SAFETY DATA SHEET

Circular no. 32/2017/TT-BCT

MULTIS COMPLEX HV 2

SDS # : 086117

Section 1. Identification

CAS number : Not applicable.

UN number : Not regulated.

EC number : Mixture.

GHS product identifier : MULTIS COMPLEX HV 2

Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Lubricating grease

Supplier's details :

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Emergency telephone number (with hours of operation) :

Vietnam: +84 28 4458 2388
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Section 2. Hazard identification

Classification of the substance or mixture :

SKIN IRRITATION - Category 3
AQUATIC TOXICITY (ACUTE) - Category 3
AQUATIC TOXICITY (CHRONIC) - Category 3

GHS label elements

Signal word : Warning

Hazard statements :

Causes mild skin irritation.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention : Avoid release to the environment.

Response : If skin irritation occurs: Get medical advice or attention.

Storage : Not applicable.

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

Other hazards which do not result in classification : Prolonged or repeated contact may dry skin and cause irritation.

Additional information : Mineral oil of petroleum origin. Product containing mineral oil with less than 3% DMSO extract as measured by IP 346

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

Ingredient name	Identifiers	% (w/w)
calcium carbonate	CAS: 471-34-1 EC: 207-439-9	≤5
dilithium azelate	CAS: 38900-29-7 EC: 254-184-4	≤3
Polysulfides, di-tert-Bu	CAS: 68937-96-2 EC: 273-103-3	≤2.1
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	CAS: 68442-22-8 EC: 270-478-5	≤2.5

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.

The total concentration of ingredients in this product, reported or not in this section, is 100%.

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, 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.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 adverse health effects persist or are severe. 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.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention if adverse health effects persist or are severe. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. 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. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. 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 : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes mild skin irritation. Defatting to the skin.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

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

Inhalation : No specific data.

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

Ingestion : No specific data.

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

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : This material is harmful 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 : carbon monoxide
carbon dioxide
phosphorus oxides
sulfur oxides
Hydrogen sulfide
Mercaptans
Zinc 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.

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.

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 spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized 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".

Environmental precautions : Avoid dispersal of spilled 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.

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

See Section 10 for incompatible materials before handling or use.

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 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. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Product/substance	Exposure limits
calcium carbonate	**Ministry of Health (Viet Nam, 6/2019)** TWA 8 hours: 10 mg/m³.

Biological exposure indices

No exposure indices known.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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.

Advisory OEL : Mineral oil mist: USA: OSHA (PEL) TWA 5 mg/m3, NIOSH (REL) TWA 5 mg/m3, STEL 10 mg/m3, ACGIH (TLV) TWA 5 mg/m3 (highly refined)

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 : In case of contact through splashing: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Hydrocarbon-proof gloves
Fluorinated rubber
nitrile rubber
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

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.

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

The conditions of measurement of all properties are at standard temperature (20°C / 68°F) and pressure (1013 hPa) unless otherwise indicated

Appearance

Physical state : Solid.

Color : Green.

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Boiling point : Not available.

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not applicable.

Vapor pressure : Not available.

Vapor density : Not applicable.

Relative density : 0.9 [ASTM D 4052]

Density : 0.9 g/cm³ [15°C] [ASTM D 4052]

Solubility(ies) :

Media	Result
water	Not soluble

Miscible with water : No.

Solubility in water : Not available.

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

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): Not available.
Kinematic (room temperature): Not available.
Kinematic (40°C (104°F)): Not applicable.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

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

Chemical stability : Stable under recommended storage and handling conditions (see Section 7).

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

Conditions to avoid : No specific data.

