	Rat	> 2.6 mg/l, 4 Hours
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Oral

LD50	Rat	> 2000 mg/kg
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Components	Species	Test Results
CITRIC ACID ANHYDROUS (CAS 77-92-9)		
<u>Acute</u>		
Oral		
LD50	Rat	11700 mg/kg
CYANOCOBALAMIN (CAS 68-19-9)		
<u>Acute</u>		
Oral		
LD	Mouse	> 5 g/kg
GLYCINE (CAS 56-40-6)		
<u>Acute</u>		
Oral		
LD50	Rat	7930 mg/kg
L-ASCORBIC ACID (CAS 50-81-7)		
<u>Acute</u>		
Oral		
LD50	Rat	11.9 g/kg
<u>Subchronic</u>		
Oral		
NOAEL	Rat	2000 mg/kg/day
MAGNESIUM HYDROXIDE (CAS 1309-42-8)		
<u>Acute</u>		
Oral		
LD50	Rat	8500 mg/kg
MALTODEXTRIN (CAS 9050-36-6)		
<u>Acute</u>		
Oral		
LD50	Rat	> 2000 mg/kg
NICOTINIC ACID (CAS 59-67-6)		
<u>Acute</u>		
Dermal		
LD50	Rat	> 2000 mg/kg
Oral		
LD50	Rat	4500 mg/kg
POTASSIUM PHOSPHATE MONOBASIC (CAS 7778-77-0)		
<u>Acute</u>		
Dermal		
LD50	Rabbit	> 300 mg/kg, 24 Hours
Oral		
LD50	Mouse	1700 mg/kg
PYRIDOXINE HYDROCHLORIDE (CAS 58-56-0)		
<u>Acute</u>		
Oral		
LD50	Rat	4 g/kg
RIBOFLAVIN (CAS 83-88-5)		
<u>Acute</u>		
Oral		
LD50	Rat	> 10 g/kg

Components	Species	Test Results
SODIUM BICARBONATE (CAS 144-55-8)		
Acute		
Oral		
LD50	Rat	>= 7300 mg/kg 4220 - 8290 mg/kg
SODIUM PHOSPHATE, MONOBASIC (CAS 7558-80-7)		
Acute		
Oral		
LD50	Rat	8290 mg/kg
THIAMINE HYDROCHLORIDE (CAS 67-03-8)		
Acute		
Oral		
LD50	Rat	3710 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Irritation Corrosion - Skin		
L-ASCORBIC ACID		Acute dermal irritation; OECD 404 Result: Non-irritant Species: Rabbit Notes: EU SCC Review 1986-1990
Irritation Corrosion - Skin: P.I.I. value		
CITRIC ACID ANHYDROUS		OECD 404 Result: Mild to moderate irritant. Species: Rabbit
Serious eye damage/eye irritation	Causes serious eye irritation.	
Eye		
CITRIC ACID ANHYDROUS		Acute ocular irritation; OECD 405 Result: Severe Irritant Species: Rabbit
L-ASCORBIC ACID		Acute ocular irritation; OECD 405 Result: Slight irritant Species: Rabbit Notes: EU SCC Review 1986-1990
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Sensitization		
CYANOCOBALAMIN		Epidemiology Result: Hypersensitivity reactions can occur rarely.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity		
L-ASCORBIC ACID		Not classifiable as to carcinogenicity to humans. < 6000 mg/kg/day Result: Negative Species: Mouse Notes: UN SIDS Dossier 1000 - 2000 mg/kg/day Result: Negative Species: Rat Notes: UN SIDS Dossier
IARC Monographs. Overall Evaluation of Carcinogenicity		
SILICON DIOXIDE (CAS 7631-86-9)		3 Not classifiable as to carcinogenicity to humans.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)		
Not listed.		
US. National Toxicology Program (NTP) Report on Carcinogens		
Not listed.		
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	

