SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SDS # : 30982

AERO DM 20W60

Date of the previous version: 2014-01-17 **Revision Date:** 2015-03-20 **Version** 3

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name **AERO DM 20W60**
Number 117

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

Identified uses Lubrification for aircraft piston engines.

1.3. Details of the supplier of the safety data sheet

Supplier

TOTAL UK LIMITED
One Euston Square
40 Melton Street. London. NW1 2FD
UNITED KINGDOM
Tel: +44 (0)20 7339 8000
Fax: +44 (0)20 7339 8033

For further information, please contact:

Contact Point Specific Product Related Info : 01977 636200
E-mail Address rm.gb-msds@total.co.uk

1.4. Emergency telephone number

00 33 149 00 00 49 (24h/24, 7d/7)
TOTAL UK ltd: + 44 (0) 20 7339 8000
For Lubricants only: TOTAL Lubricants - +44 (0)1977 636200
For bitumen only: Total Bitumen -+44 (0) 17 7272 9302

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008 ***
*For the full text of the H-Statements mentioned in this Section, see Section 2.2.****

Classification***
The product is classified as dangerous in accordance with Regulation (EC) No. 1272/2008***
Chronic aquatic toxicity - Category 3*** - (H412)***

DIRECTIVE 67/548/EEC or 1999/45/EC

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

For the full text of the R-phrases mentioned in this Section, see Section 16.

The substance/mixture is classified as dangerous in accordance with Directive(s) 67/548/EEC with amendments and/or 1999/45/EC with amendments

Symbol(s)
none***

Classification
R52-53 ***

2.2. Label elements

Labelled according to REGULATION (EC) No 1272/2008***

Hazard Statements ***
H412 - Harmful to aquatic life with long lasting effects***

Precautionary statements
P501 - Dispose of contents/container to an approved waste disposal plant***

2.3. Other hazards

Physical-Chemical Properties Contaminated surfaces will be extremely slippery.

Environmental properties Should not be released into the environment.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixture***

Hazardous components ***

Chemical Name	EC-No	REACH Registration Number	CAS-No	Weight %	Classification (Dir. 67/548)	GHS Classification
tris(methylphenyl) phosphate***	215-548-8	01-2119531335-46	1330-78-5	<2.5	Repr.Cat.3;R62 N;R50-53	Repr. 2 (H361fd) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)

Additional information Product containing mineral oil with less than 3% DMSO extract as measured by IP 346

For the full text of the R-phrases mentioned in this Section, see Section 16.
For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

General advice	IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
Skin contact	Remove contaminated clothing and shoes. Wash skin with soap and water. Remove and wash contaminated clothing before re-use.
Inhalation	Move to fresh air.
Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or poison control centre immediately.

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

Eye contact	Not classified.
Skin contact	Not classified.***
Inhalation	Not classified. Inhalation of vapours in high concentration may cause irritation of respiratory system.
Ingestion	Not classified. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically.

Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	Carbon dioxide (CO_2). ABC powder. Foam. Water spray or fog.
Unsuitable Extinguishing Media	Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Special hazard	Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentration. Nitrogen oxides (NOx), Phosphorous oxides.

5.3. Precautions for fire-fighters

Special protective equipment for fire-fighters	Wear self-contained breathing apparatus and protective suit.
Other information	Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

General Information Do not touch or walk through spilled material. Contaminated surfaces will be extremely slippery. Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

6.2. Environmental precautions

General Information Do not allow material to contaminate ground water system. Try to prevent the material from entering drains or water courses. Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and materials for containment and cleaning up

Methods for cleaning up Dam up. Contain spillage, and then collect with non-combustable absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

Personal protective equipment See Section 8 for more detail.

Waste treatment See section 13.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling When using, do not eat, drink or smoke. For personal protection see section 8. Use only in well-ventilated areas. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing.

Prevention of fire and explosion Take precautionary measures against static discharges. Ground/bond containers, tanks and transfer/receiving equipment.

Hygiene measures Ensure the application of strict rules of hygiene by the personnel exposed to the risk of contact with the product. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Do not use abrasives, solvents or fuels. Do not dry hands with rags that have been contaminated with product. Do not put product contaminated rags into workwear pockets.

