UNIVERSITY OF Southampton

RECORD OF RISK ASSESSMENT

Title of the risk assessment	Equipment Risk Assessment for lapping machine in nCATS Laboratory
Date risk assessment carried out	30th August 2018
Describe the work being assessed	Lapping and polishing of samples for surface characterisation and tribological testing for teaching, research and for commercial clients.
Describe the location at which the work is being carried out	Building 7, room 2023
Where appropriate list the individuals doing the work and the dates/times when the work will be carried out	Visitors, Technical, Academic Staff, Research and Project Students
List any other generic or specific risk assessments or other documents that relate to this risk assessment – use hyperlinks if possible	"Risks outside this generic assessment (based on the materials employed) will require a separate assessment to be made. Undergraduate student (and where appropriate staff) research activities to be risk assessed on individual basis."
Name and post of risk assessor	Terry Harvey, Area Academic Lead
List the names and post of those assisting in compiling this risk assessment	
Name, post and where required, signature of the responsible manager/supervisor approving the risk assessment	Ling Wang, Head of Group
Reference number and version number of risk assessment	Version One

Assessment

Title of risk assessment	Equipment Risk Assessment for lapping machine in nCATS Laboratory

Risk Acceptability	
1-3	Risk Acceptable
4-6	Risk to be reduced if readily possible
7-14	Risk to be reduced if reasonably practicable
15-25	Risk Unacceptable

Risk Matrix			Severity				
			very low	low	medium	high	very high
			1	2	3	4	5
Likelihood	Certain	5	5	10	15	20	25
	Likely	4	4	8	12	16	20
	Possible	3	3	6	9	12	15
	Less likely	2	2	4	6	8	10
	Improbable	1	1	2	3	4	5

ref	Task/Aspect of work	Hazard	Harm and how it could arise	Who could be affected?	Existing measures to control risk	Risk Factors		Residual Risk Score	Any changes or extra controls?
						Overall Likelihood	Overall Severity		
1	Machinery and equipment	Finger trap and rotating components	Crush injury, bruising, trapping from manoeuvring the lapping plate onto the machine and removal for cleaning; amputation due to entanglement in rotating machinery	User	Users are trained in safe handling of the lapping plates which are heavy; the rotation of the plates during operation is slow and entanglement with rotating parts is very unlikely to occur due to the design of the plates and system.	1	3	3	no
2	Fire	Ignition of flammable substances	Burn, smoke inhalation due ignition of flammable chemicals	All	Only small volumes of flammable substances are used, all electrical sources of ignition are away from flammables and insulated	1	2	2	no
3	Electrical equipment	Electricity	Electrical shock/burn from contact with mains powered equipment	User	Installation and maintenance of equipment conducted by qualified electricians. Users will do a quick visual inspection before use. Annual PAT testing.	1	2	2	no
4	Chemicals	Eye irritation, poisoning	Eye irritation, drowsiness or dizziness due to contact with lapping fluids and solvents	User	Only small volumes of diamond suspension, lubricant and alumina cutting fluid are used in systems designed to handle them, PPE supplied, follow Good Laboratory Practice and COSHH regulations, blue roll is used to absorb/clean samples and rig components, which is then disposed as hazardous waste.	1	2	2	no
5	Pneumatic spray system	Pressurised air	Injury from pressurised jet due to escape of compressed air	User	The rig has a regulator which reduces the pressure to low levels and small volume of gas are stored	1	2	2	no

Post Risk Assessment Actions

Title of risk assessment

Equipment Risk Assessment for lapping machine in nCATS Laboratory

Have any of the specialist control measures listed below been identified as required during risk assessment? – indicate yes or no – if yes then include details on the post assessment action list below.	**yes/no**
Is any exposure monitoring required?	No
Is any occupational health monitoring required?	No
Are there any hazards or other factors that could affect pregnant or nursing mothers?	No

Is any specific training required before people can carry out this work?	Yes
All operators of equipment should have training in that equipment before they carry out any experimental work	

Are there any additional procedures or risk assessments required as a result of this risk assessment?	Yes
Training on test equipment undertaken plus a undergraduates students and visitors will be required to complete a Risk Assessment before any testing starts.	

Are there any specialist disposal arrangements required?	No

Are there any special emergency arrangements required?	No

Post Assessment Actions			
Ref	Action	By whom	By when

Examples of hazards	Examples of work activities during hazard may be encountered	Examples of harm that can result if risks are not adequately controlled
Substances that are harmful if contacted, ingested, injected, inhaled	Use or generation during laboratory work, cleaning activities, outdoor pursuits, maintenance work	Dermatitis, chemical burn, poisoning or other illness
Manual handling	lifting, carrying, pushing, pulling, sliding of equipment or people	Bruising, Back injury, strains
Water	watersports, outdoor pursuits, field work, research using flumes	drowning
Pressure and vacuum systems	compressed air or gas systems, vacuum rigs	explosion or implosion, injury from pressure jets, hearing damage
Psychological	working alone, overseas, isolated situations, adverse conditions	stress or distress, suicide, long term mental conditions
Vehicle	moving or manoeuvring vehicles on public or private roads or yards, towing, cross country	Crushing, impact injuries
Electrical	equipment, temporary generators or supplies, experimental rigs, exposed cables, maintenance work	Electrical shock/burn
Environmental	exposure to extremes of heat, cold, wind, dust during field work or maintenance work	Hot burns, cold burns
Height	working at height, outdoor activities	Cuts/bruises, Broken bones, Concussion
Fire	flame cutting equipment, welding or brazing, heating equipment, outdoor barbeques or fires	burns, smoke inhalation,
Ionising radiation	radioactive materials, imaging machines	long term illness, burns
Machinery and equipment	workshop tools, mobile equipment, hand tools	Crushing. trapping, cuts and bruises, amputation
Non Ionising radiation	lasers, ultrasound, microwaves	surface or deep burns, eyesight damage
Noise or vibration	agricultural machinery, wind tunnels. vehicles. workshop equipment, test rigs	hearing loss, hand arm vibration syndrome, internal organ damage
Confined spaces	entering tanks, voids in buildings, boilers, furnaces, sewer and water pipes and manholes	Asphyxiation, illness due to breathing harmful gasses or vapours, explosion

Faculty of Engineering and the Environment	Method Statement (Equipment)

Name of Equipment			
Lapping machine			
Location of Equipment *(Building and Room/Laboratory number)*	7/2023	**Date**	30th August 2018

Assessor *(Name, ID number)*	**Contact Details** *(Email, Telephone number)*
Dr. Terry Harvey, 11467115	harveyt@soton.ac.uk; x23761
Supervisor	**Contact Details** *(Email, Telephone, Room number)*
Prof. Ling Wang	Ling.wang@soton.ac.uk; 7/4081, x25076

Introduction / Overview.
(What is the purpose of the equipment? Who is likely to use it?)

The lapping machine is used in the preparation of engineering surfaces for Teaching, Research and Commercial Clients.

A printout of this method statement, the associated Equipment Risk Assessment (ERA), Control Of Substances Hazardous to Health (COSHH) forms and Material Safety Data Sheets (MSDS), that relate to COSHH forms, along with a list of users will be kept near the equipment. Also included will be contact details of the equipment leader(s) (person or persons responsible for maintenance and training of the equipment)

Note any activities or Substances Hazardous to Health outside those contained within this document will require an individual risk assessment and COSHH form.

All users will receive a copy of the above documents once they have been trained for unsupervised operation.

Description of Equipment.
(*Provide details of the equipment, what is does and how it does it – the more detail you provide the more likely is anybody reading this will understand what is being done)*

The lapping machine is multi-disc system with six lapping discs: two iron composite, two copper composite and two aluminium discs; the latter are designed to take self-adhesive polishing cloths. Each disc takes a different diamond suspension (Kemet Liquid Diamond Type K), from 25 µm to 1 µm. The discs locate onto a rotating base unit and align and are driven via dowels, see Figure 1.