Reproductivity
L-ASCORBIC ACID

1.5 - 100 mg/kg/day Embryo-foetal development
Result: No adverse foetal effects observed
Species: Guinea pig
Notes: EU SCC Review 1986-1990
200 - 2000 mg/kg/day Embryo-foetal development
Result: No adverse foetal effects observed
Species: Rat
Notes: EU SCC Review 1986-1990
5.2 - 520 mg/kg/day Embryo-foetal development
Result: No adverse foetal effects observed
Species: Mouse
Notes: EU SCC Review 1986-1990

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

L-ASCORBIC ACID

Species: Human
Organ: Red blood cells, kidneys.
Notes: EU SCC Review 1986-1990

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
BETA-CAROTENE (CAS 7235-40-7)			
Aquatic			
<i>Acute</i>			
Algae	EC50	Green algae (Selenastrum capricornutum)	81 mg/l, 72 hours
	NOEC	Green algae (Selenastrum capricornutum)	< 10 mg/l, 72 hours
Fish	NOEC	Rainbow trout (Adult Oncorhynchus mykiss)	1000 mg/l
CALCIUM CARBONATE (CAS 471-34-1)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	> 56000 mg/l, 24 hours
CITRIC ACID ANHYDROUS (CAS 77-92-9)			
Aquatic			
<i>Acute</i>			
Algae	NOEC	Green algae (Scenedesmus quadricauda)	425 mg/l, 8 days Static Test
Crustacea	EC50	Water flea (Daphnia magna)	120 mg/l, 72 hours Static test
Fish	EC50	Bluegill sunfish (Adult Lepomis macrochirus)	1516 mg/l, 96 hours Static test
		Golden ide/orfe (Adult Leuciscus idus)	440 - 760 mg/l, 96 hours Static test
CYANOCOBALAMIN (CAS 68-19-9)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Water flea (Daphnia magna)	> 100 mg/l, 48 hours
GLYCINE (CAS 56-40-6)			
Aquatic			
<i>Acute</i>			
Fish	EC50	Fathead minnow (Adult Pimephales promelas)	> 100 mg/l

Components	Species	Test Results
L-ASCORBIC ACID (CAS 50-81-7)		
Aquatic		
<i>Acute</i>		
Fish	EC50	Rainbow trout (Adult Oncorhynchus mykiss) 1020 mg/l, 96 hours
NICOTINIC ACID (CAS 59-67-6)		
Aquatic		
<i>Acute</i>		
Algae	EC50	Green algae (Scenedesmus subspicatus) 89.93 mg/l, 72 hours
Crustacea	EC50	Water flea (Daphnia magna) 77 mg/l, 48 hours
Fish	EC50	Brown trout (Juvenile Salmo trutta) 520 mg/l, 96 hours Static test
POTASSIUM BICARBONATE (CAS 298-14-6)		
Aquatic		
<i>Acute</i>		
Crustacea	EC50	Water flea (Ceriodaphnia dubia) 630 mg/l, 48 hours US EPA 600/4-90/027
Fish	LC50	Rainbow trout (Adult Oncorhynchus mykiss) 1300 mg/l, 96 hours FIFRA 72-1
POTASSIUM CARBONATE (CAS 584-08-7)		
Aquatic		
<i>Acute</i>		
Crustacea	EC50	Water flea (Daphnia magna) 650 mg/l, 48 hours Static test
Fish	EC50	Fathead minnow (Juvenile Pimephales promelas) < 510 mg/l, 96 hours Static test
SILICON DIOXIDE (CAS 7631-86-9)		
Aquatic		
<i>Acute</i>		
Algae	EC50	Green algae (Selenastrum capricornutum) 440 mg/l, 72 hours
	NOEC	Green algae (Selenastrum capricornutum) 60 mg/l, 72 hours
Crustacea	EC50	Water flea (Daphnia magna) > 10000 mg/l, 24 hours Static test
Fish	EC50	Common carp (Juvenile Cyprinus carpio) > 10000 mg/l, 72 hours
		Zebra fish (Adult Brachydanio rerio) 5000 mg/l, 96 hours Static test
Microtox	EC50	Microtox 8700 mg/l, 15 minutes
SODIUM BICARBONATE (CAS 144-55-8)		
Aquatic		
<i>Acute</i>		
Algae	EC50	Algae (Nitscheria linearis) 650 mg/l, 5 days
Crustacea	EC50	Water flea (Daphnia magna) 2350 mg/l, 48 hours Static test
Fish	EC50	Bluegill sunfish (Adult Lepomis macrochirus) 8250 - 9000 mg/l, 96 hours Static test
		Mosquito fish (Adult Gambusia affinis) 7550 mg/l, 96 hours Static test
SODIUM PHOSPHATE, MONOBASIC (CAS 7558-80-7)		
Aquatic		
<i>Acute</i>		
Fish	EC50	Golden ide/orfe (Adult Leuciscus idus) > 2400 mg/l, 48 hours Static test
		Mosquito fish (Adult Gambusia affinis) 186 mg/l, 96 hours Static test

