Safety Data Sheet

LOCTITE Black Rubber Adhesive

SDS No. : 503303
V001.2
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Henkel Japan Ltd.

1. Identification of the substance/preparation and of the company/undertaking

Product code: 1935057
Product name: LOCTITE Black Rubber Adhesive

Recommended use : Solvent based adhesive

Company name:
Henkel Japan Ltd.
Sphere Tower Tennoz 14F 2-2-8
Higashi-Shinagawa, Shinagawa-ku, Tokyo
140-0002
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2. Hazards identification

GHS Classification:

Hazard Class	Hazard Category	Target organ
Flammable liquids	Category 2	
Skin irritation	Category 2	
Serious eye damage/eye irritation	Category 2	
Target Organ Systemic Toxicant - Single exposure	Category 3	Central nervous system
Aspiration hazard	Category 1	
Acute hazards to the aquatic environment	Category 1	
Chronic hazards to the aquatic environment	Category 1	

GHS label elements:

Hazard pictogram:

Signal word: Danger

Hazard statement:	H225 Highly flammable liquid and vapour. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H319 Causes serious eye irritation. H336 May cause drowsiness or dizziness. H410 Very toxic to aquatic life with long lasting effects.
Prevention:	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P261 Avoid breathing mist/vapours. P264 Wash skin thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. P280 Wear protective gloves, eye protection, and face protection.
Response:	P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor/… P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. P304+P340+P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P331 Do NOT induce vomiting. P332+P313 If skin irritation occurs: Get medical advice/attention. P337+P313 If eye irritation persists: Get medical advice/attention. P362+P364 Take off contaminated clothing and wash it before reuse. P370+P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction. P391 Collect spillage.
Storage:	P403+P233 Store in a well-ventilated place. Keep container tightly closed. P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
Disposal:	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

The hazard information in product label may be differing with SDS information.

3. Composition / information on ingredients

Single substance/ Mixture: Mixture
Chemical Characterization: Solvent based adhesive

Hazardous Components and Concentration

Ingredients	contents
Methylcyclohexane	>= 30 - < 40 %
Ethyl acetate	>= 25 - < 30 %
Butanone	>= 1 - < 10 %
Magnesium oxide	>= 1 - < 10 %
Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlorides, compds. with bentonite	>= 2.5 - < 10 %
rosin	>= 0.1 - < 1 %
Silicon dioxide	>= 0.1 - < 1 %
Carbon black	>= 0.1 - < 1 %
2,6-Di-tert-butyl-p-cresol	>= 0.25 - < 1 %
zinc oxide	>= 0.25 - < 1 %

4. First aid measures

Case of skin contact:	Rinse with running water and soap. Apply replenishing cream. Change all contaminated clothing.
Case of eye contact:	Immediately flush eyes with soft jet of water or eye rinse solution for at least 15 minutes. Hold eyelid wide-open. Seek a doctor/hospital, eye flushing should continue during transportation to a doctor.
Case of ingestion:	Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.
Case of inhalation:	Move to fresh air. If symptoms persist, seek medical advice.

5. Fire fighting measures

Fire-fighting advice:	Cool endangered containers with water spray jet.
Suitable extinguishing media:	carbon dioxide, foam, powder, water spray jet, fine water spray
Extinguishing media that can not be used:	High pressure waterjet
Protective equipment:	Wear self-contained breathing apparatus. Wear protective equipment.

6. Accidental release measures

Personal precautions:	Ensure adequate ventilation. Wear protective equipment. Danger of slipping on spilled product.
Environmental precautions:	Do not empty into drains / surface water / ground water.
Measures for removal:	Remove with liquid-absorbing material (sand, peat, sawdust). Dispose of contaminated material as waste according to Section 13.

7. Handling and storage

Handling:

Precautions for safe handling: Ventilate working rooms thoroughly. Avoid naked flames, sparking and sources of ignition. Switch off electrical devices. Do not smoke, do not weld. Do not empty waste into waste water drains.

Storage:

Conditions for safe storage:

Keep container in a well ventilated place.
Keep container tightly sealed and store in a frost free place.
Do not store or use near heat, spark, open flame or other sources of ignition.

