

SAFETY DATA SHEET



Safety Data Sheet according to
1907/2006/EC (REACH), Article 31 and Annex II
Product name: **FireAde 2000 - Fire Fighting Agent**
Date of issue: 12 Sept. 2008
Date of last revision:

FIRST VALUE HOLDINGS Ltd.

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SECTION 1: Product and Company Identification

Trade name: **FireAde 2000 - Fire Fighting Agent**

Product utilisation: As a 0.5% up to 1% additive to water used in fire-fighting, to reduce surface tension. It is suitable for use in fighting fires of class A (generally combustible substances, tested by the MPA Dresden) and class B (inflammable liquids, tested by the MPA Dresden). Particular suitable for fighting fires of organic fluids such as petrol, kerosine, alcohols etc. In order to maximise foam extinguisher the product may also be used as a 3% or 6% additive to water used in fire-fighting. As a 6% or 10% additive to water used in fire-fighting the product is also suitable to cool and extinguish alkaline-earth metal fires and fires class F (edible oil, edible fat).

Manufacturer/Supplier: **FIRST VALUE HOLDINGS LIMITED**
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Person in charge: Mrs. Christiane Sotiriou (speaks English)
phone, fax and e-mail as aforementioned

SECTION 2: Hazards Identification

2.1 Classification: None

2.2 Information pertaining to particular dangers to man and the environment:

The product may cause eye and slight skin irritations. If large amounts are ingested the product may cause nausea and diarrhea. The product contains a component at a concentration of less than 0.04% which is sensitizing for the skin. At the application concentrations up to 10% of the concentrate no harmful effects are to be expected.

Not combustible. Combustible after evaporation of the water.

Low toxicity for water organisms,

SECTION 3: Composition / Information on Ingredients

Characterization: Aqueous concentrate of soaps and a dihydric alcohol

Hazardous ingredients:

<i>Common or chemical name</i>	<i>CAS-No.</i>	<i>EINECS-No.</i>	<i>Hazard symbol</i>	<i>R-Phrases</i>	<i>Percentage by weight</i>
2-Methyl-2,4-pentanediol	107-41-5	203-84-0	Xi	36/38	< 8

Synonyms: Hexlene glykol; 2,4-Pentanediol, 2-methyl-; 1,1,3-Trimethyltrimethylenediol

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<i>Common or chemical name</i>	<i>CAS-No.</i>	<i>EINECS-No.</i>	<i>Hazard symbol</i>	<i>R-Phrases</i>	<i>Percentage by weigh</i>
Polyethylene glycol, nonyl, decyl, undecyl ether <i>Synonyms: C9-11 Pareth-3 (-4, -5); Alkyl (C9-11), ethoxylated</i>	68439-46-3	not existent	Xn	22-36	< 2
Sodium decyl sulfate <i>Synonyms: Sulfuric acid, monodecyl ester, sodiumsalt</i>	142-87-0	205-568-5	Xn	22-38-41	< 0.8

Wording of R-phrases see SECTION 16

Note: The identity of the component which is sensitizing for the skin (refer to SECTION 2.2) will be disclosed on demand by a physician.

Other ingredients:

<i>Common or chemical name</i>	<i>CAS No.</i>	<i>EINECS No.</i>	<i>Chemical nature</i>	<i>Percentage by weight</i>
Sodium octyl sulfate	142-31-4	205-535-5	Soap	< 8
Water	7732-18-5	231-791-2	No comment	< 80

SECTION 4: First Aid Measures

General information: The following information is only relevant for the product upon delivery (concentrate). At the concentrations of application up to 10% no first-aid measures are expected to be necessary.

Inhalation of aerosols: If irritations occur immediately move the affected person into fresh air. If symptoms persist seek medical attention. (Not relevant for vapours, because it is almost only water which evaporates.)

Skin: Wash skin with plenty of water and soap. Change contaminated clothing. If symptoms persist seek medical attention.

Eyes: Rinse with plenty of water for at least 15 minutes. Seek medical attention.

Ingestion: If the patient is conscious have him rinse his mouth with water, spit it out and then have him drink water. Seek medical attention. Occurance of symptoms may be delayed.

