

Section 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Trade name or designation of the mixture	Tridol S1
Identification Number	Not applicable.
Registration number	-
Synonyms	Aqueous Film Forming Foam (AFFF)
Product code	130-05
Date of first issue	07-October-2010
Version number	02
Revision date	03-December-2014
Supersedes date	07-October-2010

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

Identified uses	Fire fighting foam concentrate.
Uses advised against	None known.

Details of the supplier of the safety data sheet**Supplier**

Company name	Angus Fire Ltd
Address	Station Road Bentham, Lancashire, LA2 7NA
e-mail	Email: general.enquiries@angusuk.co.uk

SDS number

-

Reference number

Not available.

Manufacturer/Supplier

Angus Fire Ltd
Station Road
Bentham, Lancashire, LA2 7NA
general.enquiries@angusuk.co.uk
0044 (0)15 2426 4000
Contact person: EH&S Manager

Emergency

0044 (0)15 2426 4000 (Standard office hours: Monday to Friday 8:30am - 4:30pm GMT)

Section 2: Hazards identification**Classification of the substance or mixture****Classification according to Directive 67/548/EEC or 1999/45/EC as amended****Classification** Xi;R36**Classification according to Regulation (EC) No 1272/2008 as amended****Health hazards**

Serious eye damage/eye irritation Category 2 Causes serious eye irritation.

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	Irritating to eyes. Occupational exposure to the substance or mixture may cause adverse health effects.
Environmental hazards	Not classified for hazards to the environment.
Specific hazards	May cause skin irritation. May cause respiratory tract irritation. May cause damage to the kidneys. May cause central nervous system effects.
Main symptoms	Symptoms can include irritation, redness, scratching of the cornea, and tearing. Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Label elements**Label according to Regulation (EC) No. 1272/2008 as amended****Contains:** 2-(2-butoxyethoxy)-ethanol, Cocoamido propyl betaine



Signal word	Warning
Hazard statements	Causes serious eye irritation.
Precautionary statements	
Prevention	Wear eye/face protection. Wash hands thoroughly after handling.
Response	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage	Store away from incompatible materials.
Disposal	Dispose of waste and residues in accordance with local authority requirements.
Supplemental label information	Not applicable.
Other hazards	Not a PBT or vPvB substance or mixture.

Section 3: Composition/information on ingredients

Mixture

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
2-(2-butoxyethoxy)-ethanol	20 - 40	112-34-5 203-961-6	-	603-096-00-8	#
Classification:	DSD: Xi;R36				
	CLP: Eye Irrit. 2;H319				
Ethylene glycol	10 - 20	107-21-1 203-473-3	-	603-027-00-1	#
Classification:	DSD: Xn;R22				
	CLP: Acute Tox. 4;H302				
Cocoamido propyl betaine	1 - 1,5	61789-40-0 263-058-8	-	-	
Classification:	DSD: Xi;R41, N;R50				
	CLP: Eye Dam. 1;H318, Aquatic Acute 1;H400				
Water	Balance	7732-18-5 231-791-2	-	-	
Classification:	DSD: -				
	CLP: -				

#: This substance has workplace exposure limit(s).

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.

Composition comments	The full text for all R-phrases is displayed in Section 16. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
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Section 4: First aid measures

Description of first aid measures

Inhalation	Move injured person into fresh air and keep person calm under observation. Get medical attention, if needed.
Skin contact	Wash the skin immediately with soap and water. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart. Get medical attention if irritation persists after washing.
Ingestion	Immediately rinse mouth and drink plenty of water. Keep person under observation. If person becomes uncomfortable take to hospital along with these instructions. Only induce vomiting at the instruction of medical personnel.

Most important symptoms and effects, both acute and delayed Symptoms include itching, burning, redness, and tearing of eyes. Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically.

Section 5: Firefighting measures

General fire hazards Product is an extinguishing media. It does not burn or support combustion.

Extinguishing media

Suitable extinguishing media No specific measures are required as this product is a fire extinguishing medium.