8. Exposure controls / personal protection

Component exposure limits:

Japan OELs JSOH

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list

Methylcyclohexane [METHYLCYCLOHEXANE]	400	1,600	Time Weighted Average (TWA):		JPJSOH OEL
Ethyl acetate [ETHYL ACETATE]	200		Threshold Limit Value:		JPISHL OEL
Ethyl acetate [ETHYL ACETATE]	200	720	Time Weighted Average (TWA):		JPJSOH OEL
Butanone [METHYL ETHYL KETONE]	200		Threshold Limit Value:		JPISHL OEL
Butanone [METHYL ETHYL KETONE]	200	590	Time Weighted Average (TWA):		JPJSOH OEL
Magnesium oxide [Inorganic and organic dusts other than Classes 1 and 2, respirable dust]		2	Time Weighted Average (TWA):		JPJSOH OEL
Magnesium oxide [Inorganic and organic dusts other than Classes 1 and 2, total dust]		8	Time Weighted Average (TWA):		JPJSOH OEL
Silicon dioxide [SANDSTONE, ROCK, MINERAL, METAL AND CARBON DUST]		0.025	Threshold Limit Value:	The exposure limit is calculated from the equation, 3.0/(1.19*(% free silica)+1) using a value of 100% free silica. Lower percentages of free silica will yield higher exposure limits.	JPISHL OEL
Silicon dioxide [Mineral Dusts containing less than 3% free silica, respirable dust]		1	Time Weighted Average (TWA):		JPJSOH OEL
Silicon dioxide [Mineral Dusts containing less than 3% free silica, total dust]		4	Time Weighted Average (TWA):		JPJSOH OEL
Zinc oxide [Sandstone, rock, mineral, metal and carbon dust]		0.025	Threshold Limit Value:	The exposure limit is calculated from the equation, 3.0/(1.19*(% free silica)+1) using a value of 100% free silica. Lower percentages of free silica will yield higher exposure limits.	JPISHL OEL
Zinc oxide [Zinc oxide, respirable dust]		1	Time Weighted Average (TWA):		JPJSOH OEL
Zinc oxide [Zinc oxide, total dust]		4	Time Weighted Average (TWA):		JPJSOH OEL
Zinc oxide [Zinc oxide nanoparticles]		0.5	Time Weighted Average (TWA):		JPJSOH OEL

Component exposure limits:

REFERENCES

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Methylcyclohexane [METHYLCYCLOHEXANE]	400		Time Weighted Average (TWA):		ACGIH
Ethyl acetate [ETHYL ACETATE]	400		Time Weighted Average (TWA):		ACGIH
Butanone [METHYL ETHYL KETONE (MEK)]	200		Time Weighted Average (TWA):		ACGIH
Butanone [METHYL ETHYL KETONE (MEK)]	300		Short Term Exposure Limit (STEL):		ACGIH
Butanone [Methyl ethyl ketone]	150		Short Term Exposure Limit (STEL):		ACGIHLIS_P
Butanone [Methyl ethyl ketone]	75		Time Weighted Average (TWA):		ACGIHLIS_P
Butanone [Methyl ethyl ketone]			Skin designation:	Can be absorbed through the skin.	ACGIHLIS_P
Magnesium oxide [MAGNESIUM OXIDE, INHALABLE FRACTION]		10	Time Weighted Average (TWA):		ACGIH
Silicon dioxide [Particles (insoluble or poorly soluble) not otherwise specified, respirable particles]		3	Time Weighted Average (TWA):		ACGIH
Silicon dioxide [Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles]		10	Time Weighted Average (TWA):		ACGIH
zinc oxide [ZINC OXIDE, RESPIRABLE FRACTION]		2	Time Weighted Average (TWA):		ACGIH
zinc oxide [ZINC OXIDE, RESPIRABLE FRACTION]		10	Short Term Exposure Limit (STEL):		ACGIH

Personal Protection Equipment:

Respiratory protection: Use only in well-ventilated areas.

Hand protection: Recommended are gloves made from Nitril rubber (Material thickness >0,1 mm, Perforation time < 30s).Gloves should be replaced after each short time contact or contamination. Available at laboratory specialized trade or at pharmacies / chemist's shops.
In the case of longer and repeated contact please note that in practice the penetration times may be considerably shorter than those determined according to EN 374. The protective gloves must always be checked for their suitability for use at the specific workplace (e.g. mechanical and thermal stress, product compatibility, antistatic effects, etc.). The gloves must be replaced immediately at the first signs of wear and tear. The information provided by the manufacturers and given in the relevant trade association regulations for industrial safety must always be observed. We recommend that a hand care plan is drawn up in

cooperation with a glove manufacturer and the trade association in accordance with the local operating conditions.

