Safety Data Sheet

HiTEC® 4691 Diesel Additive

SDS no. H4691

Section 1. Identification

Product identifier : HiTEC® 4691 Diesel Additive

Product use : Petrochemical industry: Diesel Fuel Additive

Date of issue/Revisions : 2 November 2022

In case of emergency - Chemical

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+65-3158-1349 (Asia Pacific)
+61-290372994 (Australia)
4001-204937 (China)
+81-345209637 (Japan)
00-308-13-2549 (South Korea)
+1-703-741-5979 (Spanish language)
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Section 2. Hazards identification

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Ground container and receiving equipment. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing vapour. Wash thoroughly after handling.

Response : Collect spillage. IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention. In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Storage : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Other hazards which do not result in classification : None known.

Please note some GHS hazard classifications listed above may not be applicable in your country or region and are shown for informational purposes only.

Section 2. Hazards identification

For other GHS hazard classifications not listed above, the classification is not applicable in your region.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	CAS number	%	GHS Classification	Type
Solvent naphtha (petroleum), heavy arom.	64742-94-5	≥55 - ≤65	FLAMMABLE LIQUIDS - Category 4 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]
2-ethylhexan-1-ol	104-76-7	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (oral) - Category 5 ACUTE TOXICITY (dermal) - Category 5 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 3	[1] [2]
1,2,4-trimethylbenzene	95-63-6	≥5 - ≤10	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1] [2]
naphthalene	91-20-3	≥5 - ≤8.2	FLAMMABLE SOLIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 CARCINOGENICITY - Category 2 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1 (M=1) LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 (M=1)	[1] [2]

Section 3. Composition/information on ingredients

Long-chain alkyltriazoleamine	Proprietary	≥3 - ≤5	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 4	[1]
Solvent naphtha (petroleum), heavy arom.	64742-94-5	≥3 - ≤5	FLAMMABLE LIQUIDS - Category 4 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	[1]
indan	496-11-7	≥3 - ≤5	FLAMMABLE LIQUIDS - Category 3 SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A ASPIRATION HAZARD - Category 1 SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 3 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3	[1]
octamethylcyclotetrasiloxane	556-67-2	≤0.1	FLAMMABLE LIQUIDS - Category 3 REPRODUCTIVE TOXICITY (Fertility) - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1 (M=10)	[1]

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Please note some GHS hazard classifications listed above may not be applicable in your country or region and are shown for informational purposes only.

Type

[1] Substance classified with a physical, health or environmental hazard
[2] Substance with a workplace exposure limit

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Section 4. First aid measures

Inhalation : If inhaled, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Section 4. First aid measures

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

HazChem Code (Australia) : 3Y

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Section 6. Accidental release measures

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapour or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
2-ethylhexan-1-ol	**Japan Society for Occupational Health (Japan, 9/2021).** OEL-M: 5.3 mg/m³ 8 hours. OEL-M: 1 ppm 8 hours.
1,2,4-trimethylbenzene	**Safe Work Australia (Australia, 12/2019).** TWA: 123 mg/m³ 8 hours. TWA: 25 ppm 8 hours.
naphthalene	**GBZ 2.1 (China, 8/2019). Absorbed through skin.** PC-TWA: 50 mg/m³ 8 hours. PC-STEL: 75 mg/m³ 15 minutes.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Hand Protection: Wear chemical resistant gloves. Nitrile gloves of minimum thickness 0.4 mm have an expected breakthrough time of 120 minutes or less when in frequent contact with the product. Due to variable exposure conditions the user must consider that the practical use of a chemical-protective glove in practice may be much shorter than the permeation time above. Manufacturer's directions for use, especially about the minimum thickness and the minimum breakthrough time, must be observed. This information does not replace suitability tests by the end user since glove protection varies depending on the conditions under which the product is used.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls/personal protection

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state : Liquid. [Oily.]

Colour : Brown.

Odour : Characteristic.

Odour threshold : Not available.

pH : Not available.

