

MSDS

(Material Safety Data Sheet)

Product name

REVOX Brake&Parts cleaner

1. Information on the chemical product and company

A. Product Name	REVOX Brake&Parts cleaner
B. Recommended use and restrictions on use	
Recommended use	Brake & parts cleaner
Restrictions on use	Limitations of use: Do not use towards flames and avoid use near heaters, furnaces, or other sources of ignition.
C. Manufacturer / Supplier / Distributor information (domestic supplier information for emergency contact in case of import)	
Manufacturer Information	
Company Name	SejongParts+, LLC
Address	14th Floor,28, Seojeon-ro, 10beon-gil, Busanjin-gu, BUSAN, KOREA
Telephone Number	+8216448122

2. Hazard and Toxicity

A. Hazard and Toxicity Classification	Flammable liquid: Category 1 Compressed gas: High-pressure gas Skin corrosion/irritation: Category 2 Serious eye damage/eye irritation: Category 2 (2A/2B) Specific target organ toxicity (single exposure): Category 3 (anesthetic effects) Specific target organ toxicity (repeated exposure): Category 2 Inhalation hazard: Category 1 Acute aquatic toxicity: Category 1 Chronic aquatic toxicity: Category 1
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B. Warning label items including precautionary statements

Pictogram



Signal

Danger

H224 Extremely flammable liquid and vapor

H280 Contains gas under pressure: may explode if heated

H304 May be fatal if swallowed and enters airways

H315 Causes skin irritation

H319 Causes serious eye irritation

Hazard Statements:

H336 May cause drowsiness or dizziness

H373 May cause damage to organs (specify all known affected organs) through prolonged or repeated exposure (specify route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

H400 Very toxic to aquatic life

H410 Very toxic to aquatic life with long-lasting effects

Precautionary Statements:

P210 Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

P233 Keep container tightly closed.

Prevention:

P240 Ground and bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/... equipment.

P242 Use non-sparking tools.

P243 Take precautionary measures against static discharge.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

Prevention:	P264 Wash ... thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor/... P302+P352 IF ON SKIN: Wash with plenty of water/... P303+P361+P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 Call a POISON CENTER/doctor/... if you feel unwell. P314 Get medical advice/attention if you feel unwell. P321 ...Specific treatment (see ... on this label). P331 Do NOT induce vomiting. P332+P313 If skin irritation occurs: Get medical advice/attention. P337+P313 If eye irritation persists: Seek medical advice/attention. P362+P364 Take off contaminated clothing and wash it before reuse. P370+P378 In case of fire: Use ... to extinguish. P391 Collect spillage. 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. P410+P403 Protect from sunlight. Store in a well-ventilated place.
Response:	P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
Storage:	
Disposal:	

3. Composition/Information on Ingredients

Substance Name	Common Name	CAS No.	Concentration(%)
Methylcyclohexane		108-87-2	35~40
Hydrotreated Heavy Naphtha (Petroleum)	Hydrotreated light straight run (petroleum)	64742-49-0	10~15
Heptane	Heptane, n-Heptane	142-82-5	1~5
Carbon dioxide		124-38-9	5~10
Additive 1		Confidential	20~25
Additive 2		Confidential	15~20

4. Emergency Procedures

A. In case of eye contact

Seek immediate medical attention.

If the substance comes into contact with eyes, rinse with running water for at least 20 minutes.

If possible, remove contact lenses and continue rinsing.

If eye irritation persists, seek medical advice or attention.

B. In case of skin contact

Remove contaminated clothing and shoes and isolate the contaminated area.

Defrost clothing frozen to skin before removing

In case of burns, cool the affected area with cold water as long as possible, do not remove clothing stuck to skin

Wash skin with soap and water

Gas or liquefied gas contact can cause burns, severe injuries, or frostbite

Remove all contaminated clothing or items stuck to skin (or hair). Wash skin with water/shower

Seek medical examination (doctor) if discomfort is felt

Seek medical advice/treatment if skin irritation occurs

C. In case of inhalation

If exposed to excessive dust or fumes, remove to clean air and seek medical attention if coughing or other symptoms occur.