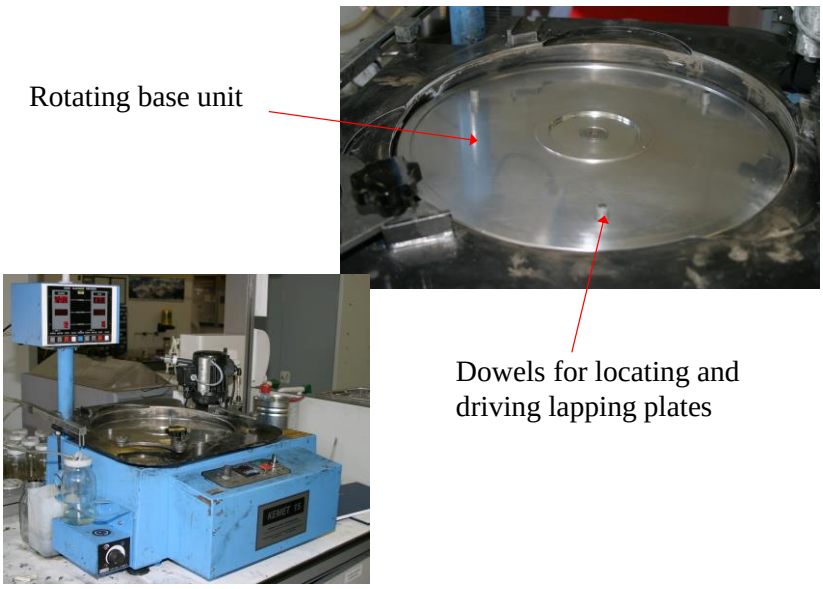

Figure 1 Image of the lapping machine with no lapping plate in position (bottom left) and image of the rotating base unit, with the dowels highlighted.

When in position the ring platform is raised to operating position and the ring arms are moved into position. The rings are positioned against the ring arms and the samples placed inside the ring and a load placed onto, see Figure 2.

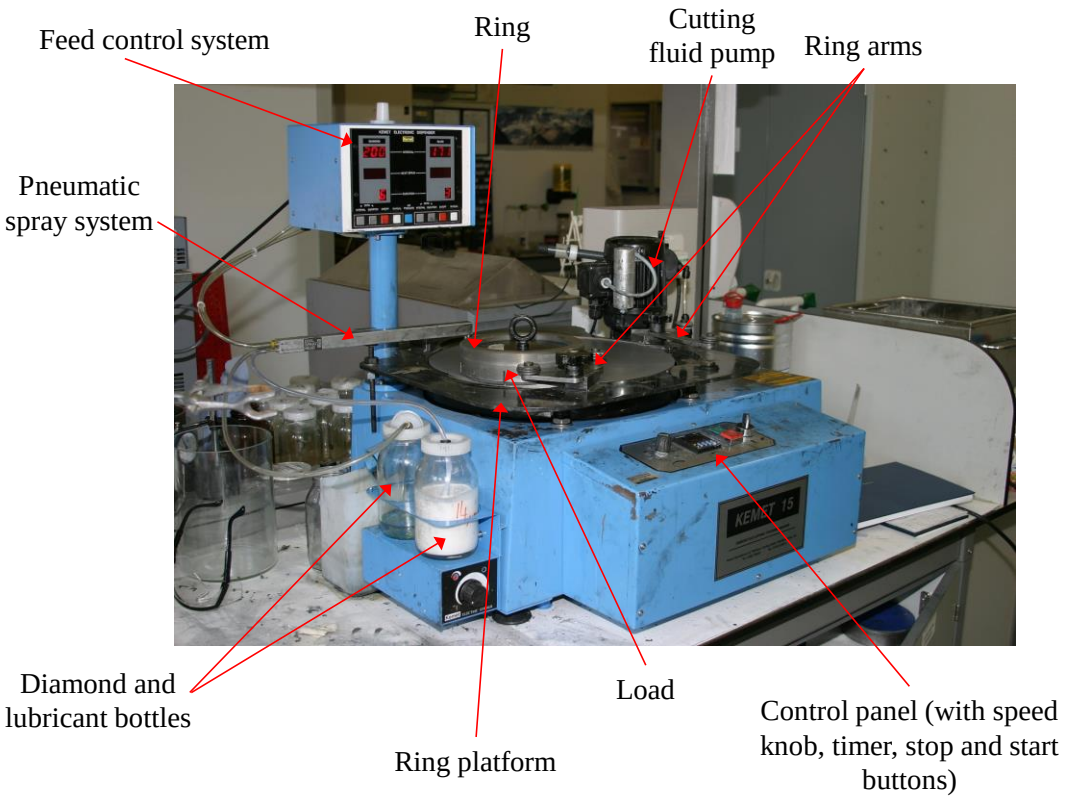

Figure 2 Image of the lapping machine during operation with labels for important systems

On the left-hand side of the rig are the Liquid Diamond and lubricant (Kemet Lubricating Fluid Type K) filled bottles, the diamond has a magnetic stirrer which maintained the diamond in suspension. Both the

diamond and lubricant are connected to the pneumatic system, which sucks the liquids up from the bottles and sprays onto the lapping discs, see Figure 3.

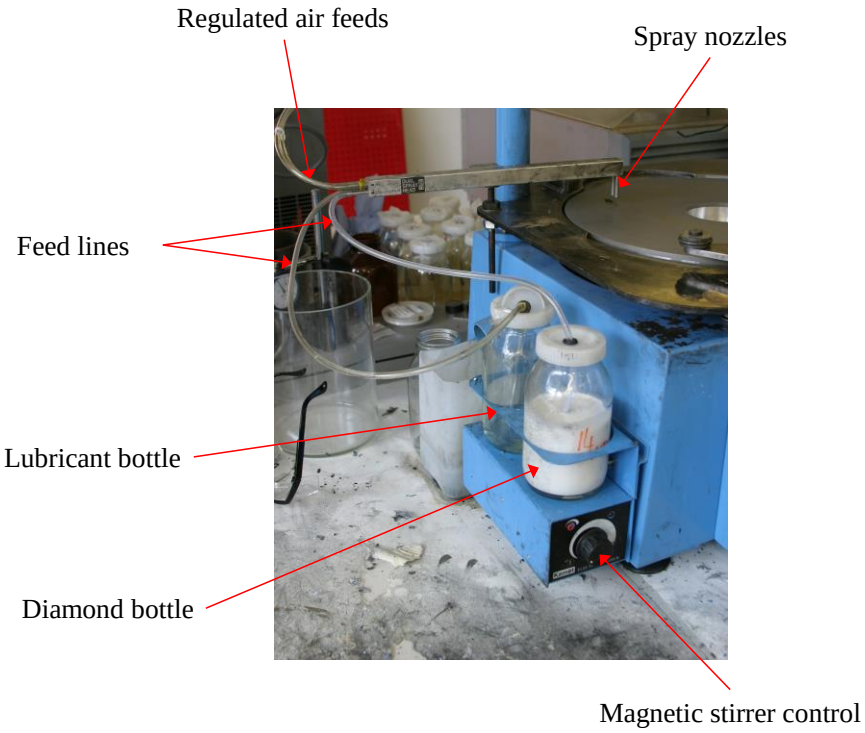

Figure 3 Image of the feed system for supplying diamond and lubricant to lapping discs.

Operation is controlled by the start and stop button, in addition the rotation speed of the base unit is controlled by a twisting knob. When the start button is depressed the base unit (and lapping disc) start rotating and will continue to rotate for the duration set by the timer or if the stop button is depressed. The diamond and lubricant feed-rate and interval are set on the feed panel, see Figure 4.

