

SAFETY DATA SHEET

Safety data sheet according to (EC) No. 1907/2006

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier:**

AOS HEAT SINK COMPOUND

1.2. Relevant identified uses of the substance or mixture and uses advised against:

Thermally conductive paste.

1.3. Details of the supplier of the safety data sheet:

Danfoss A/S

Nordborgvej 81 Phone: 74 88 20 77

DK-6430 Nordborg

Denmark

Responsible person for the safety data sheet (e-mail): lkj@danfoss.com**1.4. Emergency telephone number:**

NHS (England or Wales): Dial 111 or 0845 4647 NHS 24 (Scotland): Dial 111

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture:**

Environmentally hazardous paste.

CLP (1272/2008): Aquatic Acute 1;H400 Aquatic Chronic 1;H410

2.2. Label elements:**WARNING**

H410: Very toxic to aquatic life with long lasting effects.

P273: Avoid release to the environment.

P391: Collect spillage.

2.3. Other hazards: None known.

PBT/vPvB: No ingredients are PBT/vPvB, according to the criteria in REACH Annex XIII.

SECTION 3: Composition/information on ingredients**3.2. Mixtures:**

% w/w	Substance name	CAS-no.	EC-no.	Index-no.	REACH reg.-no.	Classification
70-<80	Zinc oxide	1314-13-2	215-222-5	030-013-00-7	01-2119463881-32	Aquatic Acute 1;H400 (M=1) Aquatic Chronic 1;H410 (M=1)

Wording of hazard statements - see section 16.

SECTION 4: First-aid measures**4.1. Description of first aid measures:**

Inhalation: Move the affected person to fresh air. Keep at rest. If symptoms persist: Seek medical advice.

Skin contact: Remove all contaminated clothing. Wash skin with water and mild soap.

Eye contact: Flush with water or physiological salt water, holding eyelids open; remember to remove contact lenses, if any. If irritation persist: Seek medical advice.

Ingestion: Rinse mouth and drink plenty of water. **Do not induce vomiting.** If vomiting occurs keep head down to avoid vomit in the lungs. Seek medical advice.**4.2. Most important symptoms and effects, both acute and delayed:**

May cause slight irritation of skin and eyes.

4.3. Indication of any immediate medical attention and special treatment needed:

Show this safety data sheet to a physician or emergency ward.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media:

Use carbon dioxide, dry chemical or foam.

5.2. Special hazards arising from the substance or mixture:

Do not inhale smoke fumes. In case of fire, the substance may form hazardous decomposition products: Primarily oxides of carbon.

5.3. Advice for firefighters:

Wear self-contained breathing apparatus when generation of smoke is vigorous.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures:

Use gloves of rubber when spill is wiped up – see section 8. Avoid further spreading. Ventilate area of spill.

6.2. Environmental precautions:

Do not empty into drains – see section 12. Inform appropriate authorities in accordance with local regulations.

6.3. Methods and material for containment and cleaning up:

Take up with absorbent material (e.g. general-purpose binder) and place in marked container for disposal. Clean with water.

Dispose of in accordance with local regulations or burn under controlled conditions. Further handling of spillage - see section 13.

6.4. Reference to other sections:

See references above.

SECTION 7: Handling and storage

7.1. Precautions for safe handling:

Avoid contact with skin, eyes and clothing. Provide sufficient ventilation. Wash contaminated skin immediately with water and mild soap. Moisturisers prevents drying of the skin and may be used with great advantage after work.

7.2. Conditions for safe storage, including any incompatibilities:

Store in a tightly closed original container of metal. Keep in a dry and well-ventilated place.

7.3. Specific end use(s):

See section 1.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters:

Occupational exposure limits (EH40/2005 with later amendments): None

DNEL:	Exposure	Value	Population	Effects
Zinc oxide	Long term, inhalation	6.2 mg/m ³	Worker	Local
	Long term, dermal	6223 mg/kg/d	Worker	Local
	Long term, oral	62.2 mg/kg/d	Worker	Local
	Long term, inhalation	6.2 mg/m ³	Consumer	Local
	Long term, dermal	622 mg/kg/d	Consumer	Local
	PNEC:	Medium	Value	
Zinc oxide	Fresh water	25.6 µg/l		
	Sea water	7.6 µg/l		
	Fresh water sediment	146 mg/kg		
	Sea water sediment	70.3 mg/kg		
	Sewage treatment plant	64.7 µg/l		
	Soil	44.3 mg/kg		

8.2. Exposure controls:

Appropriate engineering controls: Provide sufficient ventilation.

Personal protective equipment:

Inhalation: Normally not required.

Skin: Wear protective gloves of nitrile rubber (> 0.3 mm) (EN 374). It has not been possible to find data for breakthrough time. In case of spill on the glove, it is recommended to change it after use.

Eyes: Wear tight fitting safety goggles (EN 166) when there is risk of eye contact.