Move to a well-ventilated area

Perform artificial respiration if the person is not breathing.

Provide oxygen if breathing is difficult.

Keep warm and ensure stability

D. In case of ingestion

Seek medical advice/treatment if discomfort is felt

Do not induce vomiting.

If swallowed, seek immediate medical attention from a healthcare professional or doctor.

Do not induce vomiting.

E. Other medical precautions

Ensure medical personnel are aware of the substance and take protective measures□

5. Explosion and Fire Response Measures

A. Suitable (unsuitable) extinguishing agents

Suitable (unsuitable) extinguishing agents

Use alcohol foam, carbon dioxide, or water spray for extinguishing fires related to this material.

Use dry sand or soil for smothering fires.

Small fire: Dry chemical (appropriate extinguishing agent)

Small fire: Water spray (appropriate extinguishing agent)

Small fire: Regular foam (appropriate extinguishing agent)

Alcohol-resistant foam (for alcohol or polar solvent mixtures) (appropriate extinguishing agent)

Direct water stream (inappropriate extinguishing agent)

Large fire: Water spray/mist (appropriate extinguishing agent)

Large fire: Regular foam (appropriate extinguishing agent)

B. Specific hazards arising from the chemical

Specific hazards arising from the chemical

The chemical can undergo vigorous polymerization reactions, causing fires and explosions.

Vapors can travel to an ignition source and ignite.

During burning, heat decomposition or combustion may produce irritating and highly toxic gases.

The substance may form explosive mixtures at or above its flashpoint.

Containers may explode when heated.

Easily ignited by heat, sparks, or flames.

Flammable liquids and vapors.

Indoor, outdoor, and sewer vapor explosion hazards.

Vapors can form explosive mixtures with air.

Vapors can cause dizziness or asphyxiation without warning.

During a fire, irritating, corrosive, and toxic gases may be generated.

Inhalation and contact can irritate or burn skin and eyes.

Highly flammable liquid and vapor.

Highly inflammable liquid and vapor.

Contains high-pressure gas; may explode if heated.

C. Protective equipment and precautions

Firefighters should wear appropriate protective equipment.

Extinguish fires from a safe distance or from a protected location.

Be cautious as most of the substance is lighter than water.

Most vapors are heavier than air and can spread along the ground and accumulate in low or confined spaces.

Be cautious when transporting at high temperatures.

If not hazardous, move containers away from the fire area.

Extinguish tank fires from the maximum distance or use unmanned firefighting equipment. □

Cool containers with large amounts of water after the fire has been extinguished.

If pressure release devices emit a high-pitched sound or the tank changes color, immediately retreat.

Move away from tanks engulfed in flames. □

In the case of large-scale fires, use unmanned firefighting equipment, or if not possible, let the fire burn out.

6. Response Measures for Leakage Accidents

A. Measures and protective equipment needed to protect the human body

Extremely fine particles can cause fires or explosions, so remove all ignition sources.

Clean up spills immediately and follow protective measures as stated in the protective gear section.

If possible, turn the leaking container so that it discharges gas rather than liquid.

Materials in contact with the cryogenic liquid can become brittle and easily break.

Do not touch or walk on the spilled material.

Do not apply direct water jet to the leak source.

Remove all ignition sources.

Use water spray to reduce vapor or disperse the vapor cloud, ensuring water does not come into contact with the spilled material.

Ensure all equipment used when handling the material is properly grounded.

Allow the substance to disperse.

Ventilate the contaminated area.

If it is not dangerous, stop the leak.

Vapor suppressant foam can be used to reduce vapor generation.

Be aware of materials and conditions to avoid.

Do not inhale dust, fumes, gas, mist, vapor, or spray.