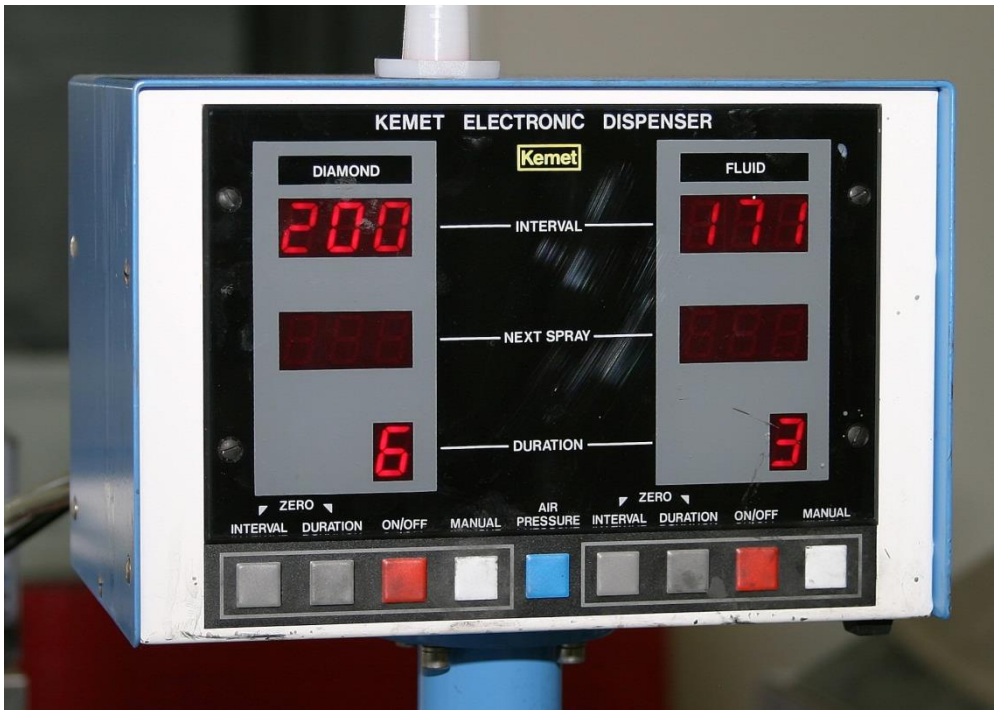

Figure 4 Image of the feed panel.

Additional operations include re-cutting of the iron and copper discs with an alumina suspension (Kemox Type O-400s). The alumina suspension is pumped from a unit in the back right-side of the base unit. The cloth pads on the aluminium discs need to be replaced periodically due to wear and scoring of the cloth; this is achieved by peeling the pads from the disc and removing any adhesive on the discs with solvent (acetone).

At the end of operation, or when lapping plates are changed the machine is thoroughly cleaned with paper and solvent (isopropanol) to remove the residual lapping fluids. The machine has a system where lapping fluids are allowed to drain base the rotating base unit, then into a side chute and collected for disposal (by Hazardous Waste Collection).

Identification of risks and risk mitigation

(list all associated risk likely encountered when using the equipment and any existing risk mitigation in place)

Type of Risk: Rotating machinery

Hazards: The machine uses a rotating base that the lapping plates are located on.

Mitigation: With the lapping plate located on the base unit there are no places to physically snag in the rotating components and the slow rotation speeds mean injury is very unlikely. The stop button is easily accessible during operation if a problem occurs.

Type of Risk: Pressure gas

Hazards: The machine uses compressed air to run the pneumatically driven liquid feed system that sprays diamond suspension and lubricant onto the disc.

Mitigation: The machine has a regulator which reduces the pressures used in operation. The system itself does not store pressure gas except in the regulator and pipes, thus the small volumes mean explosive release is highly unlikely.

Type of Risk: Manual handling

Hazards: The lapping discs need to be handled onto the base unit which can lead to fingers being trapped. Also as the discs are heavy they can be dropped with the possibility of crushing limbs.

Mitigation: Users are trained the appropriate method to offering the lapping plate to the base unit, as well as general handling of the discs.

Type of Risk: Electrical equipment

Hazards: The lapping machine has an electric operated motor and pump. The motor and its electrical system are contained within the machine. The pump is a self-contained unit, with a lead that connects the main unit.

Mitigation: The machine has been designed for purpose and has been supplied by a company. Annual PAT testing ensures that it is safe to use.

Type of Risk: Chemicals

Hazards: Two solvents are used: isopropanol is used for general cleaning and acetone in the removal of the lapping cloths. Three other chemicals are used during operation: Kemet Liquid Diamond Type K, Kemet Lubricating Fluid Type K and Kemox Type O-400s.

Mitigation: Appropriate PPE is supplied and users are required to wear them when handling these chemicals. The paper used to clean the machine of lapping fluids is collected for hazardous waste disposal, along with any fluid collected from the machine. COSHH forms and MSDS for all chemicals are provided.

Type of Risk: Sharp edges

Hazards: The lapping and polish process produces sharp edges on surfaces.

Mitigation: During training operators are specific warned about this issue.

Control Measures including training, PPE

(Identify significant hazards and actions/control measures to be taken)

All users will be trained in the safe operation of the lapping machine. Until training is complete all trainees will be supervised and not allowed to operate the machine by themselves.

Emergency Equipment Shutdown Procedure

(Describe the steps to shut the equipment in the event of an emergency and the location of any emergency stop(s) the equipment has)

In the event of emergency the lapping machine can be stopped using the main red stop button on the control panel and/or switched off at the main switch to the left of the equipment.

Unattended running

(Can this rig be run unattended? And if so what precautions are needed)

Due to the duration of lapping and polishing unattended running is common. The operator needs to complete the unattended running form and keep it close to the rig and post a second copy of the form on the entrance, making it visible to anybody entering the laboratory.

Faculty of Engineering and the Environment
COSHH assessment form

This form must be completed **before** any work with substances hazardous to health is begun, so that a suitable and sufficient assessment of the health risks is made.

Procedure being carried out	Using lapping machine		
Location where the substance will be used	7/2023		
What supervision or training will the person carrying out the procedure receive?	Training by / instruction from facility manager of experienced user	**Review date** [1]	7/8/2018
	Name	**Signature**	**Date**
Person performing the work	Dr. Terry Harvey		
Supervisor/grant holder	Prof. Ling Wang		
Divisional Safety Officer or other designated person	Dr. Terry Harvey		

[1] This assessment should be reviewed immediately if there is any reason to consider that the original assessment is no longer valid, e.g. due to significant changes in the work activity.

Attachments
The following documents must be attached:
- Risk assessment identifying the need for the COSHH assessment and clearly indicating the persons potentially at risk (e.g. staff, students, visitors etc.)
- Full description of the procedure.
- MSDS for all substances in 1 a) or b) below
- Any health and safety information provided by supplier in 1 c) below

1 Nature of the hazard and risks identified

a) Chemicals with Health hazards H phrases H300, H301, H304, H310, H311, H314, H318, H330, H331, H334, H340, H341, H350, H351, H360, H361, H370, H371, H372, H373, EUH029, EUH031, EUH032

Name of substance	Hazard phrases (Refer to MSDS - must be attached)	Possible exposure route (see key below)[2]	Risk from single acute exposure	Risks from repeated low exposure	Duration of adverse effect	Effects could be hazardous to human reproductive systems
Kemet Liquid Diamond Type K	H304	1, 2	Serious	Not serious	Short term	Not known
Kemet Lubricating Fluid Type K	H304	1, 2	Serious	Not serious	Short term	Not known
Kemox Type O	H304	1, 2	Serious	Not serious	Short term	Not known
Propanol	H319, H336	1, 2	Serious	Not serious	Short term	Not known
Acetone	H319, H336	1, 2	Serious	Not serious	Short term	Not known