7.2. Conditions for safe storage, including any incompatibilities

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Technical measures/Storage conditions Keep away from food, drink and animal feedingstuffs. Keep in a bunded area. Keep container tightly closed. Preferably keep in the original container. Otherwise, reproduce all the statutory information from the labels onto the new container. Do not remove the hazard labels of the containers (even if they are empty). Design the installations in order to avoid accidental emissions of product (due to seal breakage, for example) onto hot casings or electrical contacts. Protect from frost, heat and sunlight. Protect from moisture.

Materials to avoid Strong oxidising agents.

7.3. Specific use(s)

Specific use(s) No information available.***

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parametres

Exposure limits Mineral oil mist:
USA: OSHA (PEL) TWA 5 mg/m³, NIOSH (REL) TWA 5 mg/m³, STEL 10 mg/m³, ACGIH (TLV) TWA 5 mg/m³ (highly refined)***

Legend See section 16

DNEL Worker (Industrial/Professional)

Chemical Name	Short term, systemic effects	Short term, local effects	Long term, systemic effects	Long term, local effects
tris(methylphenyl) phosphate*** 1330-78-5	1.11 mg/m³ Inhalation 74 mg/kg/bw Dermal	16 mg/cm2 Dermal	0.47 mg/m³ Inhalation 3.33 mg/kg/bw Dermal	

DNEL Consumer

Chemical Name	Short term, systemic effects	Short term, local effects	Long term, systemic effects	Long term, local effects
tris(methylphenyl) phosphate*** 1330-78-5	37 mg/kg/bw Dermal 0.28 mg/m³ Inhalation 157.5 mg/kg/bw Oral	8 mg/cm2 Dermal	1.67 mg/kg/bw Dermal 0.06 mg/m³ Inhalation 0.03 mg/cm2 Oral	

Predicted No Effect Concentration (PNEC)

Chemical Name	Water	Sediment	Soil	Air	STP	Oral
tris(methylphenyl) phosphate*** 1330-78-5	0.000146 mg/l fw 0.0000146 mg/l mw 0.00146 mg/l or	0.0404 mg/kg dw fw 0.00404 mg/kg dw mw	0.00000317 mg/kg dw		100 mg/l	0.67 mg/kg

8.2. Exposure controls

Occupational Exposure Controls

Engineering measures Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Personal protective equipment

General Information	If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Respirator with combination filter for vapour/particulate (EN 14387). Type A/P2. The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.***
Eye protection	Safety glasses with side-shields.
Skin and body protection	Wear suitable protective clothing, impervious clothing, Protective shoes or boots, Long sleeved clothing.
Hand protection	Hydrocarbon-proof gloves. Fluorinated rubber. Nitrile rubber. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves.

Environmental exposure controls

General Information	The product should not be allowed to enter drains, water courses or the soil.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Clear
Colour	yellow to brown
Physical state @20°C	Liquid
Odour	slight

Property	Values	Remarks	Method
pH		Not applicable	
Boiling point/boiling range		Not applicable	
Flash point	**> 220 °C**		Cleveland Open Cup (COC)
	> 428 °F		Cleveland Open Cup (COC)
Evapouration rate		No information available	
Flammability Limits in Air		No information available	
Vapour pressure		No information available	
Vapour density		No information available	
Density	871 kg/m^3	@ 15 °C	
Water solubility		Not applicable	
Solubility in other solvents		No information available	
logPow		No information available	

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Autoignition temperature	**> 250 °C**		ASTM E 659-78
	> 482 °F		ASTM E 659-78
Viscosity, kinematic	24.4 mm2/s	@ 100 °C	ISO 3104
Explosive properties	Not explosive		
Oxidising properties	Not applicable		
Possibility of hazardous reactions	Not applicable		

9.2. Other information

No information available***

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

General Information No information available.***

10.2. Chemical stability

Stability Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions None under normal processing.

10.4. Conditions to Avoid

Conditions to Avoid Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.

10.5. Incompatible materials

Materials to avoid Strong oxidising agents.

10.6. Hazardous Decomposition Products

Hazardous Decomposition Products None under normal use. Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot, Nitrogen oxides (NOx), Phosphorous oxides.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity Local effects Product Information

Skin contact . Not classified.***

Eye contact . Not classified.

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Inhalation . Not classified. Inhalation of vapours in high concentration may cause irritation of respiratory system.