Information for doctor: If injured skin is contaminated on a large scale apply polyethylene glycol (e. g. Lutrol, PEG 400), leave it on for some minutes and then wash with water.

SECTION 5: Fire Fighting Measures

General information: The product is a fire-fighting agent. Use a fire-fighting agent that is suitable for the burning materials.

Extinguishing agents: Dependent on burning materials.

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Not suitable extinguishing agents for safety reasons: Dependent on burning materials.

Special exposure hazards: Dependent on burning materials.

Special protective equipment for fire-fighters: Dependent on burning materials.

Further notice: The product is tested as an additive to water used in fire-fighting.

SECTION 6: Accidental Release Measures

Personal precaution: If aerosols are generated use fine dust respirator (P2 or P3) or a ventilated breathing hood.

Environmental precaution: Do not discharge the product into surface water, groundwater or soil.

Methods for cleaning up: Withdraw large quantities. Take up the rest with liquid-absorbent material (sand, clay, cat litter or other adsorbent material for water). Discharge contaminated material according to SECTION 13.

SECTION 7: Handling and Storage

Handling: Avoid contact with skin and eyes.

Notes for prevention of fire and explosion: Not applicable

Storage: Keep containers closed. Store between 1°C to 49°C in well-ventilated area. Shield from solar radiation and heat. German VCI-class of storage: 12.

SECTION 8: Exposure Controls / Personal Protection

8.1 *Technical protection:* Avoid the generation of aerosols from the concentrate.

8.2 *Occupational exposure limit values:*

Note: If no European exposure limit value exists, the former German maximum concentration in the workplace (MAK, TRK) including the associated short time limit values are stated. They are not mandatory any more, but it is recommended to comply with.

2-Methyl-2,4-pentanediol

- CAS-No.:	107-41-5
- Exposure limit value:	49 mg/m ³ (10 ml/m ³)
- Short term limit value:	98 mg/m ³ (15-minute average, 4 measurements at intervals of 1 hour)
- BLV:	None
- Origin:	Not mandatory recommendation of the MAK-Commission of Germany
- Remarks:	None.
- Year:	2008

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Explanations:

- BLV: Biological limit value
- Remarks:: H : Substances effective by resorption through skin
S = Sensitizing substance
Y or C: There is no teratogenic risk if the exposure limit value and the BLV are maintained.

8.3 Personal Protection:

Adjust personal protective equipment to the type of burning materials. Use a fine dust respirator at least. Use eye protection if handling the concentrate.

The following protection measures apply to the product upon delivery (concentrate).

- Respiratory protection:** If aerosols are generated use fine dust respirator (P2 or P3) or a ventilated breathing hood.
- Hand protection:** If contact with hands cannot be avoided use protection gloves tested according to DIN EN 374. Seek advice from manufacturers of protection gloves. If gloves cannot be used for safety reasons (e. g. while working at rotating machines) use skin-protective barrier cream. Consult the company medical officer for the type of barrier cream to be used.
Comment: In contrary to the European ordinance 1907/2006/EC (REACH), it is not sufficient to specify only the protective glove material. The break-through-times are dependent not only on the material but also on the manufacturing technique. It is therefore essential to consult the manufacturers of protective gloves. For this product rubber or plastic gloves are generally sufficient.
- Eye protection:** Safety glasses with side shield.
- Skin protection:** Use waterproof protective clothing and gumboots if contamination of clothing cannot be avoided.
- General protective measures:** Avoid contact with eyes and skin. Change contaminated clothing immediately.
- Industrial hygiene:** Do not eat, drink, smoke or take snuff at work.

SECTION 9: Physical and Chemical Properties

9.1 Appearance

- Physical state:** Liquid.
- Colour:** Transparent, slightly red.
- Odour:** Faint pleasant odour.