Melting point : -77°C (-106.6°F)

Boiling point : 150 to 215°C (302 to 419°F)

Flash point : Closed cup: 56°C (132.8°F) [Pensky-Martens Minimum]

Evaporation rate : <1 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 0.6%
Upper: ≤13%

Vapour pressure : 0.8 kPa (6.0005 mm Hg)

Relative vapour density : Not available.

Vapour density : >1 [Air = 1]

Density : 0.908 g/cm³ [59°F (15°C)]

Relative density : Not available.

Solubility(ies) :

Media	Result
cold water	Not soluble

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : 438°C (820.4°F)

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C): 5 mm^2/s (5 cSt) Minimum

Explosive properties : Not available.

Oxidising properties : Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials:
oxidising materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks
Solvent naphtha (petroleum), heavy arom.	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	>4778 mg/m³	4 hours	Based on data for a similar substance.
	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	>4688 mg/m³	4 hours	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	6318 mg/kg	-	-
2-ethylhexan-1-ol	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	1 to 5.3 mg/l	4 hours	-
	None available.	LC50 Inhalation Vapour	Rat	>0.89 mg/l	4 hours	-
	None available.	LD50 Dermal	Rat	1970 mg/kg	-	WOE does not support classification
	401 Acute Oral Toxicity	LD50 Oral	Rat	2047 mg/kg	-	-
1,2,4-trimethylbenzene	None available.	LC50 Inhalation Vapour	Rat	>10200 mg/m³	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>3440 mg/kg	-	Based on data for a similar substance.
	None available.	LD50 Oral	Rat	6000 mg/kg	-	-
naphthalene	403 Acute	LC50 Inhalation	Rat	>0.4 mg/l	4 hours	No effects at

Section 11. Toxicological information

	Inhalation Toxicity	Vapour				saturation.
	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>16000 mg/kg	-	-
	401 Acute Oral Toxicity	LD50 Oral	Mouse	533 mg/kg	-	-
Long-chain alkyltriazoleamine	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>2000 mg/kg	-	-
Solvent naphtha (petroleum), heavy arom.	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	>4778 mg/m³	4 hours	Based on data for a similar substance.
	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	>4688 mg/m³	4 hours	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	6318 mg/kg	-	Based on data for a similar substance.
indan	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>2000 mg/kg	-	Based on data for a similar substance.
octamethylcyclotetrasiloxane	403 Acute Inhalation Toxicity	LC50 Inhalation Vapour	Rat	36 mg/l	4 hours	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2375 mg/kg	-	-
	401 Acute Oral Toxicity	LD50 Oral	Rat	>4800 mg/kg	-	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	Based on data for a similar substance.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
2-ethylhexan-1-ol	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
1,2,4-trimethylbenzene	None available.	Rabbit	Skin - Irritant	Based on data for a similar substance.
naphthalene	None available.	Rabbit	Eyes - Not an Irritant	-
	None available.	Rabbit	Skin - Not an Irritant	-
Solvent naphtha (petroleum), heavy arom.	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	Based on data for a similar substance.
octamethylcyclotetrasiloxane	405 Acute Eye	Rabbit	Eyes - Not an Irritant	-

Section 11. Toxicological information

	Irritation/Corrosion 404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-

Skin : Causes skin irritation.

Eyes : Causes serious eye irritation.

Respiratory : Based on available data, the classification criteria are not met.

Sensitisation

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
1,2,4-trimethylbenzene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
naphthalene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
Solvent naphtha (petroleum), heavy arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
octamethylcyclotetrasiloxane	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-

Conclusion/Summary

Skin : North America and South America GHS classification: May cause an allergic skin reaction.
For other regional GHS classifications: Not classified.

