


MATERIAL SAFETY DATA SHEET
 Conform to Regulation (EC) No. 1272/2008 (CLP)

| SECTION 1: Identification of the substance/mixture and of the Company /Undertaking | |
|--|--|
| 1.1. Product name/ Trade name | FSS - FIRE SUPPRESSION SYSTEMS |
| 1.2. Material uses | Fire suppressants |
| 1.3. Details of the supplier of the safety data sheet | ESP International Srl Strada Farnesiana 47 29122 Piacenza (PC) – Italy Manufacturing Plant: Strada per Chieri, no. 109 14019 Villanova d’Asti, AT – Italy Phone +39/0141- 945628 Fax +39/0141- 946671 Email: info@fss-esp.com Website: www.fss-esp.com |
| 1.4. Emergency telephone number | POC: Mr. Enzo Perna telephone +39 0141 - 945628 e.perna@fss-esp.com |

| SECTION 2: Hazard Identification | | | | | |
|---|-------------------|------------|-----------|---|-------------------------------|
| 2.1. Classification of the substances or mixture | | | | | |
| Index # | Component | CAS NUMBER | EC NUMBER | CLP Classification Regulation EEC no. 1272/2008 | DSD Classification 67/548/EEC |
| // | Potassium Nitrate | 7757-79-1 | 231-818-8 | 2.14/3 Ox. Sol.3 H272 | O; Oxidizer |
| // | DCDA | 461-58-5 | 207-312-8 | // | // |
| // | Organic resin | 9003-35-4 | 500-005-2 | // | // |
| Adverse physicochemical, human health and environmental effects: No other hazards | | | | | |
| 2.2. Label elements | | | | | |
| Pictogram: GHS03 | | | | | |
|  | | | | | |
| Hazard Class and Category: Oxidizing solid, hazard category 3 | | | | | |
| Signal Word: Warning | | | | | |
| Hazard Statement: H272: may intensify fire; oxidizer | | | | | |

General Statements:

- P102 Keep out of the reach of children
- P103 Read label instructions before use

Precautionary Statement Prevention:

- P210 Keep away from heat/sparks/open flames/hot surfaces. — Do not smoke.
- P221 Take any precaution and keep away from combustible material
- P243 Avoid electrostatic loads
- P250 Avoid crash and strike
- P273 Do not waste the product and/or the casing

Precautionary Statement Response: Fluid Aerosol

- P302+P350+P313 In case of skin contact: may cause redness or irritation. Rinse cautiously with running water. If skin irritation occurs get medical advice/attention.
- P304+P340+P313 In case of inhalation: remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention for any breathing difficulty.
- P305+P351+P313 In case of eye contact: may cause redness or irritation. Rinse cautiously with running water for several minutes. If eye irritation persists, get medical advice/attention.
- P314 Seek medical attention for further treatment, observation, and support if necessary.
- P370+P380 In the event of a fire, evacuate the area and inform emergency services.
- Ignition of FSS Fire Suppression Systems produces a fire suppression aerosol.
- P370+P378 Water may be used as an additional suppression agent, as well as powder extinguisher and/or CO2 extinguisher.

Precautionary Statement Disposal:

- P501 Disposal should be in accordance with applicable national, state and local environmental control regulations.

2.3. Other Hazards

No other hazards

SECTION 3: Composition, Information on Ingredients

| 3.1. Identification | CAS # | EC # | CLP Classification Regulation EEC no. 1272/2008 | DSD Classification 67/548/EEC | % | Comments |
|---------------------|-----------|-----------|--|-------------------------------|-----|---|
| Potassium Nitrate | 7757-79-1 | 231-818-8 | GHS03 Wng 2.14/3 Ox. Sol.3 H272 EUH 210 | O; Oxidizer | ≥43 | Components are blended and pressed into a highly stable, molded form. Molded composition is contained within an aluminum-steel housing. |
| DCDA | 461-58-5 | 207-312-8 | // | // | ≥32 | No environmental exposure |
| Organic resin | 9003-35-4 | 500-005-2 | // | // | ≥25 | |

Extinguishing Charge:

Composition of the extinguishing charge is contained within a sealed aluminum casing.
Polymerized mixture of Organic and Inorganic Salts

| | |
|--|--|
| Discharge time: Fluid Aerosol: PBT vPvB | From 50sec to 100sec (\pm 10% tolerance) Particulates of Potassium Salts, Nitrogen and Water Vapor N/A N/A |
| 3.2. Other denomination: | Portable Condensed aerosol fire extinguisher |

