

Jotarroof

Section 1. Identification

GHS product identifier	: โจदारูฟ
Other means of identification	: Not available.
Product code	: 3746
Product description	: Paint.
Product type	: Liquid.

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

Use in coatings - Consumer use: Apply this product only as specified on the label.

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Section 2. Hazards identification

Classification of the substance or mixture	: SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 2 LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
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GHS label elements

Signal word	: No signal word.
Hazard statements	: H401 - Toxic to aquatic life. H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

General	: P102 - Keep out of reach of children.
Prevention	: P273 - Avoid release to the environment.
Response	: Not applicable.
Storage	: Not applicable.
Disposal	: P501 - 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.
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Section 3. Composition/information on ingredients

Substance/mixture : Mixture
 Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.
 EC number : Mixture.
 Product code : 3746

Ingredient name	%	CAS number
benzophenone	≤0.3	119-61-9
diuron (encapsulated)	≤0.3	330-54-1
diuron	≤0.029	330-54-1
zinc pyrithione	≤0.023	13463-41-7
2-octyl-2h-isothiazol-3-one (OIT)	≤0.011	26530-20-1
C(M)IT/MIT (3:1)	≤0.0026	55965-84-9

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.

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. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel.

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 : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
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.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life. 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 : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
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.

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 spilt material. 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".

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.

Methods and material for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. 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. 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** : 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 unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
diuron (ISO); 3-(3,4-dichlorophenyl)-1,1-dimethylurea	Ministry of Labor (Thailand, 8/2017). TWA: 10 mg/m ³ 8 hours.

- Recommended monitoring procedures** : Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
- 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.
- 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 to ISO 16321-1:2022 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** : 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.
- There is no one glove material or combination of materials that will give unlimited resistance to any individual or combination of chemicals. The breakthrough time must be greater than the end use time of the product. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed. Gloves should be replaced regularly and if there is any sign of damage to the glove material. Always ensure that gloves are free from defects and that they are stored and used

Section 8. Exposure controls/personal protection

correctly.

The performance or effectiveness of the glove may be reduced by physical/chemical damage and poor maintenance.

Barrier creams may help to protect the exposed areas of the skin but should not be applied once exposure has occurred.

Wear suitable gloves tested to ISO 374-1:2016.

May be used, gloves(breakthrough time) 4 - 8 hours: nitrile rubber (> 0.4 mm), neoprene (> 0.35 mm), polyvinyl alcohol (PVA) (> 0.3 mm)

- 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.
- 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.
- If workers are exposed to concentrations above the exposure limit, they must use a respirator according to EN 140. Use respiratory mask with charcoal and dust filter when spraying this product, according to EN 14387(as filter combination A2-P2). In confined spaces, use compressed-air or fresh-air respiratory equipment. When use of roller or brush, consider use of charcoalfilter.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid.
- Colour** : Various colours.
- Odour** : Characteristic.
- Odour threshold** : Not available.
- pH** : 8-9.5
- Melting point** : 0
- Boiling point** : Lowest known value: 100°C (212°F) (water). Weighted average: 107.32°C (225.2°F)
- Flash point** : Not available.
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : 0.36 (water) compared with butyl acetate
- Flammability (solid, gas)** : Not applicable.
- Lower and upper explosive (flammable) limits** : 0.6 - 4.2%
- Vapour pressure** : Highest known value: 3.2 kPa (23.8 mm Hg) (at 20°C) (water). Weighted average: 3.05 kPa (22.88 mm Hg) (at 20°C)
- Vapour density** : Highest known value: 7.5 (Air = 1) (propanoic acid, 2-methyl-, monoester with 2,2,4-trimethyl-1,3-pentanediol).
- Relative density** : 1.17 g/cm³
- Solubility** : Easily soluble in the following materials: cold water and hot water.
- Partition coefficient: n-octanol/ water** : Not available.
- Auto-ignition temperature** : Not applicable.
- Decomposition temperature** : Not available.
- SADT** : Not available.
- Viscosity** : Kinematic (40°C): >20.5 mm²/s (>20.5 cSt)
- Aerosol product**

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	: No specific data.
Incompatible materials	: Keep away from the following materials to prevent strong exothermic reactions: oxidising agents, strong alkalis, strong acids.
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	Result	Species	Dose	Exposure
benzophenone	LD50 Dermal	Rabbit	3535 mg/kg	-
	LD50 Oral	Rat	>10 g/kg	-
zinc pyrithione	LC50 Inhalation Dusts and mists	Rat	0.14 mg/l	4 hours
	LD50 Dermal	Rat	2000 mg/kg	-
2-octyl-2h-isothiazol-3-one (OIT)	LD50 Oral	Rat	221 mg/kg	-
	LD50 Dermal	Rabbit	690 mg/kg	-
C(M)IT/MIT (3:1)	LD50 Dermal	Rabbit	690 mg/kg	-
	LD50 Oral	Rat	550 mg/kg	-
	LD50 Oral	Rat	53 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
zinc pyrithione	Eyes - Irritant	Mammal - species unspecified	-	-	-

