SAFETY DATA SHEET

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

1.1. Product identifier

Trade name or designation of the mixture	Tridol ATF 3/3 LT
Registration number	-
Synonyms	None.
SDS number	-
Product code	150-10
Issue date	02-July-2012
Version number	02
Revision date	03-December-2014
Supersedes date	02-July-2012

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

Identified uses	Firefighting foam concentrate.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name	Angus Fire Ltd
Address	Station Road Bentham, Lancashire, LA2 7NA
Telephone	0044 (0)15 2426 4000
e-mail	general.enquiries@angusuk.co.uk
Contact person	EH&S Manager

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

Section 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification Xi;R36/38

The full text for all R-phrases is displayed in section 16.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	Irritating to eyes and skin. 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 respiratory irritation. May cause central nervous system effects. May cause damage to the kidneys. A few cases of sensitisation have been reported.
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.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: 2-methylpentane-2,4-diol, Sodium Decyl Sulphate

Hazard pictograms

Signal word Warning

Hazard statements H315 - Causes skin irritation.
H319 - Causes serious eye irritation.

Precautionary statements

Prevention P280 - Wear protective gloves and eye/face protection.
P264 - Wash thoroughly after handling.

Response P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - 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.

2.3. Other hazards Not a PBT or vPvB substance or mixture.

Section 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Ethylene glycol	20-<25	107-21-1 203-473-3	-	603-027-00-1	#
Classification:	**DSD:**	Xn;R22			
	CLP:	Acute Tox. 4;H302			
2-methylpentane-2,4-diol	10 - < 20	107-41-5 203-489-0	-	603-053-00-3	
Classification:	**DSD:**	Xi;R36/38			
	CLP:	Skin Irrit. 2;H315, Eye Irrit. 2;H319			
Sodium Decyl Sulphate	1-<2,5	142-87-0 205-568-5	-	-	
Classification:	**DSD:**	Xn;R22, Xi;R38-41			
	CLP:	Acute Tox. 4;H302, Skin Irrit. 2;H315, Eye Dam. 1;H318			
Cocamidopropyl Betaine	< 1	61789-40-0 263-058-8	-	-	
Classification:	**DSD:**	Xi;R36/38			
	CLP:	Skin Irrit. 2;H315, Eye Irrit. 2;H319			
Sodium Octyl Sulphate	< 1	142-31-4 205-535-5	-	-	
Classification:	**DSD:**	Xi;R36/37/38			
	CLP:	Skin Irrit. 2;H315, Eye Irrit. 2;H319, STOT SE 3;H335			

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Water	Balance	7732-18-5 231-791-2	-	-	

Classification: **DSD:** -

CLP: -

#: This substance has been assigned Community workplace exposure limit(s).
DSD: Directive 67/548/EEC.
CLP: Regulation No. 1272/2008.

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
The full text for all R- and H-phrases is displayed in section 16.

Section 4: First aid measures

General information Not available.

4.1. 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 eyelids wide apart. Get medical attention if irritation develops and persists.

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.

4.2. Most important symptoms and effects, both acute and delayed 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.

4.3. 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 medium. It does not burn or support combustion.

5.1. Extinguishing media

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

Unsuitable extinguishing media Not applicable.

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

5.3. 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 fire fighting procedures No specific precautions.

Section 6: Accidental release measures

6.1. 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.

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

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

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

Section 7: Handling and storage

7.1. Precautions for safe handling Avoid contact with skin and eyes. Wear appropriate personal protective equipment. Wash hands after handling. Observe good industrial hygiene practices.

7.2. 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.

7.3. Specific end use(s) Firefighting foam concentrate.

Section 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	49 mg/m3
		10 ppm
	MAK	49 mg/m3
		10 ppm
Ethylene glycol (CAS 107-21-1)	Ceiling	52 mg/m3
		20 ppm
	MAK	26 mg/m3
		10 ppm

Belgium. Exposure Limit Values.

Components	Type	Value	Form
2-methylpentane-2,4-diol (CAS 107-41-5)	TWA	123 mg/m3	
		25 ppm	
Ethylene glycol (CAS 107-21-1)	STEL	104 mg/m3	Aerosol
		40 ppm	Aerosol
	TWA	52 mg/m3	Aerosol
		20 ppm	Aerosol

Czech Republic. OELs. Government Decree 361

Components	Type	Value
Ethylene glycol (CAS 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-methylpentane-2,4-diol (CAS 107-41-5)	VLE	125 mg/m3	
		25 ppm	
Ethylene glycol (CAS 107-21-1)	VLE	104 mg/m3	Vapor.
		40 ppm	Vapor.
	VME	52 mg/m3	Vapor.
		20 ppm	Vapor.

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	TWA	49 mg/m3
		10 ppm
Ethylene glycol (CAS 107-21-1)	TWA	26 mg/m3
		10 ppm

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

Components	Type	Value
Ethylene glycol (CAS 107-21-1)	AGW	26 mg/m3
		10 ppm

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

Components	Type	Value	Form
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	125 mg/m3	
		25 ppm	
	TWA	125 mg/m3	
		25 ppm	
Ethylene glycol (CAS 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 (CAS 107-21-1)	STEL	104 mg/m3
	TWA	52 mg/m3

Italy. OELs

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	25 ppm
Ethylene glycol (CAS 107-21-1)	STEL	104 mg/m3
		40 ppm
	TWA	52 mg/m3
		20 ppm

Netherlands. OELs (binding)

Components	Type	Value	Form
Ethylene glycol (CAS 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-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	100 mg/m3	
		20 ppm	
Ethylene glycol (CAS 107-21-1)	Ceiling	25 ppm	Vapor.
	TLV	10 mg/m3	Dust.