B. Measures and protective equipment needed to protect the human body

Leaked materials can cause contamination.

Prevent entry into waterways, sewers, basements, and confined spaces.

Do not discharge into the environment.

C. Purification or removal methods

Build a dam and collect water for extinguishing.

Absorb spilled material with inert substances (e.g., dry sand or soil), and place in a chemical waste container.

Absorb liquid and wash contaminated area with detergent and water.

Cover with dry sand, soil, or other non-flammable materials, then transfer to a container.

In case of a large leak, create a trench at a distance from the leaked liquid.

Collect absorbed material using clean, explosion-proof tools.

Collect leaked material.

7. Handling and Storage Methods

A. Safe handling guidelines

Do not apply pressure, cut, weld, solder, join, pierce, grind, or expose to heat, flame, sparks, static electricity, or other ignition sources.

Follow all MSDS/label precautions as product residues may remain even after the container is empty.

Use caution when handling and storing.

Carefully open the cap before opening.

Prevent long-term or continuous skin contact.

Ensure all equipment is grounded when handling the substance.

Be mindful of materials and conditions to avoid.

Refer to engineering controls and personal protective equipment when working.

Be cautious of heat.

When working in low-lying confined spaces, measure oxygen concentration in the air and ventilate during work due to the risk of oxygen deficiency.

Use explosion-proof electrical, ventilation, lighting, (...) equipment.

Use only non-sparking tools.

Take measures to prevent static electricity.

Avoid inhaling dust, fumes, gas, mist, vapor, and spray.

Thoroughly wash handling areas after use.

Handle only outdoors or in well-ventilated areas.

B. Safe storage methods

Completely drain empty drums, seal them properly, and return them immediately to the drum regulator or place them appropriately.

Keep containers away from heat exposure as pressure may increase when exposed to heat.

Keep away from heat, sparks, open flames, and hot surfaces – No smoking.

Store containers tightly closed in a well-ventilated area.

Keep containers in a well-ventilated area and maintain at a low temperature.

Store in a storage area with a locking mechanism.

Avoid direct sunlight and store in a well-ventilated area.

8. Exposure prevention and personal protective equipment ☐

A. Chemical exposure limits, biological exposure limits, etc

Domestic regulations

Methylcyclohexane	TWA – 400ppm
Heptane	TWA – 400ppm STEL – 500ppm
Carbon dioxide	TWA – 5000ppm STEL – 30000ppm
ACGIH regulations	
Methylcyclohexane	TWA 400 ppm
Heptane	STEL 500 ppm, TWA 400 ppm
Carbon dioxide	TWA 5000 ppm, STEL 30000 ppm
Biological exposure limits	
Other exposure limits	No data available
B. Appropriate engineering controls	No data available Implement process isolation, local exhaust, or other engineering controls to maintain air levels below exposure limits. Ventilate to maintain air pollution below exposure limits when dust, fumes, or mist are generated during operation. Install washing facilities and safety showers in areas where this material is stored or used.
C. Personal protective equipment	
Respiratory protection	Wear a respirator certified by the Korea Occupational Safety and Health Agency (KOSHA) suitable for the physical and chemical properties of the exposed gas/liquid. If exposure concentration is below 4000ppm, wear a half-face respirator equipped with an appropriate filter or cartridge. If exposure concentration is below 10,000ppm, wear a loose-fitting hood/helmet powered air-purifying respirator or continuous flow dust mask/gas mask (dust mask only applies to liquid aerosols). If exposure concentration is below 20,000ppm, wear a full-face or powered half-face, air-supplied continuous flow/pressure-demand half-face respirator equipped with an appropriate filter or cartridge. If exposure concentration is below 400,000ppm, wear a full-face or helmet/hood type, pressure-demand supplied-air mask equipped with an appropriate filter or cartridge. If exposure concentration is below 4,000,000ppm, wear a self-contained breathing apparatus (SCBA) or pressure-demand self-contained breathing apparatus (SCBA) equipped with an appropriate filter or cartridge.
Eye protection	Considering the physical and chemical properties of the chemical substance, wear appropriate protective gloves made of suitable materials. Install emergency washing facilities (such as showers) and washing facilities at easily accessible locations for workers.
Hand protection	Wear appropriate protective gloves made of suitable materials to protect your body from chemical hazards.
Body protection	Wear appropriate protective clothing made of suitable materials to protect your body from chemical hazards.