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
2-octyl-2h-isothiazol-3-one (OIT)	skin	Mammal - species unspecified	Sensitising
C(M)IT/MIT (3:1)	skin	Mammal - species unspecified	Sensitising

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
diuron (encapsulated)	Category 2	-	-
diuron (ISO); 3-(3,4-dichlorophenyl)-1,1-dimethylurea	Category 2	-	-
zinc pyrethione	Category 1	-	-

Aspiration hazard

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	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: No specific data.
Ingestion	: No specific data.
Skin contact	: No specific data.
Eye contact	: No specific data.

Potential chronic health effects

General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
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.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
benzophenone	Acute LC50 10 mg/l Fresh water	Fish - Pimephales promelas - Larvae	96 hours
diuron (ISO); 3-(3,4-dichlorophenyl)-1,1-dimethylurea	Acute EC50 0.022 mg/l	Algae	72 hours
zinc pyrethione	Acute EC50 1.4 mg/l	Daphnia	48 hours
	Acute LC50 14.7 mg/l	Fish	96 hours
	Chronic NOEC 0.0032 mg/l	Algae	96 hours
	Chronic NOEC 0.56 mg/l	Daphnia	21 days
	Chronic NOEC 0.41 mg/l	Fish	28 days
	Acute EC50 0.067 mg/l	Algae	72 hours
2-octyl-2h-isothiazol-3-one (OIT)	Acute EC50 0.051 mg/l	Daphnia	48 hours
	Acute LC50 0.0104 mg/l	Fish	96 hours
	Chronic NOEC 2.7 ppb Marine water	Daphnia - Daphnia magna	21 days
	Acute EC50 0.084 mg/l	Algae - Scenedesmus subspicatus	72 hours

Section 12. Ecological information

C(M)IT/MIT (3:1)	Acute EC50 0.32 mg/l Acute LC50 0.047 mg/l Acute EC50 0.048 mg/l	Daphnia Fish Algae - Pseudokirchneriella subcapitata	48 hours 96 hours 72 hours
	Acute EC50 0.0052 mg/l Acute EC50 0.1 mg/l Acute LC50 0.22 mg/l Acute NOEC 0.00064 mg/l Chronic NOEC 0.0012 mg/l	Algae - Skeletonema costatum Daphnia - Daphnia magna Fish - Oncorhynchus mykiss Algae - Skeletonema costatum Algae - Pseudokirchneriella subcapitata	48 hours 48 hours 96 hours 48 hours 72 hours
	Chronic NOEC 0.004 mg/l Chronic NOEC 0.098 mg/l	Daphnia - Daphnia magna Fish - Oncorhynchus mykiss	21 days 28 days

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
diuron (ISO); 3-(3,4-dichlorophenyl)-1,1-dimethylurea C(M)IT/MIT (3:1)	-	-	Not readily
	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
benzophenone	3.18	12.02	low
diuron (ISO); 3-(3,4-dichlorophenyl)-1,1-dimethylurea	2.84	5.2	low
zinc pyriithione	0.9	11	low
2-octyl-2h-isothiazol-3-one (OIT)	2.45	-	low
C(M)IT/MIT (3:1)	-	3.16	low

Mobility in soil

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

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 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
UN number	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 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 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.
Additional information	-	-	-

Transport in bulk according to : Not available.
 IMO instruments

ADR / RID

Section 15. Regulatory information

[Hazardous Substance Act B.E. 2535 \(1992\)](#)

Type

Ingredient name
aldehydes

Type
3

Authority
The Food and Drug Administration

Conditions
In Products used in household or public health activity with purposes for disinfecting floor, wall, sanitary ware, and other materials or for anti-clogging of drainage system or sewer line

aldehydes

3

Department of Livestock Development

In products used in animal feed manufacturing, animal farm, slaughter house and meat processing product manufacturing for purposes of disinfection and cleaning or for anti-clogging of drainage system or sewer line

diuron

3

Department of Agriculture

Except the part on responsibility of Department of Industrial Works

diuron

3

Department of Industrial Works

Except the part on responsibility of

Section 15. Regulatory information

Department of
Agriculture

No known specific national and/or regional regulations applicable to this product (including its ingredients).

Section 16. Other information

History

Date of printing : 14.04.2023

Date of issue/Date of revision : 14.04.2023

Date of previous issue : 14.04.2023

Version : 1.13

Key to abbreviations : 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
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
 UN = United Nations
 LogPow = logarithm of the octanol/water partition coefficient

References : Not available.

✔ Indicates information that has changed from previously issued version.

Notice to reader

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.