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

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	120 mg/m3
Ethylene glycol (CAS 107-21-1)	STEL	50 mg/m3
	TWA	15 mg/m3

Russian Federation. Hygiene Norm GN 2.2.5.1313-03. Executive No. 76 of 30 April 2003. Maximum allowable concentration (MAC) of harmful substances in the air of working zones, as amended.

Components	Type	Value	Form
Ethylene glycol (CAS 107-21-1)	Ceiling	10 mg/m3	Vapor and aerosol.
	TWA	5 mg/m3	Vapor and aerosol.

Spain. Occupational Exposure Limits

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	123 mg/m3
		25 ppm
Ethylene glycol (CAS 107-21-1)	STEL	104 mg/m3
		40 ppm
	TWA	52 mg/m3
		20 ppm

Sweden. Occupational Exposure Limit Values

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	120 mg/m3
		25 ppm
Ethylene glycol (CAS 107-21-1)	STEL	50 mg/m3
		20 ppm
	TWA	25 mg/m3
		10 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	98 mg/m3
		20 ppm
	TWA	49 mg/m3
		10 ppm
Ethylene glycol (CAS 107-21-1)	STEL	52 mg/m3
		20 ppm
	TWA	26 mg/m3
		10 ppm

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	123 mg/m3	
		25 ppm	
	TWA	123 mg/m3	
		25 ppm	
Ethylene glycol (CAS 107-21-1)	STEL	104 mg/m3	Vapor.
		40 ppm	Vapor.
	TWA	52 mg/m3	Vapor.
		10 mg/m3	Particulate.
		20 ppm	Vapor.

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures Follow standard monitoring procedures.

Derived No Effect Level (DNEL) Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls Ensure adequate ventilation, especially in confined areas. Observe occupational exposure limits and minimise the risk of exposure.

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

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.

Form	Liquid.
Colour	Pale yellow.
Odour	Organic.
Odour threshold	Not available.
pH	6,5 - 8
Melting point/freezing point	-15 °C (5 °F)
Initial boiling point and boiling range	100 °C (212 °F) (760 mmHg)
Flash point	> 98 °C (> 208,4 °F)
Evaporation rate	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable
Flammability limit - upper (%)	Not applicable
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Relative density	1,04
Relative density temperature	at 20°C
Solubility(ies)	Miscible in all proportions.
Partition coefficient (n-octanol/water)	Not available.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Explosive properties	Not available.
Oxidizing properties	Not available.
9.2. Other information	No relevant additional information available.

Section 10: Stability and reactivity

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

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 discomfort if swallowed.
Inhalation	Under normal conditions of intended use, this material is not expected to be an inhalation hazard.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Symptoms	Symptoms can include irritation, redness, scratching of the cornea, and tearing. Symptoms may include redness, drying and cracking of the skin.

11.1. Information on toxicological effects

Acute toxicity	Causes skin and eye irritation. May cause central nervous system effects.

Components	Species	Test results
2-methylpentane-2,4-diol (CAS 107-41-5)		
Acute		
Oral		
LD50	Rat	4,79 g/kg
Ethylene glycol (CAS 107-21-1)		
Acute		
Dermal		
LD50	Rabbit	9530 mg/kg
Oral		
LD50	Rat	5,89 g/kg
Sodium Decyl Sulphate (CAS 142-87-0)		
Acute		
Oral		
LD50	Rat	1950 mg/kg

Skin corrosion/irritation	Prolonged contact may cause dryness of the skin.
Serious eye damage/irritation	Causes serious eye irritation.
Respiratory sensitisation	No data available.
Skin sensitisation	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

12.1. Toxicity 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.

Components		Species	Test results
2-methylpentane-2,4-diol (CAS 107-41-5)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia reticulata)	2400 - 3200 mg/l, 48 hours
Fish	LC50	Bleak (Alburnus alburnus)	7000 - 9100 mg/l, 96 hours
Ethylene glycol (CAS 107-21-1)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	8050 mg/l, 96 hours

12.2. Persistence and degradability	No data available.
12.3. Bioaccumulative potential	The product is not expected to bioaccumulate.
Partition coefficient n-octanol/water (log Kow)	
Ethylene glycol	-1,36
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
Mobility in general	The product is water soluble and may spread in water systems.
12.5. Results of PBT and vPvB assessment	No data available.
12.6. Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13: Disposal considerations

13.1. 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

The product is not covered by international regulation on the transport of dangerous goods.

RID

The product is not covered by international regulation on the transport of dangerous goods.

ADN

The product is not covered by international regulation on the transport of dangerous goods.

IATA

The product is not covered by international regulation on the transport of dangerous goods.

IMDG

The product is not covered by international regulation on the transport of dangerous goods.

Section 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I

Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

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

Not listed.

Commission Decision 2000/479/EC on the implementation of a European pollutant emission register (EPER)

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(1) Candidate List as currently published by ECHA

Not listed.

Other regulations	The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.
National regulations	Follow national regulation for work with chemical agents.
15.2. 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	HSDB IUCLID RTECS (2010)
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-statements under Sections 2 to 15	R22 Harmful if swallowed. R36/37/38 Irritating to eyes, respiratory system and skin. R36/38 Irritating to eyes and skin. R38 Irritating to skin. R41 Risk of serious damage to eyes. H302 - Harmful if swallowed. H315 - Causes skin irritation. H318 - Causes serious eye damage. H319 - Causes serious eye irritation. H335 - May cause respiratory irritation.
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.