[2] (1) Contact skin and/or eyes, (2) Inhalation, (3) Injection and/or sharps

b) Substances with Physical hazards H phrases H200, H201, H202, H203, H204, H205, H220, H221, H222, H223, H224, H225, H226, H228, H240, H241, H242, H250, H251, H252, H260, H261, H270, H271, H272, H280, H281, EUH001, EUH006, EUH014, EUH018, EUH019, EUH044

Name of substance	Hazard phrases (Refer to MSDS - must be attached)	What are the storage requirements for this material? How will they be met?	Quantity used in procedure	Quantity likely to be held in storage	Risk in planned use	Risk in uncontrolled release from storage
Kemet Liquid Diamond Type K	EUH066	Supplied bottle	10-100ml	0.5 litres	Minor	Minor
Kemet Lubricating Fluid Type K	EUH066	Supplied bottle	10-100ml	1 litre	Minor	Minor
Kemox Type O		Supplied bottle	10-100ml	1 litre	Minor	Minor
Propanol	H225	Supplied bottle or solvent spray bottle	10-100ml	5 litres	Minor	Minor
Acetone	H225	Supplied bottle or solvent spray bottle	10-100ml	5 litres	Minor	Minor

c) Substances without a CAS No and no associated H phrases

Name of substance	Nature of the hazard e.g. biological, flammable, explosive, corrosive	Any other information relating to risks arising from this hazard
n/a		

2 Use of substance and control of risks

a) Control measures

Name of substance	Provide a description of the control measures in place to protect the health and safety of both the user and other persons who may be exposed. Control measures should aim to reduce the risks of exposure to the minimum achievable. Consideration should be given to the use of alternative substances which are less hazardous and have a lower risk associated with their use. In this section you should also provide details of any post reactive products that have been made as a result of the procedure you have followed and the control measures you intend to use to minimise risks associated with these products. Provide details of any monitoring that will be carried out (e.g. for airborne contaminants or of exposed individuals) [3]. (NB: a full description of the procedure must be attached)	List personal protective equipment or containment required
Kemet Liquid Diamond Type K	Wear PPE, avoid contact with skin and eyes. IF IN EYES: Rinse cautiously with water for several minutes, seek medical attention. IF SWALLOWED: DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.	nitrile gloves; laboratory coat; safety spectacles
Kemet Lubricating Fluid Type K	Wear PPE, avoid contact with skin and eyes. IF IN EYES: Rinse cautiously with water for several minutes, seek medical attention. IF SWALLOWED: DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.	nitrile gloves; laboratory coat; safety spectacles
Kemox Type O	Wear PPE, avoid contact with skin and eyes. IF IN EYES: Rinse cautiously with water for several minutes, seek medical attention. IF SWALLOWED: DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.	nitrile gloves; laboratory coat; safety spectacles
Propanol	Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.	nitrile gloves; laboratory coat; safety spectacles
Acetone	Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.	nitrile gloves; laboratory coat; safety spectacles

[3] For the majority of work, atmospheric monitoring should not be necessary for protecting health, providing sufficient thought has gone into ensuring the adequacy of control measures in relation to risks, and the control measures are properly used and maintained

b) Emergency measures

Name of substance	Describe the actions to be taken in the event of uncontrolled release taking into account the quantity of the spill of the substance (i.e. several grams or kilograms), with details of any equipment and/or service required	List equipment and services required
Kemet Liquid Diamond Type K	Large spills will require the use of adsorbing material available from one of the spill kits in the laboratory, minor spills can be handled with laboratory wipes; these materials will be place in the heavy contaminated waste bins, prior to hazard waste collection	nitrile gloves; laboratory coat; safety spectacles, spill kit
Kemet Lubricating Fluid Type K	Large spills will require the use of adsorbing material available from one of the spill kits in the laboratory, minor spills can be handled with laboratory wipes; these materials will be place in the heavy contaminated waste bins, prior to hazard waste collection	nitrile gloves; laboratory coat; safety spectacles, spill kit
Kemox Type O	Large spills will require the use of adsorbing material available from one of the spill kits in the laboratory, minor spills can be handled with laboratory wipes; these materials will be place in the heavy contaminated waste bins, prior to hazard waste collection	nitrile gloves; laboratory coat; safety spectacles, spill kit
Propanol	Minor spills can be adsorbed with laboratory wipes, very large spills may require evacuation of the laboratory after opening the windows	nitrile gloves; laboratory coat; safety spectacles
Acetone	Minor spills can be adsorbed with laboratory wipes, very large spills may require evacuation of the laboratory after opening the windows	nitrile gloves; laboratory coat; safety spectacles

c) Disposal of substance or product resulting from its use.

Name of substance / product	Describe the method to be used for disposal of the substance or its products, with details of any control measures, services, labelling, and/or permissions required	List equipment and services required
Kemet Liquid Diamond Type K	Disposal initial requires pouring waste liquid into the ‘waste solvent bottle’, when the bottle is full it will collected in as ‘hazardous waste’	Hazardous waste collection
Kemet Lubricating Fluid Type K	Disposal initial requires pouring waste liquid into the ‘waste solvent bottle’, when the bottle is full it will collected in as ‘hazardous waste’	Hazardous waste collection
Kemox Type O	Disposal initial requires pouring waste liquid into the ‘waste solvent bottle’, when the bottle is full it will collected in as ‘hazardous waste’	Hazardous waste collection

Propanol	Disposal initial requires pouring waste liquid into the ‘waste solvent bottle’, when the bottle is full it will collected in as ‘hazardous waste’	Hazardous waste collection
Acetone	Disposal initial requires pouring waste liquid into the ‘waste solvent bottle’, when the bottle is full it will collected in as ‘hazardous waste’	Hazardous waste collection

SAFETY DATA SHEET

Creation Date 28-Apr-2009 **Revision Date** 27-Sep-2016 **Revision Number** 8

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

1.1. Product identification

Product Description:	**Acetone**
Cat No. :	**A/0560/08, A/0560/15, A/0560/17, A/0560/21, A/0560/25, A/0560/27, A/0560/PK4, A/0560/DH25, A/0560/PB08, A/0560/PB17, A/0560/PC17, A/0560/PC21, A/0560/PC24, A/0560/PC25, A/0560/21RSS, A/0560/24RSS, A/0560/25RSS, A/0560/34RSS, A/0560/27RSS, A/0560/21S**
Synonyms	2-Propanone
CAS-No	67-64-1
EC-No.	200-662-2
Molecular Formula	C3 H6 O
Reach Registration Number	01-2119471330-49

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

Recommended Use	Laboratory chemicals.
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company	Fisher Scientific UK Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom
E-mail address	begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Chemtrec US: (800) 424-9300
Chemtrec EU: 001 (202) 483-7616
Tel: 01509 231166

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids	Category 2 (H225)

Health hazards

Serious Eye Damage/Eye Irritation	Category 2 (H319)
Specific target organ toxicity - (single exposure)	Category 3 (H336)

Environmental hazards
Based on available data, the classification criteria are not met

2.2. Label elements

Signal Word **Danger**

Hazard Statements

H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness
EUH066 - Repeated exposure may cause skin dryness or cracking

Precautionary Statements

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P240 - Ground/Bond container and receiving equipment
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Acetone	67-64-1	EEC No. 200-662-2	>95	Flam. Liq. 2 (H225) Eye Irrit. 2 (H319) STOT SE 3 (H336) EUH066

Reach Registration Number	01-2119471330-49

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Ingestion Do not induce vomiting. Obtain medical attention.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.

Protection of First-aiders Remove all sources of ignition. Use personal protective equipment.

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

Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: May cause pulmonary edema

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
CO_2, dry chemical, dry sand, alcohol-resistant foam. Water spray. Cool closed containers exposed to fire with water spray.

Extinguishing media which must not be used for safety reasons
Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO_2), Formaldehyde, Methanol.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and inhalation of vapors.