9. Physical and Chemical Properties

A. Appearance	
State	liquid
Color	Transparent
B. Odor	Hydrocarbon-like burning odor
C. Odor Threshold	No data available
D. pH	No data available
E. Melting/Freezing Point (°C)	–91°C
F. Initial Boiling Point and Boiling Range	91 ~ 98°C
G. Flash Point (°C)	–4°C
H. Evaporation Rate	40
I. Flammability (Solid, Gas)	No data available
J. Upper/Lower Flammability or Explosion Limits	6.6/1.1%
K. Vapor Pressure	40mmHg 20°C
L. Solubility (Water)	Less than 0.01wt% in water
M. Vapor Density	3.45
N. Specific Gravity (15/4°C)	0.7
O. n-Octanol/Water Partition Coefficient (Kow)	4.66
P. Auto-Ignition Temperature	285°C
Q. Decomposition Temperature	No data available

R. Kinematic Viscosity (40°C/cSt)	No data available
S. Molecular Weight	0.59 cST 25°C

10. Stability and Reactivity

A. Chemical Stability and Possibility of Hazardous Reactions	Highly flammable liquid and vapor Can undergo violent polymerization reactions, causing fire and explosion Can form explosive mixtures at or above the flash point Container may explode when heated Highly flammable: Easily ignited by heat, sparks, or flames Leakage poses fire/explosion risk Risk of vapor explosion indoors, outdoors, and in sewers Vapor can form explosive mixtures with air Vapor can cause dizziness or asphyxiation without warning Can emit irritating, corrosive, and toxic gases during a fire Inhalation and contact can irritate or burn skin and eyes
B. Conditions to Avoid	Keep away from heat, sparks, flames, and high temperatures – No smoking
C. Incompatible Materials	No data available
D. Hazardous Decomposition Products	Irritating, corrosive, and toxic gases During burning, heat decomposition or combustion may produce irritating and highly toxic gases. No data available

11. Toxicological effects

A. Information on likely routes of exposure	Respiratory irritation (burning sensation in the throat and nose), cough, wheezing, shortness of breath, pulmonary edema. Inhalation can cause respiratory tract inflammation and pneumonia. Vapors can cause dizziness and asphyxiation. High concentration exposure can lead to central nervous system dysfunction. Gastrointestinal irritation accompanied by nausea, vomiting, and diarrhea. Inhalation into the lungs can cause potentially fatal chemical pneumonia. High concentration exposure can lead to central nervous system dysfunction. Short-term exposure: irritation Long-term exposure: irritation
B. Health hazard information	
Acute toxicity	
Oral	LD50 > 5000 mg/kg Rat (Similar substance CAS No. 540–84–1 OECD TG 401, GLP, male and female, no deaths)
Dermal	LD50 > 2000 mg/kg Rabbit (Similar substance CAS No. 540–84–1, OECD TG 402, GLP, male and female, no deaths)
Inhalation	Gas LCLo 90000 ppm 5 min, others (Mammals–Human, LCLo, 90000ppm/5M, ChemIDplus)
Skin corrosion or irritation	Results of the skin corrosion/irritation test using rabbits showed that there was irritation that did not recover within 72 hours. The substance is considered to have irritant properties with a primary irritation index of 1 and swelling index of 0, based on OECD TG 404. The similar substance has the CAS No. 540–84–1.
Serious eye damage or irritation	Severe eye damage/irritation test using rabbits resulted in irritation with complete recovery within 48 hours. The substance is non-irritating. Scores for conjunctivæ, cornea, iris, and chemosis were 0.67, 0, 0, and 0, respectively. The test was conducted according to OECD TG 405 and under GLP. The similar substance has CAS No. 540–84–1.
Respiratory sensitization	No data available
Skin sensitization	

There was no observed skin sensitization in guinea pigs (OECD Guideline 406, GLP).