Incompatible materials : Strong oxidizing agents

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/substance	Result
calcium carbonate	**Rat - Oral - LD50** 6450 mg/kg **Rat - Dermal - LD50** >2000 mg/kg OECD [402]
dilithium azelate	**Rat - Female - Oral - LD50** >300 mg/kg OECD [420] **Rat - Female - Dermal - LD50** >2000 mg/kg OECD [402]
Polysulfides, di-tert-Bu	**Rat - Oral - LD50** >2000 mg/kg **Rat - Dermal - LD50** >2000 mg/kg
Phosphorodithioic acid, mixed O,O-bis (2-ethylhexyl and iso-Bu) esters, zinc salts	**Rat - Male, Female - Oral - LD50** >2000 mg/kg EPA **Rat - Male, Female - Dermal - LD50** >2000 mg/kg OECD [402]

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
MULTIS COMPLEX HV 2	22435.6	106927.9	N/A	N/A	N/A
calcium carbonate	6450	N/A	N/A	N/A	N/A
dilithium azelate	500	N/A	N/A	N/A	N/A
Polysulfides, di-tert-Bu	2500	2500	N/A	N/A	N/A
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	2500	2500	N/A	N/A	N/A

Skin corrosion/irritation

Serious eye damage/eye irritation

Respiratory corrosion/irritation

Respiratory or skin sensitization

Skin

Respiratory

Germ cell mutagenicity

Carcinogenicity

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

Reproductive toxicity

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

Specific target organ toxicity (single exposure)

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

Specific target organ toxicity (repeated exposure)

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

Aspiration hazard

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

Information on the likely routes of exposure Not available.

Potential acute health effects

Eye contact No known significant effects or critical hazards.

Inhalation No known significant effects or critical hazards.

Skin contact Causes mild skin irritation. Defatting to the skin.

Ingestion No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

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

Inhalation No specific data.

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

Ingestion No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

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	Result
Phosphorodithioic acid, mixed O,O-bis (2-ethylhexyl and iso-Bu) esters, zinc salts	**Sub-acute - Rat - Oral - NOAEL** OECD [Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test] 160 mg/kg

General : Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Other information :

Not available.

Section 12. Ecological information

Harmful to aquatic life with long lasting effects.

Toxicity

Product/ingredient name	Result
calcium carbonate	**Acute - LC50 - Fresh water** Fish - Western mosquitofish - *Gambusia affinis* - Adult >5.6 pph [96 hours] Effect: Mortality **Acute - EC10** OECD [201] Algae - *Desmodesmus subspicatus* >14 mg/l [72 hours] **Acute - EC50** OECD [201] Algae - *Desmodesmus subspicatus* >14 mg/l [72 hours] **Chronic - NOEC - Fresh water** Fish - Catfish - *Rhamdia quelen* Size: 15 cm; Weight: 8.9 g 16.5 mg/l [30 days] Effect: Mortality
dilithium azelate	**Acute - LC50 - Fresh water** OECD [201] Algae 3.2 mg/l [72 hours] **Acute - LC50** Read across Daphnia >100 mg/l [48 hours] **Acute - LC50** Read across Fish >100 mg/l [96 hours]
Polysulfides, di-tert-Bu	**Acute - LC50** Fish - *Danio rerio* >0.088 mg/l [96 hours] **Acute - EC50** Daphnia 0.24 mg/l [48 hours] **Acute - EC50** Algae - *Pseudokirchneriella subcapitata* 0.838 mg/l [72 hours]
Phosphorodithioic acid, mixed O,O-bis	**Acute - EL50 - Fresh water**

(2-ethylhexyl and iso-Bu) esters, zinc salts	OECD [201] Algae - *Scenedesmus subspicatus* 21 mg/l [72 hours] Effect: (biomass) **Acute - LL50 - Fresh water** OECD [203] Fish - *Oncorhynchus mykiss* 4.5 mg/l [96 hours] Effect: Mortality **Acute - EL50 - Fresh water** OECD [202] Daphnia - *Daphnia Magna* 23 mg/l [48 hours] Effect: Mobility **Chronic - NOEC - Fresh water** OECD [211] Daphnia 0.4 mg/l [21 days] Effect: Reproduction **Acute - LC50 - Marine water** OECD [203] Fish - *Cyprinodon variegatus* 46 mg/l [96 hours] Effect: Mortality

Based on available data, the classification criteria are met.