6.2. Environmental precautions

Should not be released into the environment.

6.3. Methods and material for containment and cleaning up

Remove all sources of ignition. Take precautionary measures against static discharges. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Wear personal protective equipment. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only non-sparking tools. Use explosion-proof equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Flammables area. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition.

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **EU** - Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component	European Union	The United Kingdom	France	Belgium	Spain
Acetone	TWA: 500 ppm 8 hr TWA: 1210 mg/m³ 8 hr	TWA: 500 ppm TWA: 1210 mg/m³ STEL: 1500 ppm STEL: 3620 mg/m³	TWA / VME: 500 ppm (8 heures). restrictive limit TWA / VME: 1210 mg/m³ (8 heures). restrictive limit STEL / VLCT: 1000 ppm. restrictive limit STEL / VLCT: 2420 mg/m³. restrictive limit	TWA: 500 ppm 8 uren TWA: 1210 mg/m³ 8 uren STEL: 1000 ppm 15 minuten STEL: 2420 mg/m³ 15 minuten	TWA / VLA-ED: 500 ppm (8 horas) TWA / VLA-ED: 1210 mg/m³ (8 horas)

Component	Italy	Germany	Portugal	The Netherlands	Finland
Acetone	TWA: 500 ppm 8 ore. Media Ponderata nel Tempo TWA: 1210 mg/m³ 8 ore. Media Ponderata nel Tempo	TWA: 500 ppm TWA: 1200 mg/m³	STEL: 750 ppm 15 minutos TWA: 500 ppm 8 horas TWA: 1210 mg/m³ 8 horas	STEL: 2420 mg/m³ 15 minuten TWA: 1210 mg/m³ 8 uren	TWA: 500 ppm 8 tunteina TWA: 1200 mg/m³ 8 tunteina STEL: 630 ppm 15 minuutteina STEL: 1500 mg/m³ 15 minuutteina

Component	Austria	Denmark	Switzerland	Poland	Norway
Acetone	MAK-KZW: 2000 ppm 15 Minuten MAK-KZW: 4800 mg/m³ 15 Minuten MAK-TMW: 500 ppm 8 Stunden MAK-TMW: 1200 mg/m³ 8 Stunden	TWA: 250 ppm 8 timer TWA: 600 mg/m³ 8 timer	STEL: 1000 ppm 15 Minuten STEL: 2400 mg/m³ 15 Minuten TWA: 500 ppm 8 Stunden TWA: 1200 mg/m³ 8 Stunden	STEL: 1800 mg/m³ 15 minutach TWA: 600 mg/m³ 8 godzinach	TWA: 125 ppm 8 timer TWA: 295 mg/m³ 8 timer STEL: 125 ppm 15 minutter. STEL: 295 mg/m³ 15 minutter.

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Acetone	TWA: 600 mg/m³ STEL : 1400 mg/m³	TWA-GVI: 500 ppm 8 satima. TWA-GVI: 1210 mg/m³ 8 satima. STEL-KGVI: 1500 ppm 15 minutama. STEL-KGVI: 3620	TWA: 500 ppm 8 hr. TWA: 1210 mg/m³ 8 hr. STEL: 1500 ppm 15 min STEL: 3630 mg/m³ 15 min	Skin-potential for cutaneous absorption TWA: 500 ppm TWA: 1210 mg/m³	TWA: 800 mg/m³ 8 hodinách. Ceiling: 1500 mg/m³

		mg/m³ 15 minutama.			

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Acetone	TWA: 500 ppm 8 tundides. TWA: 1210 mg/m³ 8 tundides.	TWA: 500 ppm 8 hr TWA: 1210 mg/m³ 8 hr	STEL: 3560 mg/m³ TWA: 1780 mg/m³	STEL: 2420 mg/m³ 15 percekben. CK Substances with European indicative limits (96/94/EC, 2000/39/EC, 2006/15/EC, 2009/161/EU), which currently has no peak limit concentration. In these cases, Annex 3.1. should be used exercised TWA: 1210 mg/m³ 8 órában. AK	TWA: 250 ppm 8 klukkustundum. TWA: 600 mg/m³ 8 klukkustundum. Ceiling: 500 ppm Ceiling: 1200 mg/m³

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Acetone	TWA: 500 ppm TWA: 1210 mg/m³	TWA: 500 ppm IPRD TWA: 1210 mg/m³ IPRD STEL: 1000 ppm STEL: 2420 mg/m³	TWA: 500 ppm 8 Stunden TWA: 1210 mg/m³ 8 Stunden	TWA: 500 ppm TWA: 1210 mg/m³	TWA: 500 ppm 8 ore TWA: 1210 mg/m³ 8 ore

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Acetone	TWA: 200 mg/m³ STEL: 800 mg/m³ vapor	Ceiling: 2420 mg/m³ TWA: 500 ppm TWA: 1210 mg/m³	TWA: 500 ppm 8 urah TWA: 1210 mg/m³ 8 urah	STV: 500 ppm 15 minuter STV: 1200 mg/m³ 15 minuter LLV: 250 ppm 8 timmar. LLV: 600 mg/m³ 8 timmar.	TWA: 500 ppm 8 saat TWA: 1210 mg/m³ 8 saat

Biological limit values

List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
Acetone			Acetone: 100 mg/L urine end of shift	Acetone: 50 mg/L urine end of shift	Acetone: 80 mg/L urine (end of shift)

Component	Italy	Finland	Denmark	Bulgaria	Romania
Acetone				Acetone: 80 mg/L urine at the end of exposure or end of shift	Acetone: 50 mg/L urine end of shift

Component	Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
Acetone			Acetone: 80 mg/L urine end of exposure or work shift		

Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS70 General methods for sampling airborne gases and vapours

MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography

MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				186 mg/kg

Inhalation	2420 mg/m³	1210 mg/m³

Predicted No Effect Concentration (PNEC) See values below.

Fresh water	10.6 mg/l
Fresh water sediment	30.4 mg/kg
Marine water	1.06 mg/l
Marine water sediment	3.04 mg/kg
Water Intermittent	21 mg/l
Microorganisms in sewage treatment	100 mg/l
Soil (Agriculture)	29.5 mg/kg

8.2. Exposure controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	> 480 minutes	0.5 mm	EN 374 Level 6	As tested under EN374-3 Determination of Resistance to Permeation by Chemicals
Neoprene gloves	< 30 minutes	0.45 mm		

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: low boiling organic solvent Type AX Brown conforming to EN371

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls Do not allow material to contaminate ground water system.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Colorless
Physical State	Liquid

Odor	sweet	
Odor Threshold	19.8 ppm	
pH	7	
Melting Point/Range	-95 °C / -139 °F	
Softening Point	No data available	
Boiling Point/Range	56 °C / 132.8 °F	
Flash Point	-20 °C / -4 °F	**Method -** Closed cup
Evaporation Rate	5.6 (Butyl Acetate = 1.0)	
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	**Lower** 2.1 vol% **Upper** 13 vol%	
Vapor Pressure	247 mbar @ 20 °C	
Vapor Density	2.0	(Air = 1.0)
Specific Gravity / Density	0.790	
Bulk Density	Not applicable	Liquid
Water Solubility	soluble	
Solubility in other solvents	No information available	

Partition Coefficient (n-octanol/water)

Component	**log Pow**
Acetone	-0.24

Autoignition Temperature	465 °C / 869 °F	
Decomposition Temperature	> 4°C	
Viscosity	0.32 mPa.s @ 20 °C	
Explosive Properties	Not explosive	Vapors may form explosive mixtures with air
Oxidizing Properties	Not oxidising	

9.2. Other information

Molecular Formula	C3 H6 O
Molecular Weight	58.08
Refractive index	1.358 - 1.359

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

10.4. Conditions to avoid

Heat, flames and sparks. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Strong reducing agents. Strong bases. Peroxides. Halogenated compounds. Alkali metals. Amines.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO_2). Formaldehyde. Methanol.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal Based on available data, the classification criteria are not met
Inhalation Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetone	5800 mg/kg (Rat)	> 15800 mg/kg (rabbit) > 7400 mg/kg (rat)	76 mg/l, 4 h, (rat)

(b) skin corrosion/irritation; Based on available data, the classification criteria are not met

(c) serious eye damage/irritation; Category 2
Test method OECD Test Guideline 405
Test species rabbit
Observation end point Irritating to eyes

(d) respiratory or skin sensitization;

Respiratory Based on available data, the classification criteria are not met
Skin Based on available data, the classification criteria are not met

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

Component	Test method	Test species	Study result
Acetone 67-64-1 (>95)	OECD Test Guideline 471 AMES test	in vivo	negative
	OECD Test Guideline 476 Mammalian Gene cell mutation	in vitro	negative

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Category 3

Results / Target organs Central nervous system (CNS).