SECTION 4: First Aid Measures

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| 4.1. Description of first aid measures Body Skin Contact / Eye Contact | Extinguishing charge: None. Contact is impossible when the flame inhibitor is assembled. Do not touch the tube of the dispenser during/after use. Medical attention is unnecessary. Fluid Aerosol: after contact, wash/flush immediately with running water. Medical attention is necessary in case of direct contact burns |
| 4.2. Most important symptoms and effects, both acute and delayed | No information available. |
| 4.3. Indication of any immediate medical attention and special treatment needed | Seek medical attention for further treatment, observation and support, if necessary. |

SECTION 5: FIRE-FIGHTING MEASURES

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| 5.1. Extinguishing media Suitable extinguishing media: Water. Carbon dioxide (CO ₂) CO ₂ or Dry chemical fire extinguishers. | |
| 5.2. Special hazards arising from the substance or mixture Flammability of the product | Do not inhale combustion gases. Beginning of self-ignition phenomena over 300°C. Medical attention is unnecessary. In the event of a fire, evacuate the area and inform emergency services. Ignition of FSS - Fire Suppression Systems produces a fire suppression aerosol. |
| 5.3 Advice for fire-fighters | No specific measures are required as the product itself is a fire fighting agent. Use breathing apparatus if required |

SECTION 6: Accidental Release Measures

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| 6.1. Personal precautions, protective equipment, and emergency procedures | |
| 6.2. Environmental precautions No particular action: the emission of the extinguishing charge when the fire suppressant is assembled is impossible, as it is inert material. See protective measures under point 7 and 8. | |
| 6.3. Methods and material for containment and cleaning up If the devices come out from packaging, they can be safely recovered by hand and should be inspected for damage prior to repacking. Suspect or damaged articles should be labelled and consigned for correct disposal. | |

6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Normal attention in handling.

In case of unintentional activation of the fire suppressant, wait for the complete aerosol discharge and ventilate the area.

Avoid the direct contact of the product with open flames.

7.2. Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in an environment not exposed to sunlight/rain. Keep dry.

Prevent product temperatures above 80 °C and below -50 °C.

Avoid shock, electric currents, static discharge, excessive heat, and extended periods of storage at temperature greater than 80°.

Medical attention is unnecessary.

7.3 Specific end use(s)

None in particular

SECTION 8: Exposure Controls, Personal Protection

8.1 Control parameters

Potassium nitrate - Index: N/A, CAS: 7757-79-1, EC No: 231-818-8

DCDA - Index: N/A, CAS: 461-58-5, EC No: 207-312-8

Organic Resin - Index: N/A, CAS: 9003-35-4, EC No: 500-005-2

TLV TWA: N.A.

8.2 Exposure controls

Respiratory protection

Ventilate area completely after discharge. Do not enter the area prior to complete venting of enclosures. Use filter mask as necessary during clean-up

Hand protection

Wear gloves if necessary

Eye protection

Safety glasses are advisable if necessary

Skin protection

N/A

Personal protection:

No individual protection.

Stick to the instructions legible on the product and inside each packaging box.

Occupational exposure limits:

No specific occupational exposure limit.

Environmental exposure controls:

No information available.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance and odor of aerosol:

Beige to white in color.

Auto-ignition temperature:

Odorless.

about 350°C

Solubility in water:

Slightly soluble

Appearance of device:

steel cylinder High up to 330 mm in length and of mm 33 diameter

Extinguishing charge physical state:

from 20°C solid to 0°C solid (from 62°F solid to 32°F)

Usability Temperature:

-140°F to +320°F

Granulometry:

From 2 to 4 microns

Steam:

None

Conductivity:

Nonconductor

Fluid Aerosol physical state:

Gaseous

Exit temperature:

high, safety distance from supply source 1mt

9.2. Other information

| | |
|-------------------------|---------------------------------|
| Conductivity | Nonconductor up to 100.000 Volt |
| Electrostatic Discharge | None |
| Usability Humidity | up to 98 % U.R |
| Corrosiveness | None |
| Thermal Shock | None |
| Residue after use | Negligible |

SECTION 10: Stability and Reactivity

10.1 Reactivity.

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

10.2 Chemical stability.

The product is stable under normal storage and temperature conditions.