9.2 Relevant data for Safety and Health for the product (concentrate):

- Melting point/ range:** -1°C
- Boiling point / range:** 127°C
- Flash range:** No inflammability
- Ignition temperature:** Not applicable
- Autoignition temperature:** Not applicable

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<i>Explosive range:</i>	Not applicable
<i>Vapour pressure:</i>	Almost like water
<i>Substance weight:</i>	1.011 g/ml
<i>Bulk density:</i>	Not applicable
<i>Solubility in water:</i>	Miscible
<i>pH-Value:</i>	8.0 (Will be lowered by carbon dioxide from air.)
<i>Volatile components:</i>	Water
<i>Solubility in other solvents:</i>	Not determined
<i>Partition coefficient n-octanol/water:</i>	Not determined
<i>Kinematic viscosity:</i>	2.23 mm ² /sec at 20°C and 4.74 mm ² /sec at 5°C, respectively
<i>Surface tension:</i>	Product: 0.0162 +/- 0.002 N/m (16.2 +/- 2 dyn/cm) 1% aqueous solution: 0.029 +/- 0.002 N/m (29 +/- 2 dyn/cm) 3% aqueous solution: 0.026 +/- 0.002 N/m (26 +/- 2 dyn/cm) 6% aqueous solution: 0.022 +/- 0.002 N/m (22 +/- 2 dyn/cm)
<i>Interfacial tension:</i>	Not determined

SECTION 10: Stability and Reactivity

<i>Thermal decomposition:</i>	Not determined
<i>Substances to be avoided:</i>	Strong oxidizing agents.
<i>Dangerous reactions:</i>	No dangerous reactions are known.
<i>Hazardous decomposition products:</i>	After evaporation of water: carbon monoxide, carbon dioxide, different hydrocarbons and sulfur compounds, mainly sulfur dioxide when burning.
<i>Dangerous polymerisations:</i>	None.

SECTION 11: Toxicological Information

11.1 Product	Only few information on the toxicity of the product is available (refer to a letter of the Hygiene-Institut des Ruhrgebietes dated 04 th Aug. 2008). On the basis of the toxicities of the ingredients the following toxicities of the product are to be expected:
<i>Acute toxicity:</i>	The product may cause eye and slight skin irritations, and nausea and diarrhea if large amounts are swallowed. No toxic effects are to be expected if industrial hygiene standards are maintained.
<i>Acute oral toxicity:</i>	LD ₅₀ (rat, oral): > 2000 mg/kg (Hygiene-Institut des Ruhrgebietes)
<i>Acute inhalative toxicity:</i>	No data.
<i>Acute dermal toxicity:</i>	At a patch-test the pure component 2-Methyl-2,4-pentanediol caused already skin reactions of some patients with eczema at a concentration of 1% (GESTIS).
<i>After inhalation:</i>	We have no information on symptoms resulting from aerosol inhalation. The vapour pressure of all other components is negligible in comparison to the water component.
<i>After skin contact:</i>	Slight irritations are possible.
<i>After eye contact:</i>	Irritations are possible.

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After ingestion: We have no information on symptoms resulting from ingestion. On the basis of the component 2-Methyl-2,4-pentanediol nausea and diarrhea are to be expected if large amounts of the product are swallowed.

Sensitization: No sensitizing effects are known.
Mutagenicity: No mutagenic effects are known.
Cancer: No carcinogenic effects are known.
Reproductive toxicity: No toxic effects on reproduction are known.

Toxic effects after repeated exposure (subacute to chronic toxicity):

No information available.

Further Information: The product contains a further component at a concentration less than 0.04% which is sensitizing for the skin (refer to SECTION 2.2 and 3).

Practical experience: There are no reports of symptoms of poisoning after using the product.

11.2 Animal based data for the pure components:

11.2.1 2-Methyl-2,4-pentanediol

LD₅₀ (different rodents, oral): 2500 - 5000 mg/kg (GESTIS)
LD₅₀ (rabbit, dermal): > 7.5 - 12.5 mg/kg (24 h contact, GESTIS)

11.2.2 Polyethylene glycol, nonyl, decyl, undecyl ether

LD₅₀ (rat, oral): 1378 mg/kg (ChemIDplus: J. of the American Collage of Toxicology, Vol. 10, p. 427, 1997)
LD₅₀ (rabbit, dermal): > 2000 mg/kg (as aforementioned)