Respiratory : Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative	-
	475 Mammalian Bone Marrow Chromosomal Aberration Test	Experiment: In vivo Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
2-ethylhexan-1-ol	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
1,2,4-trimethylbenzene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 In vitro Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
naphthalene	473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Positive	WOE does not support classification
	471 Bacterial Reverse	Experiment: In vitro	Negative	-

Section 11. Toxicological information

	Mutation Test 479 Genetic Toxicology: In vitro Sister Chromatid Exchange Assay in Mammalian Cells None available. 486 Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo	Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal Experiment: In vitro Subject: Mammalian-Human Experiment: In vivo Subject: Mammalian-Animal	Negative Negative Negative	- - -
Solvent naphtha (petroleum), heavy arom.	471 Bacterial Reverse Mutation Test 473 In vitro Mammalian Chromosomal Aberration Test 475 Mammalian Bone Marrow Chromosomal Aberration Test 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal Experiment: In vivo Subject: Mammalian-Animal Experiment: In vivo Subject: Mammalian-Animal	Negative Negative Negative Negative	Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance.
indan	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
octamethylcyclotetrasiloxane	471 Bacterial Reverse Mutation Test 473 In vitro Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal	Negative Negative	- -

Conclusion/Summary : Based on available data, the classification criteria are not met.

Carcinogenicity

Product/ingredient name	Test	Species	Exposure	Result	Remarks
2-ethylhexan-1-ol	451 Carcinogenicity Studies 451 Carcinogenicity Studies	Mouse Rat	18 months; 5 days per week 24 months; 5 days per week	Negative - Oral - NOAEL Negative - Oral - NOAEL	- -
naphthalene	None available.	Rat	105 weeks; 5 days per week	Positive - Inhalation - NOAEL	-
octamethylcyclotetrasiloxane	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	24 months; 5 days per week	Positive - Inhalation - TC	-

Conclusion/Summary : Suspected of causing cancer.
The classification of this product is based on the concentration of the carcinogenic substance present: Naphthalene

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Developmental toxin	Remarks
Solvent naphtha (petroleum), heavy arom.	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Positive	Based on data for a similar substance. WOE does not support classification
2-ethylhexan-1-ol	416 Two-Generation Reproduction Toxicity Study	Oral	Rat	Negative	Negative	Negative	-
1,2,4-trimethylbenzene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
Solvent naphtha (petroleum), heavy arom.	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Positive	Based on data for a similar substance. WOE does not support classification
octamethylcyclotetrasiloxane	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Positive	Negative	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar substance.
2-ethylhexan-1-ol	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	-
	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
	414 Prenatal Developmental Toxicity Study	Mouse	Negative - Oral	-
1,2,4-trimethylbenzene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
naphthalene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	-
Solvent naphtha (petroleum), heavy arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Oral	Based on data for a similar substance.
octamethylcyclotetrasiloxane	414 Prenatal Developmental Toxicity Study	Rabbit	Negative - Inhalation	-
	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), heavy arom.	Category 3	-	Narcotic effects
2-ethylhexan-1-ol	Category 3	-	Respiratory tract irritation
1,2,4-trimethylbenzene	Category 3	-	Respiratory tract irritation
Solvent naphtha (petroleum), heavy arom.	Category 3	-	Narcotic effects

Specific target organ toxicity (repeated exposure)

Based on available data, the classification criteria are not met.

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), heavy arom.	ASPIRATION HAZARD - Category 1
1,2,4-trimethylbenzene	ASPIRATION HAZARD - Category 1
Solvent naphtha (petroleum), heavy arom.	ASPIRATION HAZARD - Category 1
indan	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure : Skin, Eyes, Ingestion, and Inhalation

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	300 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
	452 Chronic Toxicity Studies	Rat	900 mg/m³	12 months	Chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	0.38 mg/l	13 weeks	Sub-chronic NOAEL Inhalation Vapour	-
2-ethylhexan-1-ol	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	250 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	640 mg/m³	90 days	Sub-chronic NOAEL Inhalation Vapour	-
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic NOEL Oral	-
1,2,4-trimethylbenzene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
	452 Chronic Toxicity Studies	Rat	1800 mg/m³	12 months	Chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
naphthalene	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	0.011 mg/l	13 weeks	Sub-chronic LOAEL Inhalation Vapour	-
	411 Subchronic Dermal Toxicity: 90-day Study	Rat	1000 mg/kg	-	Sub-chronic NOAEL Dermal	-
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	200 mg/kg	-	Sub-chronic NOAEL Oral	-
	None available.	Rat	1 ppm	90 days	Sub-chronic NOAEL Inhalation Vapour	-