Unsuitable extinguishing media Not applicable.

Special hazards arising from the substance or mixture Not a fire hazard.

Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Special firefighting procedures No specific precautions.

Section 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Avoid contact with skin and eyes. Avoid inhalation of mists or aerosols. Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet.

For emergency responders Use personal protection recommended in Section 8 of the SDS.

Environmental precautions For large (industrial) releases, prevent spill from entering a waterway.

Methods and material for containment and cleaning up Absorb spillage with suitable absorbent material. Collect and dispose of spillage as indicated in Section 13.

Reference to other sections For personal protection, see Section 8.
For waste disposal, see Section 13.

Section 7: Handling and storage

Precautions for safe handling Avoid contact with skin and eyes. Wear appropriate personal protective equipment. Wash hands after handling. Read and follow manufacturer's recommendations. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store in original tightly closed container. Store at temperature below 40°C. Store above freezing. Read and follow manufacturer's recommendations. Store away from incompatible materials.

Specific end use(s) Fire fighting foam concentrate.

Section 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Austria. MAK List

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	MAK	97,5 mg/m ³
	STEL	10 ppm 15 ppm
Ethylene glycol (107-21-1)	Ceiling	101,2 mg/m ³
		20 ppm
	MAK	52 mg/m ³ 26 mg/m ³ 10 ppm

Belgium. Exposure Limit Values.

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	101,2 mg/m ³	
	TWA	15 ppm	
		10 ppm 67,5 mg/m ³	

Belgium. Exposure Limit Values.

Components	Type	Value	Form
Ethylene glycol (107-21-1)	STEL	40 ppm	Aerosol
		104 mg/m3	Aerosol
	TWA	52 mg/m3	Aerosol
		20 ppm	Aerosol

Czech Republic. OELs. Government Decree 361

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	Ceiling	100 mg/m3
	TWA	70 mg/m3
Ethylene glycol (107-21-1)	Ceiling	100 mg/m3
	TWA	50 mg/m3

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	VLE	101,2 mg/m3	
		15 ppm	
		10 ppm	
Ethylene glycol (107-21-1)	VLE	67,5 mg/m3	
		40 ppm	Vapor.
	VME	104 mg/m3	Vapor.
		52 mg/m3	Vapor.
		20 ppm	Vapor.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	AGW	100 mg/m3
Ethylene glycol (107-21-1)	AGW	10 ppm
		26 mg/m3

Greece. OELs (Decree No. 90/1999, as amended)

Components	Type	Value	Form
Ethylene glycol (107-21-1)	STEL	125 mg/m3	Vapor.
		50 ppm	Vapor.
	TWA	125 mg/m3	Vapor.
		50 ppm	Vapor.

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Components	Type	Value
Ethylene glycol (107-21-1)	STEL	104 mg/m3
	TWA	52 mg/m3

Italy. OELs

Components	Type	Value	
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	101,2 mg/m3	
		15 ppm	
		10 ppm	
Ethylene glycol (107-21-1)	TWA	67,5 mg/m3	
		40 ppm	
	STEL	104 mg/m3	
		TWA	52 mg/m3
			20 ppm

Netherlands. OELs (binding)

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	100 mg/m3	
	TWA	50 mg/m3	
Ethylene glycol (107-21-1)	STEL	104 mg/m3	Vapor.
	TWA	52 mg/m3	Vapor.
		10 mg/m3	Mist.

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	TLV	68 mg/m3	
Ethylene glycol (107-21-1)	Ceiling TLV	10 ppm 25 ppm 10 mg/m3	Vapor. Dust.

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	100 mg/m3
Ethylene glycol (107-21-1)	TWA STEL TWA	67 mg/m3 50 mg/m3 15 mg/m3

Hygiene Norm GN 2.2.5.2439-09. Maximum allowable concentration (MAC) of harmful substances in the air of working zones. Executive No. 76 of 30 april 2006. Including Appendixes No.1, 2, 3 and 4.