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs No information available.

(j) aspiration hazard; Based on available data, the classification criteria are not met

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: May cause pulmonary edema

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects .

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Acetone	Oncorhynchus mykiss: LC50 = 5540 mg/l 96h Alburnus alburnus: LC50 = 11000 mg/l 96h Leuciscus idus: LC50 = 11300 mg/L/48h Salmo gairdneri: LC50 =	EC50 = 8800 mg/L/48h EC50 = 12700 mg/L/48h EC50 = 12600 mg/L/48h	NOEC = 430 mg/l (algae; 96 h)	EC50 = 14500 mg/L/15 min

	6100 mg/L/24h			

12.2. Persistence and degradability Readily biodegradable

Persistence Persistence is unlikely, based on information available.

Component	Degradability
Acetone 67-64-1 (>95)	91 % (28 d) (OECD 301 B)

12.3. Bioaccumulative potential Does not bioaccumulate

Component	log Pow	Bioconcentration factor (BCF)
Acetone	-0.24	0.69

12.4. Mobility in soil The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in air

12.5. Results of PBT and vPvB assessment Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

12.6. Other adverse effects

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

European Waste Catalogue (EWC) According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not dispose of waste into sewer. Can be incinerated, when in compliance with local regulations.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN1090
14.2. UN proper shipping name ACETONE
14.3. Transport hazard class(es) 3
14.4. Packing group II

ADR

14.1. UN number UN1090
14.2. UN proper shipping name ACETONE
14.3. Transport hazard class(es) 3
14.4. Packing group II

IATA

14.1. UN number UN1090
14.2. UN proper shipping name ACETONE
14.3. Transport hazard class(es) 3

14.4. Packing group II

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

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

International Inventories X = listed

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Acetone	200-662-2	-		X	X	-	X	X	X	X	X

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Acetone	WGK 1	

Component	France - INRS (Tables of occupational diseases)
Acetone	Tableaux des maladies professionnelles (TMP) - RG 84

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.
Take note of Dir 94/33/EC on the protection of young people at work
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3
H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness
EUH066 - Repeated exposure may cause skin dryness or cracking

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
PNEC - Predicted No Effect Concentration
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor
ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - Volatile Organic Compounds

Key literature references and sources for data
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Creation Date	28-Apr-2009
Revision Date	27-Sep-2016
Revision Summary	Update to Format, SDS sections updated, 2, 7, 11.

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

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet

SAFETY DATA SHEET

Creation Date 01-Sep-2009 **Revision Date** 30-May-2018 **Revision Number** 16

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

1.1. Product identification

Product Description:	**Propan-2-ol**
Cat No. :	**P/7490/08, P/7490/15, P/7490/17, P/7490/21, P/7490/FP21, P/7490/25, P/7490/27, P/7490/DH25, P/7490/MC15, P/7490/PB08, P/7490/PB17, P/7490/PC24, P/7490/PC25, P/7490/21RSS, P/7490/24RSS, P/7490/25RSS, P/7490/34RSS, P/7490/27RSS**
Synonyms	2-Propanol; IPA; Isopropyl alcohol; Propan-2-ol; Isopropanol
CAS-No	67-63-0
EC-No.	200-661-7
Molecular Formula	C3 H8 O
Reach Registration Number	01-2119457558-25

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

Recommended Use	Laboratory chemicals.
Sector of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company	Fisher Scientific UK Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom
E-mail address	begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Tel: 01509 231166
Chemtrec US: (800) 424-9300
Chemtrec EU: 001 (202) 483-7616

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids	Category 2 (H225)

Health hazards

Serious Eye Damage/Eye Irritation	Category 2 (H319)
Specific target organ toxicity - (single exposure)	Category 3 (H336)

Environmental hazards
Based on available data, the classification criteria are not met

2.2. Label elements

Signal Word **Danger**

Hazard Statements
H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness

Precautionary Statements
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P240 - Ground/bond container and receiving equipment
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Isopropyl alcohol	67-63-0	200-661-7	>95	Flam. Liq. 2 (H225) Eye Irrit. 2 (H319) STOT SE 3 (H336)

Reach Registration Number	01-2119457558-25

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.
Ingestion	Do not induce vomiting. Obtain medical attention.
Inhalation	Move to fresh air. Obtain medical attention. If not breathing, give artificial respiration.
Self-Protection of the First Aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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

Breathing difficulties. May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

4.3. Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
CO_2, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.

Extinguishing media which must not be used for safety reasons
Do not use water jet. Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO_2), peroxides.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing.

6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Flammables area. Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component	The United Kingdom	European Union	Ireland
Isopropyl alcohol	STEL: 500 ppm 15 min STEL: 1250 mg/m^3 15 min TWA: 400 ppm 8 hr TWA: 999 mg/m^3 8 hr		TWA: 200 ppm 8 hr. STEL: 400 ppm 15 min Skin

Biological limit values
List source(s):

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
MDHS70 General methods for sampling airborne gases and vapours
MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas

chromatography
MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				888 mg/kg
Inhalation				500 mg/m³

Predicted No Effect Concentration (PNEC) According to our experience and to the information provided to us, the product does not have any harmful effects if it is used and handled as specified. See values below.

Fresh water	140.9 mg/l
Fresh water sediment	552 mg/kg
Marine water	140.9 mg/l
Water Intermittent	140.9 mg/l
Food chain	160 mg/kg
Microorganisms in sewage treatment	2251 mg/l
Soil (Agriculture)	28 mg/kg

8.2. Exposure controls

Engineering Measures
Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure adequate ventilation, especially in confined areas.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	> 480 minutes	0.5 mm	EN 374	Permeation rate < 0.9 µg/cm2/min
Nitrile rubber	> 360 - 480 minutes	0.35 - 0.55 mm		As tested under EN374-3 Determination of Resistance to Permeation by Chemicals
Viton (R)	> 480 minutes	0.4 mm		
Neoprene	< 40 minutes	0.7 mm		

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to EN14387

Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls No information available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Colorless	
Physical State	Liquid	
Odor	Alcohol-like	
Odor Threshold	No data available	
pH	7	1% aq. sol
Melting Point/Range	-89.5 °C / -129.1 °F	
Softening Point	No data available	
Boiling Point/Range	81 - 83 °C / 177.8 - 181.4 °F	@ 760 mmHg
Flash Point	12 °C / 53.6 °F	**Method -** Abel Closed Cup (BS 2000 Part 170, IP 170, AS/NZS 2106)
Evaporation Rate	1.7	ASTM D 3539 (Butyl acetate = 1.0)
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	**Lower** 2 Vol% **Upper** 12 Vol%	
Vapor Pressure	43 mmHg @ 20 °C	
Vapor Density	2.1 @ 20 °C / 68 °F	(Air = 1.0)
Specific Gravity / Density	0.785	ASTM D-4052
Bulk Density	Not applicable	Liquid
Water Solubility	Miscible	
Solubility in other solvents	No information available	