11.2.3 Sodium decyl sulfate

LD₅₀ (Ratte, oral): 1950 mg/kg (ChemIDplus and MSDS of the company Solberg, Norway)

11.2.4 Sodium octyl sulfate

LD₅₀ (Ratte, oral): 3200 mg/kg (Merck: RTECS)

SECTION 12: Ecological Information

12.1 Product upon delivery (concentrate):

Ecotoxic effects: The product is water polluting (WGK 2) according to the German WHG (federal water act). The product may be used for fighting forest fires up to a concentration of 0.5% without affecting soil biota (Tests of the Hygiene-Institut des Ruhrgebietes). No further information is available.

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Ecotoxic data:

Fish toxicity: EC₀: 20 mg/l / 48 h (Bericht -Nr. [report No.] 424-222750/110675/2.000 dated 4th March 2002 by TÜV Produkt und Umwelt GmbH, Köln, Germany)
EC₅₀: 40 mg/l / 48 h (as aforementioned)

Further information: None

12.2 Information on the **pure ingredients**:

12.2.1 2-Methyl-2,4-pentanediol:

Ecotoxic effects: Readily biodegradable. No bioaccumulation is to be expected.

Ecotoxic data:

Fish toxicity: Gambusia affinis: LC₅₀: 8,510 mg/l / 98 h (Merck)
Daphnia toxicity: Daphnia magna: EC₅₀: 3,200 mg/l / 48 h (Merck)
Bacterial toxicity: Photobacterium phosphoreum: EC₅₀: 3,028 mg/l / 5 min (Merck)

Further information:

Biodegradation: > 70% / 28 d (Zahn-Wellens-test)

Distribution: log Pow: 0.58 (calculated, Merck)

WGK (Water Pollution category, Germany): 1 (slightly water polluting), VwVwS, annex 3, identification no.: 5025

12.2.2 Polyethylene glycol, nonyl, decyl, undecyl ether:

Ecotoxic effects: No information available.

Ecotoxic data:

Fish toxicity: LC₅₀: 9 mg/l / 98 h (MSDS of Deverochema, Czech Republic)
Daphnia toxicity: EC₅₀: 21 mg/l / 48 h (as aforementioned)
Algae toxicity: EC₅₀: 100 mg/l / 72 h (as aforementioned)

Further information:

WGK (Water Pollution category, Germany): 2 (water polluting), VwVwS, annex 3, self-rating

12.2.3 Sodium decyl sulfate:

Ecotoxic effects: Readily biodegradable. No bioaccumulation is to be expected.

Ecotoxic data: No information available.

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Further information:

WGK (Water Pollution category, Germany): 2 (water polluting), VwVwS, annex 2, identification no.: 664

12.2.4 Sodium octyl sulfate:

Ecotoxic effects: Readily biodegradable. No bioaccumulation is to be expected.

Ecotoxic data: No information available.

Further information:

WGK (Water Pollution category, Germany): 2 (water polluting), VwVwS, annex 2, identification no.: 664

12.3 For the application concentration of 3% the following data are available:

Ecotoxic effects: Readily biodegradable. No adverse effects to sewage plants are to be expected (TTC-test by the Hygiene-Institut des Ruhrgebietes).

Ecotoxic data for the 3% aqueous solution:

Fish toxicity: LC₅₀: 1,330 mg/l (Estimation by the Hygiene-Institut des Ruhrgebietes based on the data of the concentrate)

Daphnia toxicity: EC₅₀: 26,000 mg/l / 48 h (Hygiene-Institut des Ruhrgebietes: tested according to TG OECD 202)

Algal toxicity: EC₅₀: 63,390 mg/l / 72 h (Hygiene-Institut des Ruhrgebietes: tested according to TG OECD 201)

EC₂₀: 18,830 mg/l / 72 h (as aforementioned)

EC₁₀: 9,950 mg/l / 72 h (as aforementioned)

Further information:

COD (3% solution): 9,680 mg O₂ / l (Hygiene-Institut des Ruhrgebietes)

BOD₅ (3% solution): 1,920 mg O₂ / l (= 19,8%) (Hygiene-Institut d. R.: MITI-test)

Biodegradability: 87% / 25 d (Hygiene-Institut des Ruhrgebietes)

WGK (Water Pollution category, Germany): 1 (slightly water polluting), VwVwS, annex 3, self-rating

Do not allow the product to enter water supplies, waste water or soil.