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	Ceiling	10 mg/m3	Aerosol
Ethylene glycol (107-21-1)	Ceiling TWA	10 mg/m3 5 mg/m3	Vapor and aerosol. Vapor and aerosol.

Spain. Occupational Exposure Limits

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	101,2 mg/m3
Ethylene glycol (107-21-1)	TWA STEL TWA	15 ppm 10 ppm 67,5 mg/m3 40 ppm 104 mg/m3 52 mg/m3 20 ppm

Sweden. Occupational Exposure Limit Values

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	200 mg/m3
Ethylene glycol (107-21-1)	TWA STEL TWA	30 ppm 15 ppm 100 mg/m3 20 ppm 50 mg/m3 25 mg/m3 10 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	101,2 mg/m3
Ethylene glycol (107-21-1)	TWA STEL TWA	15 ppm 10 ppm 67 mg/m3 20 ppm 52 mg/m3 26 mg/m3 10 ppm

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
2-(2-butoxyethoxy)-ethanol (112-34-5)	STEL	15 ppm	
Ethylene glycol (107-21-1)	TWA STEL	101,2 mg/m3 10 ppm 67,5 mg/m3 40 ppm	Vapor.

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
	TWA	104 mg/m ³ 10 mg/m ³ 20 ppm 52 mg/m ³	Vapor. Particulate. Vapor. Vapor.
Recommended monitoring procedures	Follow standard monitoring procedures.		
DNEL	Not available.		
PNEC	Not available.		
Exposure controls			
Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Observe occupational exposure limits and minimise the risk of exposure to a minimum.		
Individual protection measures, such as personal protective equipment			
General information	Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.		
Eye/face protection	Wear approved safety goggles.		
Skin protection			
- Hand protection	Wear suitable gloves. Butyl rubber gloves are recommended. Suitable gloves can be recommended by the glove supplier.		
- Other	Wear suitable protective clothing.		
Respiratory protection	In case of inadequate ventilation: Use respiratory equipment with combination filter, type A2/P2.		
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.		
Hygiene measures	Handle in accordance with good industrial hygiene and safety practices. Routinely wash work clothing and protective equipment to remove contaminants.		
Environmental exposure controls	Contain spills and prevent releases and observe national regulations on emissions. Environmental manager must be informed of all major spillages.		

Section 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Liquid.
Form	Liquid.
Colour	Pale yellow.
Odour	Organic.
Odour threshold	Not available.
pH	6,5 - 8 at 20 °C
Melting point/freezing point	Not available.
Boiling point, initial boiling point, and boiling range	100 °C (212 °F) at 760 mmHg
Flash point	> 98 °C (> 208,4 °F)
Auto-ignition temperature	Not applicable.
Flammability (solid, gas)	Not available.
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Oxidising properties	Not applicable.
Explosive properties	Not applicable.
Explosive properties	Not applicable.
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Relative density	1,06
Solubility	Not available.
Partition coefficient (n-octanol/water)	No data available

Decomposition temperature	Not available.
Bulk density	Not applicable.
Pour point	Not applicable.
Viscosity	14 cSt at 20 °C
VOC (Weight%)	Not available.
Percent volatile	Not available.
Other data	
Flammability	Not applicable.
Other information	No relevant additional information available.

Section 10: Stability and reactivity

Reactivity	The product is stable and non reactive under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Contact with incompatible materials. Excessive heat. Freezing.
Incompatible materials	Alkali metals. Strong oxidising agents. Water reactive materials.
Hazardous decomposition products	Carbon oxides. Sulphur oxides. Hydrogen fluoride. Nitrogen oxides (NOx). Sodium oxides.

Section 11: Toxicological information

General information The information in this section is for the individual ingredients that are expected to contribute to the potential health effects of this product.

Information on likely routes of exposure

Ingestion	May cause dizziness, incoordination, headache, nausea, and vomiting.
Inhalation	May cause mild central nervous system effects.
Skin contact	May cause skin irritation. Prolonged or repeated skin contact may cause drying, cracking, or irritation.
Eye contact	Causes serious eye irritation.