Carcinogenicity

Industrial Safety and Health Act

No data available

Ministry of Employment Notice

No data available

IARC

No data available

OSHA

No data available

ACGIH

No data available

NTP

No data available

EU CLP

No data available

Genotoxicity in germ cells

Negative in the bacterial reverse mutation test using in vitro microorganisms, regardless of the presence or absence of a metabolic activation system (OECD Guideline 471).
Negative in vitro mammalian cell gene mutation test (OECD TG 473P).
Negative in vitro mammalian cell gene mutation test: Negative, regardless of metabolic activation (OECD TG 481)

Reproductive toxicity

Methylcyclohexane□

The combined screening test of reproductive and developmental toxicity and repeated dose toxicity using rats showed no harmful effects observed (LOAEL=250 mg/kg bw/day) (OECD TG 422, GLP).

Specific target organ toxicity (single exposure)

Inhaling high concentrations of carbon dioxide can cause mild anesthesia effects, respiratory center stimulation, and asphyxia depending on the concentration and exposure duration. [Category 3 (Narcotic effects)] (ACGIH, 2001)

Specific target organ toxicity (repeated exposure)

Exposure to 1.5% carbon dioxide during exercise for 42 days resulted in mild stress response, but did not show significant effects on basic physiological and cognitive functions (ACGIH, 2001). Exposure to 1% carbon dioxide for 22 days in divers resulted in metabolic stress (ACGIH, 2001). Exposure to 2% carbon dioxide was considered to have harmful effects at concentrations above 3%, as the respiratory resistance increased with increasing concentration (ACGIH, 2001). Exposure to 3% on a submarine during World War II resulted in symptoms ranging from excitement to gradually shifting to inhibition, increased skin blood flow, hypothermia, hypotension, increased respiratory volume, and mental dysfunction (PATTY (5th, 2001)). Prolonged exposure to the atmosphere containing 1-2% carbon dioxide resulted in acidosis and adrenal atrophy (ACGIH, 2001). However, information on repeated exposure is limited, and many data obtained over a long period of time are inconsistent, except for minor effects, making it inappropriate to

Inhalation hazard

The viscosity is 0.679 mPas and the substance is a hydrocarbon with a dynamic viscosity of approximately 679 mPas at 20℃ and a kinematic viscosity of less than 20.5 mm²/s at 40℃.

Other hazardous effects

No data available

12. Environmental impact

A. Ecotoxicity

Fish

Methylcyclohexane□

LC50 2.07 mg/ℓ 96 hr *Oryzias latipes* (calculated as geometric mean)

Heptane □

LL50 5.738 mg/ℓ 96 hr *Oncorhynchus mykiss*

Carbon dioxide

LC50 35 mg/ℓ 96 hr *기타* (Rainbow trout)

Crustaceans

Methylcyclohexane□

EC50 0.326 mg/ℓ 48 hr *Daphnia magna* (calculated as geometric mean)