SECTION 13: Disposal Considerations

13.1 *Product:* Previous to recovery the product should be pretreated to remove the water. For disposal the product has to be supervised.

Waste code: 16 10 04

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Waste name: Aqueous concentrates with the exception of those included under waste code 16 10 03*

13.2 Wastes contaminated by the product (adsorbent materials, protective clothing):

Waste code: 15 02 03
Waste name: Adsorbent and filter materials, wipes and protective clothing with the exception of those included under waste code 15 02 02*

13.3 Packing materials (completely emptied):

- a) Packing materials made of plastics:
Waste code: 15 01 02
Waste name: Packing materials made of plastics
- b) Packing materials made of metal:
Waste code: 15 01 04
Waste name: Packing materials made of metal

13.4 1 to 3% aqueous solution of the product:

An aqueous solution of the concentrate (product upon delivery) up to 3% may be discarded to the sewage system mixed with other waters at a ratio of 1 : 11, respectively.

Waste-codes in accordance with the European Waste Register ordinance.

SECTION 14: Transport Information

The product is not classified under international transport regulations.

SECTION 15: Regulatory Information (EC Directive 67/548 including the 29th conformity)

15.1 There are no safety reports according to 1907/2006/EC (REACH) available.

15.2 *EEC Classification:* None

15.3 *EEC Labeling:*

Safety-phrases: 24/25 Avoid contact with skin and eyes

15.4 *National Regulations, Germany:*

15.4.1 *Special regulations from the Gefahrstoffverordnung:* None. Schutzgruppe (protection group): 1

15.4.2 *StörfallV:* Not applicable

15.4.3 *TA-Luft:* Clause 5.2.5: Organic substances apart from particulate matter: max. mass concentration: 50 mg/m³ or max. mass flow: 0.50 kg/h (calculated as total carbon)

15.4.4 *VCI Storage Class:* 12

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15.4.5 *WHG:* Water polluting (German Water Pollution Category 2)

15.4.6 *Volatile components:* Water

15.5 *Further regulations
and restrictions:* None

SECTION 16: Other Information

R-Phrases of SECTION 3:

R 36/38 Irritating to eyes and skin
R 22 Harmful if swallowed
R 36 Irritating to eyes
R 38 Irritating to skin
R 41 Risk of serious damage to eyes

Abbreviations:

BOD: Biochemical oxygen demand
ChemIDplus: Database of the United States National Library of Medicine
COD: Chemical oxygen demand
EINECS: European Inventory of Existing Commercial Substances
GESTIS: Data base of Berufsgenossenschaftliches Institut für Arbeitsschutz, Germany
MAK: Maximale Arbeitsplatzkonzentration (maximum concentration in the workplace, out of date)
Merck: Actuel MSDS of Merck, Darmstadt, Germany
MITI: Ministry of International Trade and Industry, Japan
MSDS: Material Safety Data Sheet
OECD: Organisation for Economic Co-operation and Development
RTECS: Register of Toxic Effects of Chemical Substances
TG: Test-Guideline
TOC: Total organic carbon
TRK: Technische Richtkonzentration (technical concentration in the workplace to comply with [for cancerogenic substances], out of date)
TTC: 2,3,5-Triphenyl, tetrazoliumchloride
VCI: Verband der Chemischen Industrie e.V. (Chemical Industry Association, Germany)
VwVwS: Ordinance on water polluting substances, Germany
WHG: Wasserhaushaltsgesetz (German Federal Water Act)

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered in good faith in the belief that it is accurate. This material safety data sheet shall not be deemed to constitute or imply any warranty of any kind. In the event of an adverse incident associated with this material, this safety data sheet is not intended as a substitute for consultation with appropriately trained personnel (refer to section 1). Nor is this safety data sheet intended to be a substitute for any product literature which may accompany the finished product.