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	Niagara 3/3
Registration number	-
Synonyms	None.
SDS number	-
Product code	80 - 15
Issue date	08-September-2011
Version number	02
Revision date	03-December-2014
Supersedes date	08-September-2011

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 R43

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 sensitisation	Category 1	H317 - May cause an allergic skin reaction.

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	May cause sensitisation by skin contact. 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 and eye irritation. May cause irritation of nose, throat and mucous membranes.
Main symptoms	Contact may cause irritation and redness. Sensitisation.

2.2. Label elements

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

Contains: 1,2-Benzisothiazol-3(2H)-one, 1,3,5-tris(2-hydroxyethyl)hexahydro-1,3,5-triazine

Hazard pictograms

Signal word Warning

Hazard statements H317 - May cause an allergic skin reaction.

Precautionary statements

Prevention P261 - Avoid breathing mist/vapours/spray.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P280 - Wear protective gloves.

Response P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention.
P363 - Wash contaminated clothing before reuse.

Storage Store away from incompatible materials.

Disposal P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.

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
Sodium chloride	5 - < 10	7647-14-5 231-598-3	-	-	
Classification: **DSD:** Xi;R36 **CLP:** Eye Irrit. 2;H319					
2-methylpentane-2,4-diol	1 - 7	107-41-5 203-489-0	-	603-053-00-3	
Classification: **DSD:** Xi;R36/38 **CLP:** Skin Irrit. 2;H315, Eye Irrit. 2;H319					
1,3,5-tris(2-hydroxyethyl)hexahydro-1,3,5-triazine	0,1 - 0,5	4719-04-4 225-208-0	-	613-114-00-6	
Classification: **DSD:** Xn;R22, R43 **CLP:** Acute Tox. 4;H302, Skin Sens. 1;H317					
1,2-Benzisothiazol-3(2H)-one	< 0,1	2634-33-5 220-120-9	-	613-088-00-6	
Classification: **DSD:** Xn;R22, Xi;R38-41, R43, N;R50 **CLP:** Acute Tox. 4;H302, Skin Irrit. 2;H315, Skin Sens. 1;H317, Eye Dam. 1;H318, Aquatic Acute 1;H400					

#: This substance has 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. If skin rash or an allergic skin reaction develops, get medical attention.

Eye contact Immediately flush eye(s) with plenty of water. Remove any contact lenses. Get medical attention if irritation develops or 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 Contact may cause irritation and redness. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Sensitisation.

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 Prevent entry into waterways, sewer, basements or confined areas.

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. 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

Belgium. Exposure Limit Values.

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	TWA	123 mg/m3
		25 ppm

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

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	VLE	125 mg/m3
		25 ppm

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

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

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	125 mg/m3
		25 ppm
	TWA	125 mg/m3
		25 ppm

Italy. OELs

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	25 ppm

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	100 mg/m3
		20 ppm

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

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
Sodium chloride (CAS 7647-14-5)	Ceiling	5 mg/m3	Aerosol

Spain. Occupational Exposure Limits

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	123 mg/m3
		25 ppm

Sweden. Occupational Exposure Limit Values

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	Ceiling	120 mg/m3
		25 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

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
2-methylpentane-2,4-diol (CAS 107-41-5)	STEL	123 mg/m3
		25 ppm
	TWA	123 mg/m3
		25 ppm

Biological limit values

Hungary. Chemical Safety at Workplace Ordinance Joint Decree No. 25/2000 (Annex 2): Permissible limit values of biological exposure (effect) indices

Components	Value	Determinant	Specimen	Samplingtime
1,2-Benzisothiazol-3(2H)-one (CAS 2634-33-5)	25 %	red blood cell or total blood acetylcholinesterase activity (EC. 3.1.1.7.)	Reduction from individual baseline activity in red blood cells	Sampling time: Not critical.

Recommended monitoring procedures Follow standard monitoring procedures.