Section 11. Toxicological information

Solvent naphtha (petroleum), heavy arom.	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	300 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
	452 Chronic Toxicity Studies	Rat	900 mg/m³	12 months	Chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	0.38 mg/l	13 weeks	Sub-chronic NOAEL Inhalation Vapour	Based on data for a similar substance.
octamethylcyclotetrasiloxane	410 Repeated Dose Dermal Toxicity: 21/28-day Study	Rabbit	960 mg/kg	-	Sub-acute NOAEL Dermal	-
	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	150 ppm	24 months	Chronic NOAEL Inhalation Gas.	-

Conclusion/Summary : Based on available data, the classification criteria are not met.

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
Solvent naphtha (petroleum), heavy arom.	Acute EL50 >1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 1.4 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 2 to 5 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEL 1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Chronic NOEL 0.48 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
2-ethylhexan-1-ol	Acute EC50 39 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 16.6 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute LC50 17.1 mg/l	Fish - Leuciscus idus melanotus	96 hours	-
	Chronic EL10 5.3 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
1,2,4-trimethylbenzene	Acute LC50 3.6 mg/l	Daphnia - Daphnia magna	48 hours	-

Section 12. Ecological information

	Acute LC50 7.72 mg/l	Fish - Pimephales promelas	96 hours	-
naphthalene	Acute EC50 2.96 mg/l	Algae - Pseudokirchneriella subcapitata	96 hours	-
	Acute EC50 2.16 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 1.6 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEC 0.59 mg/l	Daphnia - Daphnia pulex	125 days	-
	Chronic NOEC 0.12 mg/l	Fish - Oncorhynchus gorbuscha	40 days	-
Long-chain alkyltriazoleamine	Acute EL50 >100 mg/l	Algae - Pseudokirchneriella subcapitata	96 hours	-
	Acute EL50 >100 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LL50 >100 mg/l	Fish - Pimephales promelas	96 hours	-
	Chronic NOEL 100 mg/l	Algae - Pseudokirchneriella subcapitata	96 hours	-
Solvent naphtha (petroleum), heavy arom.	Acute EL50 >1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 1.4 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 2 to 5 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEL 1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Chronic NOEL 0.48 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
indan	Acute LL50 14 mg/l	Fish - Pimephales promelas	96 hours	-
octamethylcyclotetrasiloxane	Acute EC50 >0.022 mg/l	Algae - Pseudokirchneriella subcapitata	96 hours	-
	Acute EC50 >0.015 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 >10000 mg/l	Micro-organism	3 hours	-
	Acute LC50 >0.022 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic NOEC <0.022 mg/l	Algae	96 hours	-
	Chronic NOEC 0.0079 mg/l	Daphnia - Daphnia magna	21 days	-
	Chronic NOEC ≥0.0044 mg/l	Fish - Oncorhynchus mykiss	93 days	-

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
Solvent naphtha (petroleum), heavy arom.	OECD 301F Ready Biodegradability - Manometric Respirometry Test	58.6 % - Inherent - 28 days	Based on data for a similar substance.
2-ethylhexan-1-ol	OECD 301C	100 % - Readily - 14 days	-

Section 12. Ecological information

naphthalene	Ready Biodegradability - Modified MITI Test (I) OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 to 2 % - Not readily - 28 days	-
Solvent naphtha (petroleum), heavy arom.	OECD 301F Ready Biodegradability - Manometric Respirometry Test	58.6 % - Inherent - 28 days	Based on data for a similar substance.
octamethylcyclotetrasiloxane	OECD 310 Ready Biodegradability - CO2 in Sealed Vessels (Headspace Test)	3.7 % - Not readily - 29 days	-