Eye protection: Goggles which can be tightly sealed.

Body protection: Suitable protective clothing

9. Physical and chemical properties

Physical state:	liquid	Color:	Black
		Odor:	of solvent
pH:	Not applicable or not available	Melting point:	Not applicable or not available
Boiling point:	77.1 °C (170.8 °F)	Density:	0.93 g/cm3
Vapor density:	Not applicable or not available	Vapor pressure:	Not applicable or not available
Flash point:	-5 °C (23 °F)		
Lower explosive limit:	Not applicable or not available	Upper explosive limit:	Not applicable or not available
Solubility in water	Not applicable or not available	Viscosity:	Not applicable or not available
Auto-ignition temperature:	Not applicable or not available	Flammability:	Not applicable or not available
Octanol / water distribution coefficient:	Not applicable or not available	Decomposition temperature:	Not applicable or not available
Particle characteristics	Not applicable or not available		

10. Stability and reactivity

Stability:

Reactivity: Reaction with oxidants.

Chemical stability: Stable under recommended storage conditions.
Condition to avoid: None if used for intended purpose.

Incompatible materials: None if used properly.

Hazardous decomposition products: None known.

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Species	Method
Methylcyclohexane	LD50	> 3,200 mg/kg	rat	not specified
Ethyl acetate	LD 50	5.6 g/kg	Rat	
Ethyl acetate	LD 50	0.44 g/kg	Mouse	
Ethyl acetate	LD50	6,100 mg/kg	rat	not specified
Butanone	LD 50	670 mg/kg	Mouse	
Butanone	LD 50	2,300 - 3,500 mg/kg	Rat	
Butanone	LD 50	4,500 - 6,800 mg/kg	Rat	
Butanone	LD50	2,737 mg/kg	rat	not specified
Magnesium oxide	LD50	> 5,000 mg/kg	rat	not specified
rosin	LD50	2,800 mg/kg	rat	not specified
Silicon dioxide	LD 50	> 22,500 mg/kg	Rat	
Silicon dioxide	LD 50	> 15,000 mg/kg	Mouse	
Silicon dioxide	LD50	> 5,000 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
Carbon black	LD 50	> 8,000 mg/kg	Rat	
Carbon black	LD50	> 8,000 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
2,6-Di-tert-butyl-p-cresol	LD 50	10,700 mg/kg	Guinea pig	
2,6-Di-tert-butyl-p-cresol	LD 50	1,040 mg/kg	Mouse	
2,6-Di-tert-butyl-p-cresol	LD 50	890 mg/kg	Rat	
2,6-Di-tert-butyl-p-cresol	LD50	> 6,000 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
zinc oxide	LD 50	7,950 mg/kg	Mouse	
zinc oxide	LD 50	> 5 g/kg	Rat	
zinc oxide	LD50	> 5,000 mg/kg	rat	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)

Acute dermal toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Species	Method
Methylcyclohexane	LD50	> 2,000 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
Ethyl acetate	LD50	> 20,000 mg/kg	rabbit	Draize Test
Butanone	LD 50	> 8,000 mg/kg	Rabbit	
Butanone	LD50	> 6,400 mg/kg	rabbit	not specified
Magnesium oxide	LD50	> 2,000 mg/kg	rabbit	not specified
rosin	LD50	> 2,000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
Silicon dioxide	LD50	> 5,000 mg/kg	rabbit	not specified
2,6-Di-tert-butyl-p-cresol	LD50	> 2,000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)
zinc oxide	LD50	> 2,000 mg/kg	rat	OECD Guideline 402 (Acute Dermal Toxicity)