Derived No Effect Level (DNEL)

Components	Type	Route	Value	Form
2-methylpentane-2,4-diol (CAS 107-41-5)	Workers	Dermal	2 mg/kg/day	Long term exposure systemic effects
		Inhalation	98 mg/m3	Acute exposure local effects
		Inhalation	49 mg/m3	Long term exposure local effects
		Inhalation	14 mg/m3	Long term exposure systemic effects

Predicted no effect concentrations (PNECs)

Components	Type	Route	Value	Form
2-methylpentane-2,4-diol (CAS 107-41-5)	Aqua (freshwater)	Not applicable	0,429 mg/l	
	Aqua (intermittent releases)	Not applicable	4,29 mg/l	
	Aqua (marine water)	Not applicable	0,0429 mg/l	
	Sediment (freshwater)	Not applicable	1,79 mg/kg	
	Sediment (marine water)	Not applicable	0,179 mg/kg	
	Soil	Not applicable	0,11 mg/kg	
	STP	Not applicable	20 mg/l	

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 Dark brown.

Odour Organic.

Odour threshold Not available.

pH	6,6 - 7,6 at 20°C
Melting point/freezing point	-18,5 °C (-1,3 °F)
Initial boiling point and boiling range	100 °C (212 °F) at 760 mmHg
Flash point	Not applicable.
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	1,16
Solubility(ies)	Miscible with water in all proportions.
Partition coefficient (n-octanol/water)	No data available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	105 cSt at -10°C 18 cSt at 20°C 47 cSt at 0°C
Explosive properties	Not available.
Oxidizing properties	Not available.
9.2. Other information	
Flammability	Not applicable.

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. Chlorine. Sulphur oxides. Metal oxides. Nitrogen oxides (NOx).

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	May cause skin irritation. May cause an allergic skin reaction.
Eye contact	May cause eye irritation on direct contact.
Symptoms	Skin sensitization, characterized by redness, inflammation, itching and/or burning may result from prolonged or repeated contact with this material.

11.1. Information on toxicological effects

Acute toxicity	May cause skin and eye irritation. May cause an allergic skin reaction.

Components	Species	Test results
2-methylpentane-2,4-diol (CAS 107-41-5)		
Acute		
Oral		
LD50	Rat	4,79 g/kg

Skin corrosion/irritation	Prolonged skin contact may cause dermatitis.
Serious eye damage/irritation	May cause eye irritation.
Respiratory sensitisation	No data available.
Skin sensitisation	May cause an allergic skin reaction.
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.

Product		Species	Test results
Niagara 3/3 (CAS Mixture)			
	LC50	Rainbow trout, donaldson trout (Oncorhynhus mykiss)	6230 ppm, 24 Hours
			4410 ppm, 48 Hours
			2830 ppm, 72 Hours
			2830 ppm, 96 Hours
Aquatic			
Crustacea	EC50	Daphnia magna	34860 ppm, 48 hours

Components		Species	Test results
1,2-Benzisothiazol-3(2H)-one (CAS 2634-33-5)			
Aquatic			
Fish	LC50	Bleak (Alburnus alburnus)	8 - 13 mg/l, 96 hours
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
Sodium chloride (CAS 7647-14-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	340,7 - 469,2 mg/l, 48 hours

12.2. Persistence and degradability	The product is biodegradable. COD: 0.45 gg-1. BOD: 0.13 gg-1/ 7 days. BOD: 0.43 gg-1/ 28 days.
12.3. Bioaccumulative potential	The product is not expected to bioaccumulate.
Partition coefficient n-octanol/water (log Kow)	No data available.
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	Not a PBT or vPvB substance or mixture.
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)

Sodium chloride (CAS 7647-14-5)

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	Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work. 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 Irritating to eyes. R36/38 Irritating to eyes and skin. R38 Irritating to skin. R41 Risk of serious damage to eyes. R43 May cause sensitisation by skin contact. R50 Very toxic to aquatic organisms.

H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
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.