Ingestion . Not classified. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Acute toxicity - Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
tris(methylphenyl) phosphate***	DL50 3700 mg/kg (Rat)	LD50 10000 mg/kg (Rabbit)	LD50 11.1 mg/l

Sensitisation

Sensitisation May cause sensitisation by skin contact.

Specific effects

Carcinogenicity This product is not classified carcinogenic. During use in engines, contamination of oil with low levels of combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

Mutagenicity This product is not classified as mutagenic.

Reproductive toxicity This product does not present any known or suspected reproductive hazards. Contains a known or suspected reproductive toxin.

Chemical Name	European Union
tris(methylphenyl) phosphate*** 1330-78-5	Repr. 2 (H361fd)***

Repeated Dose Toxicity

Subchronic Toxicity No information available.

Target Organ Effects (STOT)

Target Organ Effects (STOT) No information available.

Other information

Other adverse effects Characteristic skin lesions (oil blisters) may develop following prolonged and repeated exposures (contact with contaminated clothing).

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Harmful to aquatic life with long lasting effects.***

Acute aquatic toxicity - Product Information

No experimental data available .

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

Acute aquatic toxicity - Component Information

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
tris(methylphenyl) phosphate*** 1330-78-5	EC50 (72h) 0.4 mg/l Desmodesmus subspicatus	LC50 (48h) 0.14 mg/l Daphnia magna	LC50 (96h) 0.6 mg/l	

Chronic aquatic toxicity - Product Information
No information available.

Chronic aquatic toxicity - Component Information
.

Chemical Name	Toxicity to algae	Toxicity to daphnia and other aquatic invertebrates.	Toxicity to fish	Toxicity to microorganisms
tris(methylphenyl) phosphate*** 1330-78-5			NOEC (28d) 0.01 mg/l Oncorhynchus mykiss	

Effects on terrestrial organisms
No information available.

12.2. Persistence and Degradability

General Information
No information available.

12.3. Bioaccumulative potential

Product Information No information available.

logPow No information available
Component Information .

Chemical Name	log Pow
tris(methylphenyl) phosphate*** - 1330-78-5	5.93

12.4. Mobility in soil

Soil Given its physical and chemical characteristics, the product generally shows low soil mobility.

Air Loss by evaporation is limited.

Water Insoluble. The product spreads on the surface of the water.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

12.6. Other adverse effects

General Information No information available.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products Should not be released into the environment. Do not empty into drains. Where possible recycling is preferred to disposal or incineration. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. After use, this oil must be sent to a licensed waste oil facility. Incorrect disposal of used oil poses a risk to the environment. Mixture with other waste types such as solvents, brake- and cooling liquids is forbidden.

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

EWC Waste Disposal No The following Waste Codes are only suggestions:. 13 02 05. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

Section 14: TRANSPORT INFORMATION

ADR/RID not regulated

IMDG/IMO not regulated

ICAO/IATA not regulated

ADN not regulated

Section 15: REGULATORY INFORMATION

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

European Union

International Inventories No information available***

Further information

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

No information available***

15.2. Chemical Safety Assessment

Chemical Safety Assessment No information available

15.3. National regulatory information

The United Kingdom

• Avoid exceeding occupational exposure limits (see section 8).

Ireland

• Avoid exceeding occupational exposure limits (see section 8).

Section 16: OTHER INFORMATION

Full text of R-phrases referred to under sections 2 and 3
R62 - Possible risk of impaired fertility
R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment***

Full text of H-Statements referred to under sections 2 and 3
H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects***

Abbreviations, acronyms

Legend Section 8
TWA: Time Weight Average
STEL: Short Time Exposure Limit

+	Sensitiser	*	Skin designation
**	Hazard Designation	C:	Carcinogen
M:	Mutagen	R:	Toxic to reproduction

Revision Date: 2015-03-20
Revision Note *** Indicates updated section.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

This safety data sheet serves to complete but not to replace the technical product sheets. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above.It is understood by the user that any use of the product for purposes other than those for which it was designed entails potential risk.The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity.The user bears sole liability for the precautions required when using the product.The regulatory texts indicated herein are intended to aid the user to fulfil his obligations. This list is not to be considered complete and exhaustive.It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.

SDS # : 30982

AERO DM 20W60

Revision Date: 2015-03-20 **Version** 3

End of Safety Data Sheet