Persistence and degradability

Product/ingredient name	Result
dilithium azelate	94% [28 days]
Phosphorodithioic acid, mixed O,O-bis (2-ethylhexyl and iso-Bu) esters, zinc salts	OECD [301B] 1.5% [28 days]

Product/substance	Aquatic half-life	Photolysis	Biodegradability
calcium carbonate	-	-	Readily
dilithium azelate	-	-	Readily
Polysulfides, di-tert-Bu	-	-	Not readily
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	-	-	Not readily

Bioaccumulative potential

Product/substance	$LogK_{ow}$	BCF	Potential
dilithium azelate	-3.4	-	Low
Polysulfides, di-tert-Bu	5.6	-	High
Phosphorodithioic acid, mixed O,O-bis(2-ethylhexyl and iso-Bu) esters, zinc salts	1.67	-	Low

Mobility in soil

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

Mobility in soil : Given its physical and chemical characteristics, the product has no soil mobility. The product is insoluble and floats on water. Loss by evaporation is limited

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized 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 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	ICAO/IATA
UN/ID No	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

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.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Toxic classification (TCVN 3164-79) : 3

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia inventory (AIIC)	:	All components are listed or exempted.
Canada inventory (DSL/NDSL)	:	All components are listed or exempted.
China inventory (IECSC)	:	All components are listed or exempted.
Europe inventory (EC)	:	All components are listed or exempted.
Japan inventory	:	**Japan inventory (CSCL)**: All components are listed or exempted. **Japan inventory (ISHL)**: Not determined.
New Zealand Inventory of Chemicals (NZIoC)	:	At least one component is not listed.
Philippines inventory (PICCS)	:	At least one component is not listed.
Korea inventory (KECI)	:	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	:	All components are listed or exempted.
Thailand inventory	:	Not determined.
Turkey inventory	:	Not determined.
United States inventory (TSCA 8b)	:	All components are listed or exempted.
Vietnam inventory	:	Not determined.

The information stated in this section relates solely to the conformity of the chemical product with the countries Inventories. The information used to confirm the inventory status of this product may be based on additional data to the chemical composition shown in Section 3. Other regulations may apply for importation or marketing authorizations.

Section 16. Other information

Ratings of danger according to

NFPA

HMIS

Health	*	2
Flammability		0
Physical hazards		0

History

Date of revision	:	2025/07/09
previous revision date	:	2023/07/25
Version	:	2
Key to abbreviations	:	ACGIH = American Conference of Governmental Industrial Hygienists ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor EC50 = Half maximal effective concentration EL50 = median Effective Loading IATA = International Air Transport Association

IC50 = Half maximal inhibitory concentration
IDHL = Immediately dangerous to life or health
IMDG = International Maritime Dangerous Goods
LC50 = Median lethal concentration
LD50 = Median lethal dose
LL50 = median Lethal Loading
LogKow = logarithm of the octanol/water partition coefficient
N/A = Not available
NIOSH = National Institute of Occupational Safety and Health
NOAEL = No Observed Adverse Effect Level
NOEC No Observed Effect Concentration
NOEL = No Observed Effect Level
NOELR = No observed Effect Loading Rate
OECD = Organisation for Economic Co-operation and Development
OEL = Occupational Exposure Limit
POP = Persistent Organic Pollutants
QSAR = Quantitative Structure–Activity Relationship
REL = Recommanded Exposure Limit
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
STEL = Short Term Exposure Limit
TLV = Threshold Limit Value
TWA = Time Weight Average
VOC = Volatile Organic Compound
UVCB Substance of unknown or Variable composition, Complex reaction products or Biological material

Procedure used to derive the classification

Classification	Justification
SKIN IRRITATION - Category 3	Calculation method
AQUATIC TOXICITY (ACUTE) - Category 3	Calculation method
AQUATIC TOXICITY (CHRONIC) - Category 3	Calculation method

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.