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Solvent naphtha (petroleum), heavy arom.	2.8 to 6.5	99 to 5780	high
2-ethylhexan-1-ol	2.9	25.33	low
1,2,4-trimethylbenzene	3.63	243	low
naphthalene	3.4	36.5 to 168	low
Solvent naphtha (petroleum), heavy arom.	2.8 to 6.5	99 to 5780	high
indan	3.18	-	low
octamethylcyclotetrasiloxane	6.488	13400	high

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

Hazardous to the ozone layer : Not applicable.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and

Section 13. Disposal considerations

its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	ADG	IMDG	IATA
14.1 UN number	UN1993	UN1993	UN1993	UN1993
14.2 UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes)	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes)	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes) Marine pollutant.	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes)
14.3 Transport hazard class (es)	3 	3 	3 	3 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes.

Additional information — **Hazchem code**: 3Y

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

China

List of Goods banned for Importing

None of the components are listed.

List of Goods banned for Exporting

None of the components are listed.

List of Toxic Chemicals Severely Restricted for Importing & Exporting by China

None of the components are listed.

Section 15. Regulatory information

Singapore

Singapore - hazardous chemicals under government control

None.

Australia

Standard for the Uniform Scheduling of Medicines and Poisons

Not applicable.

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Japan

Fire Service Law

Category	Substance name/Type	Danger category
Category IV	Class II petroleums	III

Industrial Safety and Health Act

Label Requirements and Chemicals Requiring Notification

Ingredient name	%
Trimethylbenzene	≥5.0 - ≤10
Naphthalene	≥5.0 - ≤10

Chemical Substances Control Law (CSCL)

Ingredient name	%	Status	Reference number
1,2,4-Trimethylbenzene	≥5.0 - ≤10	Priority assessment	49
Naphthalene	≥5.0 - ≤10	Priority assessment	76

Poisonous and Deleterious Substances

None of the components are listed.

Pollutant Release and Transfer Registers (PRTR)

Ingredient name	%	Status	Reference number
1,2,4-Trimethylbenzene	≥5.0 - ≤10	Class 1	296
Naphthalene	≥5.0 - ≤10	Class 1	302

Japan - Water Pollution Control Law

Not listed.

Korea

Regulation according to ISHA

Section 15. Regulatory information

ISHA article 117 (Harmful substances prohibited from manufacture) : None of the components are listed.

ISHA article 118 (Harmful substances requiring permission) : None of the components are listed.

Regulation according to K-REACH/CCA

	Chemical name	%	Remarks
K-REACH/CCA Toxic chemicals :	Xylene	<0.1	Impurity
	Benzene	<0.01	Impurity

K-REACH/CCA - Banned : None of the components are listed.

K-REACH/CCA - Restricted : None of the components are listed.

K-REACH/CCA Article - TRI : The following components are listed: Naphthalene

Dangerous Materials Safety Management Act :
Class: Class 4 - Flammable Liquid
Item: 4. Class 2 petroleums - Water-insoluble liquid
Threshold: 1000 L
Danger category: III
Signal word: Contact with sources of ignition prohibited

New Zealand

HSNO Approval Number : HSR002584

International Inventory Status

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : At least one component is not listed.
Notified. Please contact your supplier for information on the inventory status of this material.

Europe : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).

Japan : At least one component is not listed.

Republic of Korea : At least one component is not listed.
Exempted Please contact your supplier for information on the inventory status of this material.

New Zealand : All components are listed or exempted.

Philippines : At least one component is not listed.
Exempted. Please contact your supplier for information on the inventory status of this material.

Section 15. Regulatory information

Switzerland : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).

Turkey : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).

Taiwan : All components are listed or exempted.

United Kingdom (UK) : For information on compliance with this regulation please contact your Afton representative (EHS.CustomerVolumes@AftonChemical.com).

United States Active : All components are active or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 11/2/2022

EHS Department (Tel: +1 804 788 5800)

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
WOE = Weight of Evidence

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	On basis of test data
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A	Calculation method
CARCINOGENICITY - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3	Calculation method
ASPIRATION HAZARD - Category 1	Calculation method
SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2	Calculation method
LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 2	Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

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