Acute inhalative toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Test atmosphere	Exposure time	Species	Method
Methylcyclohexane	LC 50	> 6564 ppm	Vapor	1 h	Rat	
Methylcyclohexane	LC50	> 26.3 mg/l	vapour	1 h	rat	not specified
Methylcyclohexane	LC 50	10172 ppm	Vapor	2 h	Mouse	
Methylcyclohexane	LC 100	82 - 260 mg/l	Vapor	6 h	Rat	
Methylcyclohexane	LC 50	> 6564 ppm	Vapor	1 h	Mouse	
Methylcyclohexane	LC 50	> 26.3 mg/l	Vapor	1 h	Mouse	
Methylcyclohexane	LC 50	> 4071 ppm	Vapor	1 h	Dog	
Methylcyclohexane	LC 50	> 26.3 mg/l	Vapor	1 h	Rat	
Methylcyclohexane	LC 50	> 16.3 mg/l	Vapor	1 h	Dog	
Methylcyclohexane	LC 50	41 mg/l	Vapor	2 h	Mouse	
Methylcyclohexane	LD 10	40 - 50 mg/l	Vapor	2 h	Mouse	
Methylcyclohexane	LC 100	59.9 mg/l	Vapor	6 h	Rabbit	
Methylcyclohexane	LC 0	11 mg/l	Vapor	6 h	Rat	
Ethyl acetate	LC Lo	> 6000 ppm	Vapor	6 h	Rat	
Ethyl acetate	LC0	> 22.5 mg/l	dust/mist	6 h	rat	other guideline:
Ethyl acetate	LC50	> 22.5 mg/l	dust/mist	6 h	rat	other guideline:
Butanone	LC50	34.5 mg/l	vapour	4 h	rat	not specified
Silicon dioxide	LC50	> 5.01 mg/l	dust/mist	4 h	rat	OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class (ATC) Method)
Silicon dioxide	LC 50	> 2.08 mg/l	Dust	4 h	Rat	
Silicon dioxide	LC 50	> 0.69 mg/l	Dust	4 h	Rat	
Silicon dioxide	LC 0	>= 0.69 mg/l	Dust	4 h	Rat	
Carbon black	LC 0	4.6 mg/m3	Dust	4 h	Rat	
Carbon black	LOAEL	> 4.6 mg/m3		4 h	Rat	
2,6-Di-tert-butyl-p-cresol	RD 50	60 ppm	Vapor	30 min	Mouse	
zinc oxide	LOAEL	7.8 mg/m3	Aerosol	3 h	Guinea pig	
zinc oxide	LC50	> 5.7 mg/l	dust/mist	4 h	rat	equivalent or similar to OECD Guideline 403 (Acute Inhalation Toxicity)
zinc oxide	LOAEL	1 mg/m3	Vapor	1 h	Guinea pig	
zinc oxide	LC 50	2,500 mg/m3	Inhalation		Mouse	
zinc oxide	LC 50	> 5,700 mg/m3	Inhalation	4 h	Rat	

Skin corrosion/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Result	Exposure time	Species	Method
Methylcyclohexane	not irritating	24 h	rabbit	Draize Test
Ethyl acetate	slightly irritating	24 h	rabbit	equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Butanone	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
rosin	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Silicon dioxide	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Carbon black	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
2,6-Di-tert-butyl-p-cresol	not irritating	4 h	rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
zinc oxide	not irritating		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Result	Exposure time	Species	Method
Methylcyclohexane	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Ethyl acetate	slightly irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Butanone	irritating		rabbit	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
rosin	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Silicon dioxide	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Carbon black	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
2,6-Di-tert-butyl-p-cresol	slightly irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
zinc oxide	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances	Result	Test type	Species	Method
Methylcyclohexane	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Ethyl acetate	not sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Butanone	not sensitising	Buehler test	guinea pig	equivalent or similar to OECD Guideline 406 (Skin Sensitisation)
Carbon black	not sensitising	Mouse local lymphnode assay (LLNA)	mouse	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,6-Di-tert-butyl-p-cresol	not sensitising	Draize Test	guinea pig	Draize Test
zinc oxide	not sensitising	Guinea pig maximisation test	guinea pig	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Methylcyclohexane	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Methylcyclohexane	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Methylcyclohexane	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Ethyl acetate	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Ethyl acetate	negative	in vitro mammalian chromosome aberration test	with and without		equivalent or similar to OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Butanone	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Butanone	negative	in vitro mammalian chromosome aberration test	not applicable		equivalent or similar to OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Butanone	negative	mammalian cell gene mutation assay	with and without		equivalent or similar to OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
rosin	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Silicon dioxide	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Silicon dioxide	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Silicon dioxide	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Carbon black	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Carbon black	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Carbon black	negative	sister chromatid exchange assay in mammalian cells	with and without		OECD Guideline 479 (Genetic Toxicology: In Vitro Sister Chromatid Exchange Assay in Mammalian Cells)
Carbon black	negative	in vitro mammalian cell micronucleus test	with and without		OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Carbon black	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 490 (In Vitro Mammalian Cell Gene Mutation Tests Using the Thymidine Kinase Gene)
2,6-Di-tert-butyl-p-cresol	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		not specified
2,6-Di-tert-butyl-p-cresol	negative	in vitro mammalian chromosome aberration test	with and without		not specified
2,6-Di-tert-butyl-p-cresol	negative	mammalian cell gene mutation assay	with		not specified
zinc oxide	negative	bacterial reverse mutation assay (e.g	with and without		OECD Guideline 471 (Bacterial Reverse Mutation