Partition Coefficient (n-octanol/water)

Component	**log Pow**
Isopropyl alcohol	0.05

Autoignition Temperature	425 - °C / 797 - °F	ASTM E-659
Decomposition Temperature	No data available	
Viscosity	2.27 mPa.s at 20 °C	
Explosive Properties	Not explosive	explosive air/vapour mixtures possible Vapors may form explosive mixtures with air
Oxidizing Properties	No information available	

9.2. Other information

Molecular Formula	C3 H8 O
Molecular Weight	60.1
VOC Content(%)	100% (Organic Carbon (by mass) = 59.9 %) (EC/1999/13)
Refractive index	1.377 at 20 °C / 68 °F (ASTM D-1218)
Surface tension	22.7 mN/m at 20 °C / 68 °F
Coefficient of expansion	0.0009 / °C
Dielectric constant	18.6 at 20 °C / 68 °F
Heat of vapourisation	665 J/g
Specific heat capacity	3 kJ/kg °C at 20 °C / 68 °F
Thermal conductivity	0.137 W/m °C at 20 °C / 68 °F

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous polymerization does not occur.
Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Acids. Halogens. Acid anhydrides.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO_2). peroxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal Based on available data, the classification criteria are not met
Inhalation Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Isopropyl alcohol	5840 mg/kg (Rat)	13900 mg/kg (Rat) 12870 mg/kg (Rabbit)	72.6 mg/L (Rat) 4 h

(b) skin corrosion/irritation; Based on available data, the classification criteria are not met

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

Respiratory Based on available data, the classification criteria are not met
Skin Based on available data, the classification criteria are not met

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; Based on available data, the classification criteria are not met

(h) STOT-single exposure; Category 3

Results / Target organs Central nervous system (CNS).

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; Based on available data, the classification criteria are not met

Symptoms / effects,both acute and delayed May cause central nervous system depression: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects . Do not empty into drains.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Isopropyl alcohol	LC50: = 11130 mg/L, 96h static (Pimephales promelas) LC50: > 1400000 µg/L, 96h (Lepomis macrochirus) LC50: = 9640 mg/L, 96h flow-through (Pimephales promelas)	13299 mg/L EC50 = 48 h 9714 mg/L EC50 = 24 h	EC50: > 1000 mg/L, 72h (Desmodesmus subspicatus) EC50: > 1000 mg/L, 96h (Desmodesmus subspicatus)	= 35390 mg/L EC50 Photobacterium phosphoreum 5 min

12.2. Persistence and degradability Expected to be biodegradable

Persistence Persistence is unlikely, based on information available.

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Isopropyl alcohol	0.05	No data available

12.4. Mobility in soil The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in air

Surface tension 22.7 mN/m at 20 °C / 68 °F

12.5. Results of PBT and vPvB assessment Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

12.6. Other adverse effects

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

European Waste Catalogue (EWC) According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not dispose of waste into sewer. Can be incinerated, when in compliance with local regulations.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN1219
14.2. UN proper shipping name Isopropanol (Isopropyl alcohol)
14.3. Transport hazard class(es) 3
14.4. Packing group II

ADR

14.1. UN number UN1219
14.2. UN proper shipping name Isopropanol (Isopropyl alcohol)
14.3. Transport hazard class(es) 3
14.4. Packing group II

IATA

14.1. UN number UN1219
14.2. UN proper shipping name Isopropanol
14.3. Transport hazard class(es) 3
14.4. Packing group II

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

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

International Inventories X = listed.

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Isopropyl alcohol	200-661-7	-		X	X	-	X	X	X	X	X

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Isopropyl alcohol	WGK 1	

Component	France - INRS (Tables of occupational diseases)
Isopropyl alcohol	Tableaux des maladies professionnelles (TMP) - RG 84

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC - Predicted No Effect Concentration

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from Ships

ATE - Acute Toxicity Estimate

VOC - Volatile Organic Compounds

Key literature references and sources for data

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Creation Date	01-Sep-2009
Revision Date	30-May-2018
Revision Summary	SDS sections updated, 9.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet

SAFETY DATA SHEET

according to Regulation (EU) 2015/830

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Revision date 2018-04-18

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

1.1. Product identifier

Product name	KEMOX TYPE O

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

Product Use	[SU3] Industrial uses: Uses of substances as such or in preparations at industrial sites; [SU17] General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment; [PC14] Metal surface treatment products, including galvanic and electroplating products; [PROC24] High (mechanical) energy work-up of substances bound in materials and/or articles; [ERC4] Industrial use of processing aids in processes and products, not becoming part of articles;
Description	For industrial/research use only. See seperate instruction sheet for correct method of use. Lubricants and lubricant additives.

1.3. Details of the supplier of the safety data sheet

Company	Kemet International Ltd
Address	Parkwood Trading Estate Maidstone Kent ME15 9NJ
Web	www.kemet.co.uk
Telephone	+44 (0)1622 755287
Fax	+44 (0)1622 670915
Email	sales@kemet.co.uk
Email address of the competent person	nroper@kemet.co.uk

1.4. Emergency telephone number

Emergency telephone number	01622755287
Company	Kemet International Ltd 09.00-17.00 Poison Centre England 0854 46 47 Scotland 08454 24 24 24

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.2. Classification - EC 1272/2008	Asp. Tox. 1: H304;

2.2. Label elements

Hazard pictograms	

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2.2. Label elements

Signal Word	Danger
Hazard Statement	Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.
Precautionary Statement: Response	P301+P310 - IF SWALLOWED: IF SWALLOWED: Immediately call a POISON CENTER/doctor/ . P331 - Do NOT induce vomiting.
Precautionary Statement: Storage	P405 - Store locked up.
Precautionary Statement: Disposal	P501 - Dispose of contents/container to

2.3. Other hazards

Other hazards	Avoid Static Electrical Discharge. May form Explosive/Flammable vapour/air mixtures.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

EC 1272/2008

Chemical Name	Index No.	CAS No.	EC No.	REACH Registration Number	Conc. (%w/w)	Classification
Distillates (Petroleum) Hydrotreated light Paraffinic		64742-55-8	265-158-7	01-2119487077-29	90 - 100%	Asp. Tox. 1: H304;
Aluminium Oxide (Aluminium oxides)		1344-28-1	215-691-6	01-2119529248-35	1 - 10%	
Silica Fumed 99.8%		112945-52-5	231-545-4		1 - 10%	

Further information

	Note H in ASL applies to the product or one of its components. Components not listed in Annex 1 must be self classified. Note P in ASL applies to the product or one of its components. Benzene Concentration is <0.1% (w/w). IP 346 DMSO content <3% Note H applies Note L Applies.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air. Seek medical attention.
Eye contact	Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention.
Skin contact	Wash off immediately with plenty of soap and water. Remove contaminated clothing.
Ingestion	DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.

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

Inhalation	Upper respiratory irritation, irritation of nose, throat and airway. Nausea, vomiting. Unconsiousness and convulsions can occur.
Eye contact	May cause irritation to eyes.
Ingestion	Harmful if swallowed. The product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hrs) May cause discomfort if swallowed, nausea, vomiting and central nervous system depresion.

4.3. Indication of any immediate medical attention and special treatment needed

	If you feel unwell, seek medical advice (show the label where possible). Treat Symptomatically.
Eye contact	Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Causes severe inflammation and may damage the cornea.

General information

	If you feel unwell, seek medical advice (show the label where possible). Keep the affected person warm and at rest. Remove contaminated clothing. Wash all contaminated clothing before reuse.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Use extinguishing media appropriate to the surrounding fire conditions. In case of fire, use dry chemical, Carbon dioxide (CO2), Foam.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Fire may cause evolution ofhydrocarbons., Aldehydes, Carbon dioxide., Carbon monoxide.