Environmental exposure controls: None particular.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties:

Appearance:	White pasta
Odour:	None
Odour threshold:	Not determined
pH (concentrate):	Not determined
Melting point / freezing point (°C):	Not determined
Initial boiling point and boiling range (°C):	> 204
Decomposition temperature (°C):	225
Flash point (°C):	296
Evaporation rate:	> 0.01
Flammability (solid, gas):	Not relevant (liquid)
Upper/lower flammability or explosive limits (vol-%):	Not determined
Vapour pressure (mmHg, 20°C):	< 0.01
Vapour density (air=1):	Not determined
Relative density (g/cm ³ , 20°C):	2.2
Solubility:	Insoluble in water
Partition coefficient: n-octanol/water, Log K _{ow} :	Not determined
Auto-ignition temperature (°C):	Not determined
Viscosity:	Not determined
Explosive properties:	Not determined
Oxidising properties:	Not determined
9.2. Other information:	None relevant

SECTION 10: Stability and reactivity

10.1. Reactivity:

No available data.

10.2. Chemical stability:

Stable under normal conditions (see section 7).

10.3. Possibility of hazardous reactions:

None known.

10.4. Conditions to avoid:

Avoid excessive heating.

10.5. Incompatible materials:

May react with strong acids and oxidizing materials.

10.6. Hazardous decomposition products:

In case of extensive heating, the mixture may form hazardous decomposition product such as oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects:

Hazard class	Data	Test	Data source
Acute toxicity:			
Inhalation	LC ₅₀ (rat) > 5700 mg/m ³ /4h (Zinc oxide, dust/spray)	OECD 403	Supplier
Dermal	LD ₅₀ (rat) > 2 g/kg (Zinc oxide)	OECD 402	Supplier
Oral	LD ₅₀ (rat) = 7950 g/kg (Zinc oxide)	No data	IUCLID
Corrosion/irritation:	No eye or skin irritation (Zinc oxide)	OECD 404/405	Supplier
Sensitization:	No skin sensitization (Zinc oxide)	OECD 406	Supplier
CMR:	No available/applicable data	-	-

Information on likely routes of exposure: Ingestion.

Symptoms:

Inhalation: Slight irritation of the airways.

Skin: May cause slight irritation with redness.

Eyes: May cause slight irritation with redness and pain.

Ingestion: May cause irritation of the gastrointestinal tract and discomfort, nausea and diarrhea.

Chronic effects: Frequent skin contact may cause skin sensitisation with symptoms such as redness, itching, blisters and eczema.

SECTION 12: Ecological information

12.1. Toxicity:

Aquatic	Data	Test (Media)	Data source
Fish	LC ₅₀ (Danio rerio, 96h) = 1.79 mg/l (Zinc oxide)	No data (FW)	ECHA
	LC ₅₀ (Oncorhynchus mykiss, 96h): 1.1-2.5 mg/l (Zinc oxide)	No data (FW)	ECHA
Daphnia	EC ₅₀ (Daphnia magna, 48h) = 2.2 mg/l (Zinc oxide)	OECD 202	ECHA
Algae	EC ₅₀ (Selenastrum capricornutum, 72h) = 0.17 mg/l (Zinc oxide)	OECD 201 (FW)	IUCLID
	NOEC (Pseudokirchneriella subcapitata, 72h) = 0.017 mg/l (Zinc oxide)	No data (FW)	Supplier

12.2. Persistence and degradability:

Methods are missing for determining the biodegradability for inorganic substances such as pigments.

12.3. Bioaccumulative potential:

Zinc oxide: Log K_{ow} = 1.53 (moderate bio accumulative effect).

12.4. Mobility in soil:

Zinc oxide: K_{oc} < 50 (very high mobility expected in soil environments).

12.5. Results of PBT and vPvB assessment:

No ingredients are PBT/vPvB, according to the criteria in REACH Annex XIII.

12.6. Other adverse effects:

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods:

The mixture is not considered as hazardous waste. Disposal should be according to local, state or national legislation. Dispose of through authority facilities or pass to chemical disposal company.

EWC-code:

12 01 01 (mixture itself) and 15 02 02 (Paper towel, inert material etc. contaminated with the mixture)

SECTION 14: Transport information

14.1. UN-no.: 3077

14.2. UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide)

14.3. Transport hazard class(es): 9

14.4. Packing group: III

14.5. Environmental hazards: Yes (Marine pollutant)

14.6. Special precautions for user: None.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code: Not relevant.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

None.

15.2. Chemical Safety Assessment:

No CSR.

SECTION 16: Other information

Hazard statements mentioned in section 3:

H400: Very toxic to aquatic life.

H410: Very toxic to aquatic life with long lasting effects.

Abbreviations:

CMR = Carcinogenicity, mutagenicity and reproductive toxicity.

CSR = Chemical Safety Report

DNEL = Derived No-Effect Level

EC₅₀ = Effect Concentration 50%

FW = Fresh Water

LC₅₀ = Lethal Concentration 50%LD₅₀ = Lethal Dose 50%

PBT = Persistent, Bioaccumulative, Toxic

PNEC = Predicted No-Effect Concentration

vPvB = very Persistent, very Bioaccumulative

Literature:

ECHA diss. = REACH Registration dossier from ECHA's home page.

IARC = International Agency for Research on Cancer

IUCLID = International Uniform Chemical Database Information

RTECS = Register of Toxic Effects of Chemical Substances.

TOXNET = Toxicology Data Network via Toxline database

Training advice:

No special training is required. However, the user should be well instructed in the execution of his/her task, be familiar with this Safety Data Sheet and have normal training in the use of personal protective equipment.

Changes since the previous edition:

Not relevant – first edition

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