		Ames test)			Assay)
zinc oxide	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
zinc oxide	ambiguous	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Ethyl acetate	negative	oral: gavage		hamster, Chinese	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Butanone	negative	intraperitoneal		mouse	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Silicon dioxide	negative	inhalation		rat	not specified
Carbon black	negative	inhalation		rat	OECD Guideline 489 (In Vivo Mammalian Alkaline Comet Assay)
2,6-Di-tert-butyl-p-cresol	negative	oral: feed		rat	not specified
zinc oxide	negative	inhalation: aerosol		rat	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
zinc oxide	negative	inhalation: aerosol		rat	OECD Guideline 489 (In Vivo Mammalian Alkaline Comet Assay)

Carcinogenicity

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous components	**Result**	**Route of application**	**Exposure time / Frequency of treatment**	**Species**	**Sex**	**Method**
Silicon dioxide		oral: feed	103 w daily	rat	male/female	equivalent or similar OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
Carbon black	not carcinogenic	oral: feed	2 y daily	rat	female	not specified
Carbon black	not carcinogenic	inhalation: dust	2 y daily	human	not specified	Weight of evidence
2,6-Di-tert-butyl-p-cresol		oral: feed	2 y daily	rat	male	
zinc oxide	not carcinogenic	oral: drinking water	1 y daily	mouse	male/female	not specified

Reproductive toxicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances	Result / Value	Test type	Route of application	Species	Method
Methylcyclohexane	NOAEL P 250 mg/kg NOAEL F1 1,000 mg/kg	screening	oral: gavage	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Ethyl acetate	NOAEL P 1500 ppm	other:	inhalation	rat	other guideline:
Butanone	NOAEL P 10,000 mg/l NOAEL F1 10,000 mg/l	two-generation study	oral: drinking water	rat	equivalent or similar to OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)
Silicon dioxide	NOAEL P 497 mg/kg NOAEL F1 497 mg/kg	One generation study	oral: feed	rat	equivalent or similar to OECD Guideline 415 (One-Generation Reproduction Toxicity Study)
Carbon black	NOAEL P > 34 mg/m3 NOAEL F1 > 34 mg/m3 NOAEL F2 > 34 mg/m3	multigeneration study	inhalation	mouse	not specified
2,6-Di-tert-butyl-p-cresol	NOAEL P 500 mg/kg	Two generation study	oral: feed	rat	not specified
zinc oxide	NOAEL P 7.5 mg/kg NOAEL F1 15 mg/kg	Two generation study	oral: gavage	rat	equivalent or similar to OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)

STOT-single exposure:

No data available.

STOT-repeated exposure:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Hazardous substances	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
Methylcyclohexane	NOAEL 250 mg/kg	oral: gavage	28 d daily	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Ethyl acetate	NOAEL 900 mg/kg	oral: gavage	90 d daily	rat	EPA OTS 795.2600 (Subchronic Oral Toxicity Test)
Butanone	NOAEL 2500 ppm	inhalation	90 days 6 hours/day, 5 days/week	rat	not specified
Silicon dioxide	NOAEL > 4,000 - 4,500 mg/kg	oral: feed	13 weeks daily	rat	equivalent or similar to OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Silicon dioxide	NOAEL 1.3 mg/m3	inhalation	13 w 6 h/d, 5 d/w	rat	equivalent or similar to OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day)
Carbon black	NOAEL > 1,000 mg/kg	oral: gavage	90 d daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Carbon black	NOAEL 1 mg/m3	inhalation	13 w 6 h/d, 5 d/w	rat	not specified
2,6-Di-tert-butyl-p-cresol	NOAEL 25 mg/kg	oral: feed	daily	rat	not specified
zinc oxide	NOAEL 31.52 mg/kg	oral: gavage	90 d daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
zinc oxide	NOAEL 1.5 mg/m3	inhalation	3 m 6 h/d, 5 d/w	rat	OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day)
zinc oxide	NOAEL 1,000 mg/kg	dermal	90 d 6 h/d, daily	rat	OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)

Aspiration hazard:

The mixture is classified based on Viscosity data.