10.3 Possibility of hazardous reactions.

None identified. During use no dangerous decomposition products are produced.

10.4 Conditions to avoid.

No specific data

10.5 Incompatible materials

10.6 Hazardous decomposition products:

None

Note: These devices are extremely stable below 125°C. They should be protected from fire, sources of electrical power, shock, and high temperatures.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Toxic by-products of combustion are extremely low.

Main by-products are listed below with 15-minute TWA values for a concentration of 50gr/m3:

| Gas | 15-minute Time Weighted Average in parts per million |
|------------------------|--|
| CO (carbon monoxide) | 57 ppm |
| NOx (nitrogen dioxide) | <5 ppm |
| Aerosol (particulates) | 8,5 mg/m3 |

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.

Carcinogenicity : No known significant effects or critical hazards.

Reproductive toxicity : 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.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data

Skin contact No specific data.

Ingestion No specific data

Inhalation No specific data.

Delayed and immediate effects and also chronic effects from short- and long-term exposure: N/A

SECTION 12: Ecological Information

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|--|---------------------------|
| 12.1 Toxicity | |
| These devices present no ecological hazards. | |
| 12.1.1. The aerosol produced after ignition has the following characteristics: | |
| ODP Ozone Depletion Potential = 0 | |
| GWP Global Warming Potential = 0 | |
| ATL Atmospheric Lifetime = negligible | |
| 12.2. Persistence and degradability | No information available. |
| 12.3. Bio accumulative potential | No information available |
| 12.4. Mobility in soil | No information available |
| 12.5. Results of PBT and vPvB assessment | |
| No PBT information available. | |
| No vPvB information available | |
| 12.6. Other adverse effects | No information available. |

SECTION 13: Disposal Considerations

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| 13.1. Waste treatment methods | |
| Disposal should be in accordance with applicable national, state and local environmental control regulations. | |

SECTION 14: Transport Information

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| 14.1. UN Code Number ADR-RID-AND-IMDG-IATA | UN 3178 |
| 14.2. Name of UN ADR-RID-AND-IMDG-IATA | Flammable solid, inorganic, n.o.s. |
| 14.3. Hazard Class ADR-RID-AND-IMDG-IATA | Classification 4.1 |
| 14.4 Packing Group ADR-RID-AND-IMDG IATA | III Passenger aircraft rail: 25kg Cargo aircraft: 100kg |
| 14.5. Environmental hazards Environment Marine pollutant | NONE NO |
| 14.6. Special precautions for user | The goods should be transported in the original packaging and in any case in packagings made of material resistant to their content and not likely to generate reactions. |
| 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable |

SECTION 15: Other Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Dir. 67/548/EEC (Classification, packaging and labelling of dangerous substances).
Dir. 99/45/EEC, (Classification, packaging and labelling of dangerous preparations).
Dir. 98/24/EC (Risks related to chemical agents at work). Dir. 2000/39/EC (Occupational exposure limit values);
Dir. 2006/8/CE.
Regulation (CE) n. 1272/2008 (CLP)

15.2. Chemical Safety Assessment
Information N/A.

SECTION 16: Other Information

- Customs Tariff Number 8424.10.00

Main bibliographic sources:

- ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
- Analysis and test report by the Polytechnic of Turin, Science of Material & Chemical Engineering Department
- GOST R 53285-2009" Fire equipment generators of fire extinguishing aerosol portable technical requirements. Test methods"

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

ATL: Atmospheric Lifetime

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CLP: Classification, Labeling, Packaging. Regulation No. 1272/2008.

DCDA: Dicyandiamide

DSD: Directive 67/548/EEC.

EINECS: European Inventory of Existing Commercial Chemical Substances.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

GWP: Global Warming Potential

HS Code: Harmonized System Code

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO: International Civil Aviation Organization.

IMDG: International Maritime Code for Dangerous Goods.

N/A.: Not available

ODP: Ozone Depletion Potential

PBT: Persistent bio accumulative and Toxic

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.

TLV: Threshold Limiting Value.

TWATLV: Threshold Limit Value for the Time Weighted Average 8-hour day. (ACGIH Standard).

vPvB: Very Persistent and very bio accumulative

Comply with Manufacturer's installation and maintenance procedures

EUH210: Safety data sheet available on request.



MSDS Date: 23/3/2022 Rev. No 10

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| Validated and verified by | Mr. Enzo Perna, Quality Mgr. |
| Revision #10 | March 23, 2022 |

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