Symptoms Symptoms include itching, burning, redness and tearing. Symptoms may include redness, drying and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity Irritating to eyes. May cause skin and respiratory tract irritation. May cause mild central nervous system effects.

Components

Components	Test results
Ethylene glycol (107-21-1)	Acute Dermal LD50 Rabbit: 9530 mg/kg Acute Oral LD50 Rat: 5,89 g/kg
2-(2-butoxyethoxy)-ethanol (112-34-5)	Acute Dermal LD50 Rabbit: 2700 mg/kg Acute Oral LD50 Rat: 4500 mg/kg
Cocoamido propyl betaine (61789-40-0)	Acute Oral LD50 Rat: 4900 mg/kg

Skin corrosion/irritation	May cause skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory sensitization	No data available
Skin sensitization	Not a skin sensitiser.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available
Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	No data available
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	No data available

Mixture versus substance information None known.

Other information Persons with pre-existing skin disorders may be more susceptible to the effects of the product.

Section 12: Ecological information

Toxicity

Components

Ethylene glycol (107-21-1)

Test results

LC50 Fathead minnow (*Pimephales promelas*): 8050 mg/l 96 hours

2-(2-butoxyethoxy)-ethanol (112-34-5)

LC50 Bluegill (*Lepomis macrochirus*): 1300 mg/l 96 hours

Persistence and degradability

The product is readily biodegradable. COD: 0,945gg-1. BOD: 44% / 5 days.

Bioaccumulative potential

The product is not expected to bioaccumulate.

Mobility

The product is water soluble and may spread in water systems.

Environmental fate - Partition coefficient

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

Not a PBT or vPvB substance or mixture.

Other adverse effects

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Section 13: Disposal considerations

Waste treatment methods

Residual waste

Dispose of waste and residues in accordance with local authority requirements.

Contaminated packaging

Dispose of in accordance with local regulations. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code

16 03 05* Waste codes should be assigned by the user based on the application for which the product was used.

Disposal methods/information

Dispose of waste and residues in accordance with local authority requirements.

Section 14: Transport information

ADR

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

ADN

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code No information available.

Section 15: Regulatory information

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

EU Regulations

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 2037/2000 on substances that deplete the ozone layer, Annex II

Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3

Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V

Not listed.

Directive 96/61/EC concerning integrated pollution prevention and control (IPPC): Article 15, European Pollution Emission Registry (EPER)

Not listed.

Regulation (EC) No. 1907/2006, Article 59(1). Candidate List

Not listed.

National regulations Not available.
Chemical safety assessment No Chemical Safety Assessment has been carried out.

Section 16: Other information

List of abbreviations DNEL: Derived No-Effect Level. PNEC: Predicted No-Effect Concentration. PBT: Persistent, bioaccumulative and toxic. vPvB: Very Persistent and very Bioaccumulative.

References US. IARC Monographs on Occupational Exposures to Chemical Agents
EPA: Acquire database
NLM: Hazardous Substances Data Base
ACGIH

Information on evaluation method leading to the classification of mixture The mixture is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

Full text of any statements or R-phrases and H-phrases under Sections 2 to 15
R22 Harmful if swallowed.
R36 Irritating to eyes.
R41 Risk of serious damage to eyes.
R50 Very toxic to aquatic organisms.
H302 - Harmful if swallowed.
H318 - Causes serious eye damage.
H319 - Causes serious eye irritation.
H400 - Very toxic to aquatic life.

Training information Follow training instructions when handling this material.

Disclaimer This information is based on our current knowledge and is believed to be correct as of the date issued. The information is intended to describe the product for the purposes of health, safety and environmental requirements only and no warranty, express or implied, is made. It should also not be construed as guaranteeing any specific property of the product. In addition, information obtained from a database is subject to change and may not be as current as the information in the MSDS available directly from Angus Fire.