Hazardous substances	Viscosity (kinematic) Value	Temperature	Method	Remarks
Butanone	0.51 mm2/s	20 °C	ASTM Standard D7042	

12. Ecological information

General ecological information:
Do not empty into drains, soil or bodies of water.

12.1. Toxicity

Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Exposure time	Species	Method
Methylcyclohexane	LC50	2.07 mg/l	96 h	Oryzias latipes	other guideline:
Ethyl acetate	LC50	220 mg/l	96 h	Pimephales promelas	other guideline:
Butanone	LC50	3,220 mg/l	96 h	Pimephales promelas	OECD Guideline 203 (Fish, Acute Toxicity Test)
rosin	LC50	Toxicity > Water solubility	96 h	Pimephales promelas	OECD Guideline 203 (Fish, Acute Toxicity Test)
Silicon dioxide	LC50	> 10,000 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Carbon Black	LC50	Toxicity > Water solubility	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Butyl hydroxytoluene	LC50	Toxicity > Water solubility	96 h	Brachydanio rerio (new name: Danio rerio)	EU Method C.1 (Acute Toxicity for Fish)
Butyl hydroxytoluene	NOEC	0.053 mg/l	30 d	Oryzias latipes	OECD Guideline 210 (fish early lite stage toxicity test)
zinc oxide	LC50	0.142 mg/l	96 h	Thymallus arcticus	OECD Guideline 203 (Fish, Acute Toxicity Test)
zinc oxide	NOEC	0.44 mg/l	72 d	Oncorhynchus mykiss	other guideline:

Toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Exposure time	Species	Method
Methylcyclohexane	EC50	0.326 mg/l	48 h	Daphnia magna	other guideline:
Ethyl acetate	EC50	164 mg/l	48 h	Daphnia cucullata	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Butanone	EC50	5,091 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Magnesium oxide	EC50	> 10,000 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Bentonite, organo-modified~	EC50	1.9 mg/l		Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
rosin	EL50	Toxicity > Water solubility	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Silicon dioxide	EL50	> 1,000 mg/l	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Carbon Black	EC50	Toxicity > Water solubility	24 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Butyl hydroxytoluene	EC50	0.48 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
zinc oxide	EC50	1 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

Chronic toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Exposure time	Species	Method
Ethyl acetate	NOEC	2.4 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Carbon Black	NOEC	Toxicity > Water solubility	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
Butyl hydroxytoluene	NOEC	0.069 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)
zinc oxide	NOEC	0.058 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Exposure time	Species	Method
Methylcyclohexane	EC50	0.134 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	other guideline:
Methylcyclohexane	NOEC	0.022 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	other guideline:
Ethyl acetate	EC50	> 2,000 mg/l	96 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Ethyl acetate	NOEC	2,000 mg/l	96 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Butanone	EC50	1,240 mg/l	96 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Butanone	EC10	1,010 mg/l	96 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Bentonite, organo-modified~	EC50	2.3 mg/l		Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
rosin	EL50	Toxicity > Water solubility	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
rosin	NOELR	Toxicity > Water solubility	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Silicon dioxide	NOELR	10,000 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Silicon dioxide	EL50	> 10,000 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Carbon Black	NOEC	Toxicity > Water solubility	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Carbon Black	EC50	Toxicity > Water solubility	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Butyl hydroxytoluene	EC50	Toxicity > Water solubility	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
Butyl hydroxytoluene	EC10	0.4 mg/l	72 h	Desmodesmus subspicatus (reported as Scenedesmus subspicatus)	EU Method C.3 (Algal Inhibition test)
zinc oxide	NOEC	0.017 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
zinc oxide	EC50	0.17 mg/l	72 h	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)

Toxicity (microorganisms):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances	Value type	Value	Exposure time	Species	Method
Ethyl acetate	EC10	2,900 mg/l	18 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
Butanone	EC50	1,150 mg/l	16 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)
rosin	EC20	Toxicity > Water solubility	3 h	activated sludge of a predominantly domestic sewage	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Silicon dioxide	EC0	10,000 mg/l	30 min	Pseudomonas putida	DIN 38412, part 27 (Bacterial oxygen consumption test)
Carbon Black	EC0	Toxicity > Water solubility	3 h	activated sludge, domestic	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)