Persistence and degradability

Photolysis

Half-life (Photolysis-aqueous)

MALIC ACID 940 Days Estimated

Half-life (Photolysis-atmospheric)

GLYCINE 4.6 Hours Estimated

MALIC ACID 2 Days Estimated

NICOTINIC ACID 24 Days Estimated

UV/visible spectrum wavelength

CYANOCOBALAMIN 278 nm

Biodegradability

Percent degradation (Aerobic biodegradation-inherent)

BETA-CAROTENE 100 %, 28 days Modified MITI (II) Test.

CITRIC ACID ANHYDROUS 98 %, 2 days Modified Zahn-Wellens, Activated sludge

L-ASCORBIC ACID 100 %, 15 days Zahn-Wellens

MALIC ACID 68 %, 5 days BOD5, Activated sludge

TARTARIC ACID 34 - 75.2 %, 5 days BOD5, Activated sludge

Percent degradation (Aerobic biodegradation-ready)

CYANOCOBALAMIN < 5 %

GLYCINE 78.13 % BOD20

NICOTINIC ACID 100 %, 14 days Modified OECD Screening Test (OECD 301E), Deionized Water

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

GLYCINE -3.21

L-ASCORBIC ACID -2.15

NICOTINIC ACID 0.36

RIBOFLAVIN 0.98

TARTARIC ACID -1.46

TARTARIC ACID -1.46 (Measured).

Bioconcentration factor (BCF)

MALIC ACID 0.1 - 0.3 Estimated

NICOTINIC ACID 1 Estimated

Mobility in soil No data available.

Adsorption

Soil/sediment sorption - log Koc

GLYCINE 0 Estimated

NICOTINIC ACID 1.57 Estimated

Mobility in general

Volatility

Henry's law

CITRIC ACID ANHYDROUS < 0 atm m³/mol Calculated, 25 °C

GLYCINE 0 atm m³/mol Estimated

MALIC ACID 0 atm m³/mol, 25 C Estimated

NICOTINIC ACID 0 Estimated

RIBOFLAVIN < 0 atm m³/mol, 25 C Estimated

TARTARIC ACID 0 atm m³/mol Estimated

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Incinerate the material under controlled conditions in an approved incinerator. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel]
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information**DOT**

Not regulated as a dangerous good.

Read safety instructions, SDS and emergency procedures before handling.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

MANGANESE GLUCONATE (CAS 6485-39-8) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**SARA 302 Extremely hazardous substance**

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories Combustible dust
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

MANGANESE GLUCONATE (CAS 6485-39-8)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Contains component(s) regulated under the Safe Drinking Water Act.

US state regulations**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

MAGNESIUM CARBONATE (CAS 546-93-0)
MAGNESIUM HYDROXIDE (CAS 1309-42-8)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	04-10-2015
Revision date	12-01-2020
Version #	03
Further information	Refer to: OSHA 3371-08 2009, Hazard Communication Guidance for Combustible Dusts NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids
HMIS® ratings	Health: 2 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 2 Instability: 0
Disclaimer	GlaxoSmithKline cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.