Heptane □

EC50 1.5 mg/ℓ 48 hr *Daphnia magna*

Carbon dioxide

No data available

Algae

Methylcyclohexane	ErC50 0.134 mg/L for 72 hours in Pseudokirchneriella subcapitata (algae, index method)
Heptane	EL50 4.338 mg/l 72 hr (QSAR)
Carbon dioxide	No data available
B. Persistence and Degradability	
Persistence	
Methylcyclohexane	log Kow 3.88
Heptane	log Kow 4.66
Carbon dioxide	log Kow 0.83
Degradability	No data available
C. Bioaccumulative potential	
Accumulation	
Methylcyclohexane	BCF 95 ~ 321 (L/kg)
Heptane	No data available
Carbon dioxide	(not a bioaccumulative substance)
Biodegradability	
Methylcyclohexane	0 % 28 day (OECD Guideline 301 D, GLP)
Heptane	70% O2 consumption within 10 days.
Carbon dioxide	No data available
D. Soil Mobility	No data available
E. Other Harmful Effects	Fish: 28d-NOELR Oncorhynchus mykiss = 1.284 mg/L growth rate QSAR Crustaceans: 21d-NOEC Daphnia magna = 0.17 mg/L OECD TG 211, GLP Algae: 72h-NOELR Selenastrum capricornutum = 0.97 mg/L biomass QSAR

13. Precautions for disposal

A. Disposal methods	Choose one of the following methods for disposal: Incinerate. Evaporate or concentrate and then incinerate the residue. Purify using separation, distillation, extraction, or filtration methods, and then incinerate the residue. Use neutralization, oxidation, reduction, polymerization, or condensation reactions to treat the substance. Dispose of the residue by incineration or by treating it again using methods such as coagulation, precipitation, filtration, or dewatering, and then incinerate the residue.
B. Precautions for disposal	(In accordance with relevant regulations) Dispose of the container of the contents.

14. Transfortation

A. UN Number	1950
B. Proper Shipping Name	AEROSOLS, FLAMMABLE
C. Hazard Class in Transportation	2.1
D. Container Grade	N/A
E. Marine pollutant	Yes (MP)
F. Special safety precautions that users need to know or that are necessary for transportation or transportation vehicles	According to the Dangerous Goods Safety Management Act for local transportation. Packed and transported in accordance with DOT and other regulations.
Emergency measures in case of fire	F-D (Flammable gases)
Emergency measures in case of spillage	S-U (Gases (flammable, toxic or corrosive))

15. Legal regulation

A. Regulation under the Industrial Safety and Health Act

Substance subject to the submission of Process Safety Management (PSM) report

Exposure standard setting substance

Hazardous substance subject to management control

Substance subject to workplace environment measurement (measurement interval: 6 months)

Substance subject to special health diagnosis (diagnosis interval: 12 months)

B. Regulation under the Chemicals Control Act

No data available

C. Regulation under the Act on the Safety Management of Dangerous Articles

Class 4, Type 3 petroleum (non-soluble) 200L

D. Regulation under the Waste Management Act

Designated waste

E. Other domestic and foreign regulations

Domestic regulations

No data available

Domestic regulations

N/A

Foreign regulations

US management information (OSHA regulations)

N/A

US management information (CERCLA regulations)

N/A

US management information (EPCRA 302 regulations)

N/A

US management information (EPCRA 304 regulations)

N/A

US management information (EPCRA 313 regulations)

N/A

US management information (Rotterdam Convention substances)

N/A

US management information (Stockholm Convention substances)

N/A

US management information (Montreal Protocol substances)

N/A

EU classification information (confirmed classification results)

Flam. Liq. 2
Asp. Tox. 1
STOT SE 3
Skin Irrit. 2
Aquatic Acute 1
Aquatic Chronic 1

EU classification information (hazard statements)

H225
H304
H336
H315
H411

EU classification information (precautionary statements)

S2, S9, S16, S29, S33, S60, S61, S62
S2, S9, S16, S29, S33, S60, S61, S62

16. Additional Information

A. Source of information

Company-owned data and other publicly available resources (e.g. public MSDS, KOSHANET (<http://www.kosha.net/index.jsp>), etc.)

B. Initial creation Date

2023.01.30

Revision count	1 time
C. Last revision date	2023.03.30
D. Others	

☐ The provided Material Safety Data Sheet (MSDS) has been edited and partially modified, referring to the MSDS provided by the Korea Occupational Safety and Health Agency (KOSHA).