Butyl hydroxytoluene	EC50	Toxicity > Water solubility	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
zinc oxide	IC50	5.2 mg/l	3 h	not specified	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)

12.2. Persistence and degradability

Hazardous substances	Result	Test type	Degradability	Exposure time	Method
Methylcyclohexane	not readily biodegradable.	aerobic	0 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Ethyl acetate	readily biodegradable	aerobic	100 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Butanone	readily biodegradable	aerobic	98 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Bentonite, organo-modified~	not readily biodegradable.	aerobic	25 %	28 d	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
rosin	readily biodegradable	aerobic	71 %	28 d	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Butyl hydroxytoluene	not readily biodegradable.	aerobic	4.5 %	28 d	OECD Guideline 301 C (Ready Biodegradability: Modified MITI Test (I))
Butyl hydroxytoluene	not inherently biodegradable	aerobic	5.2 - 5.6 %	35 d	OECD Guideline 302 C (Inherent Biodegradability: Modified MITI Test (II))

12.3. Bioaccumulative potential

Hazardous substances	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
Methylcyclohexane	> 95 - < 321	56 day	25 °C	Cyprinus carpio	other guideline:
Ethyl acetate	30	3 d	22.5 °C	Leuciscus idus melanotus	other guideline:
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
rosin		20 d	15 °C	Oncorhynchus mykiss	
Butyl hydroxytoluene		28 d	25 °C	Cyprinus carpio	
Butyl hydroxytoluene	330 - 1,800	56 d		Cyprinus carpio	OECD Guideline 305 C (Bioaccumulation: Test for the Degree of Bioconcentration in Fish)
Butyl hydroxytoluene		28 d	25 °C	Cyprinus carpio	
Butyl hydroxytoluene		56 d	25 °C	Cyprinus carpio	
Butyl hydroxytoluene		56 d	25 °C	Cyprinus carpio	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	
zinc oxide				Various	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		21 d	10 °C	Echinogammarus pirloti	
zinc oxide		28 d	10 °C	Palaemon elegans (crustaceae)	

12.4. Mobility in soil

Hazardous substances	LogPow	Temperature	Method
Methylcyclohexane	3.88		other guideline:
Ethyl acetate	0.68	25 °C	EPA OPPTS 830.7560 (Partition Coefficient, n-octanol / H2O, Generator Column Method)
Butanone	0.3	40 °C	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
rosin	> 3 - 6.2		OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
Silicon dioxide	0.53		QSAR (Quantitative Structure Activity Relationship)
Butyl hydroxytoluene	5.1		OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)

12.5. Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or vPvB.

12.6. Other adverse effects

No data available.

13. Disposal considerations

Recommended method of disposal: Dispose of waste and residues in accordance with local authority requirements.

Waste disposal of packaging not cleansed: Use packages for recycling only when totally empty.

14. Transport information

Marine transport IMDG:

Class:	3
Packing group:	II
UN no.:	1133
Label:	3
EmS:	F-E ,S-D
Seawater pollutant:	Marine pollutant
Proper shipping name:	ADHESIVES (Hexane)

Air transport IATA:

Class:	3
Packing group:	II
Packing instructions (passenger)	353
Packing instructions (cargo)	364
UN no.:	1133
Label:	3
Proper shipping name:	Adhesives

Local transport information
Land transportation: If it falls under the Fire Service Act, the Industrial Safety and Health Act, the Poisonous and Deleterious Substances Act, etc., follow the prescribed transportation method.
Maritime transportation: Follow the transportation law stipulated in the Ship Safety Act.
Air transportation: Follow the transportation method stipulated in the Civil Aeronautics Act.

15. Regulatory information

Labor Safety and Health Law:

MSDS Required Substances	rosin zinc oxide Carbon black 2,6-Di-tert-butyl-p-cresol Methylcyclohexane Ethyl acetate Butanone
Label Reduired Substances	Methylcyclohexane Ethyl acetate Butanone
Class 2 Organic Solvents:	Butanone Ethyl acetate

Fire services law:	Class 4, Class 4 Group 1 oils (Non-water soluble)
Poisonous and Deleterious substances control Law:	Does not apply.
Law concerning Pollutant Release and Transfer Register / PRTR:(content value is typical value)	Does not apply.
D. Others:	

16. Other information

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