5.3. Advice for firefighters

Do not allow runoff water to enter sewers or drains. Use water spray to keep containers cool. Wear self contained breathing apparatus and protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation of the working area. Keep personnel away from spill. Evacuate personnel to a safe area.

6.2. Environmental precautions

Do not allow product to enter drains.

6.3. Methods and material for containment and cleaning up

Clean spillage area thoroughly with plenty of water. Absorb with inert, absorbent material. Transfer to suitable, labelled containers for disposal.

6.4. Reference to other sections

See section 2 ,7, 8 & 9. for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Wear suitable protective equipment. Do not breathe gas/fumes/vapour/spray. Use in a well ventilated area. Avoid contact with eyes and skin. Do not eat, drink or smoke in areas where this product is used or stored.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a cool, dry, well ventilated area. Keep containers tightly closed.

7.3. Specific end use(s)

Use as Supplied. For use as a metal working lubricant/coolant in industrial applications only.

Suitable packaging

Mild steel containers. Plastic containers. Polytetrafluoroethylene (PTFE). Stainless steel containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Oil Mists must be kept below 5 mg/m3.

8.1.1. Exposure Limit Values

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8.1.1. Exposure Limit Values

Aluminium Oxide (Aluminium oxides)	WEL 8-hr limit ppm: -	WEL 8-hr limit mg/m3: -
	WEL 15 min limit ppm: -	WEL 15 min limit mg/m3: -
	WEL 8-hr limit mg/m3 total inhalable dust: 10	WEL 15 min limit mg/m3 total inhalable dust: -
	WEL 8-hr limit mg/m3 total respirable dust: 4	WEL 15 min limit mg/m3 total respirable dust: -
Distillates (Petroleum) Hydrotreated light Paraffinic	WEL 8-hr limit ppm:	WEL 8-hr limit mg/m3: 5
	WEL 15 min limit ppm:	WEL 15 min limit mg/m3:
	WEL 8-hr limit mg/m3 total inhalable dust: -	WEL 15 min limit mg/m3 total inhalable dust: -
	WEL 8-hr limit mg/m3 total respirable dust: -	WEL 15 min limit mg/m3 total respirable dust: -
Silica Fumed 99.8%	WEL 8-hr limit ppm:	WEL 8-hr limit mg/m3:
	WEL 15 min limit ppm:	WEL 15 min limit mg/m3:
	WEL 8-hr limit mg/m3 total inhalable dust: 6	WEL 15 min limit mg/m3 total inhalable dust:
	WEL 8-hr limit mg/m3 total respirable dust: 2.4	WEL 15 min limit mg/m3 total respirable dust:

DNEL: Derived no-effect level.

Exposure Pattern - Workers

Distillates (Petroleum) Hydrotreated light Paraffinic	Long-term - inhalation - Local effects 5.4 mg/kg

Exposure Pattern - General population

Distillates (Petroleum) Hydrotreated light Paraffinic	Long-term - inhalation - Local effects 1.2 mg/kg

8.2. Exposure controls

8.2.1. Appropriate engineering controls	Ensure adequate ventilation of the working area.
8.2.2. Individual protection measures	Avoid contact with eyes and skin. Adopt best Manual Handling considerations when handling, carrying and dispensing. Apron (Plastic or rubber). Rubber boots.
Eye / face protection	Approved safety goggles. Avoid contact with eyes. Wear Splash-proof eye goggles manufactured and tested according to EN 166.
Skin protection - Handprotection	Use Chemical resistant gloves according to EN 374. Suitability and durability of the glove is dependant on glove material and duration of contact. Breakthrough time glove material and thickness data are currently not available. Contact the glove manufacturer for more information. Niltrile rubber - NBR (, PVA, Viton >480 Mins).
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment. Not normally required.
8.2.3. Environmental exposure controls	Do not allow product to enter drains. Do not allow runoff water to enter sewers or drains.
Occupational exposure controls	Appropriate local exhaust ventilation is required. Exposure above the recommended occupational exposure limit (OEL) may cause adverse health effects.

SECTION 9: Physical and chemical properties

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9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Off white/Amber
Odour	Characteristic
Odour threshold	No data available
pH	No data available
Melting point	Not applicable.
Initial boiling point	≈ 280
Flash point	> 145 °C
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Upper Explosive Limit	7 %
Lower Explosive Limit	0.9 %
Vapour pressure	< 0.001 Pa
Vapour density	No data available
Relative density	≈ 0.9 kg/m3
Partition coefficient	No data available
Autoignition temperature	No data available
Viscosity	≈ 10 x 10-6 m²/s @ 40 °C (ISO 3219)
Explosive properties	No data available
Oxidising properties	No data available

9.2. Other information

Conductivity	No data available
Surface tension	No data available
Gas group	Not applicable.
Benzene Content	No data available
Lead content	No data available
VOC (Volatile organic compounds)	No data available

Water solubility

Insoluble.

Further information

Liquid. May form Explosive/Flammable vapour/air mixtures.

SECTION 10: Stability and reactivity

10.1. Reactivity

Avoid sparks, flames, heat and sources of ignition.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None expected under normal conditions of use.

10.4. Conditions to avoid

Heat, sparks and open flames.

10.5. Incompatible materials

Strong acids. Strong oxidising agents.

10.6. Hazardous decomposition products

Incomplete combustion will produce toxic and noxious fumes including carbon monoxide and

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10.6. Hazardous decomposition products

	carbon dioxide. Aldehydes. Hydrocarbons.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	No data is available on this product.
Skin corrosion/irritation	May cause irritation to skin.
Serious eye damage/irritation	May cause irritation to eyes.
Respiratory or skin sensitisation	No data is available on this product.
Carcinogenicity	No data is available on this product.
Reproductive toxicity	No data is available on this product.
STOT-single exposure	No known effects based on the information supplied.
STOT-repeated exposure	No known effects based on the information supplied.
Aspiration hazard	The fluid can enter the lungs and cause damage. May be fatal if swallowed and enters airways.
Repeated or prolonged exposure	Repeated or prolonged exposure may cause dermatitis.

11.1.4. Toxicological Information

Distillates (Petroleum) Hydrotreated light Paraffinic	**Oral Rat LD50:** >5000mg **Inhalation Rat LC50/4 h:** >5 mg/l Vapours	**Dermal Rabbit LD50:** >5000mg
Silica Fumed 99.8%	**Dermal Rat LD50:** 2000 mg/kg	**Oral Rat LD50:** 5000 mg/kg

11.1.8. Symptoms related to the physical, chemical and toxicological characteristics

	May caues discomfort if swallowed. Gastrointestinal symptoms include upset stomach, nausea, vomiting and diarrhoea. May cause irritation to the respiratory system.In high concentrations vapours are narcotic and may cause headache, fatigue, dizziness and nauzia along with CNS depression.

SECTION 12: Ecological information

12.1. Toxicity

Distillates (Petroleum) Hydrotreated light Paraffinic	**Daphnia EC50/48h:** 10000.0000 mg/l	**Fish LC50/96h:** 100.0000 mg/l
Silica Fumed 99.8%	**Fish LC50/96h:** 10000.0000 mg/l	

	No data is available on this product.

12.2. Persistence and degradability

	The product is not readily biodegradable but is expected to be inherently biodegradable based on available information.

12.3. Bioaccumulative potential

	No data is available on this product.

Partition coefficient

	KEMOX TYPE O No data available

12.4. Mobility in soil

	No data is available on this product.

12.5. Results of PBT and vPvB assessment

	Not classified as PBT/vPvB by current Eu Criteria.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

	12 01 07 mineral- based machining oils free of halogens (except emulsions and solutions). 12 01 09 machining emulsions and solutions free of halogens. 12 01 10 synthetic machining oils. 12 01 15 machining sludges other than those mentioned in 12 01 14. 12 01 18 metal sludge (grinding, honing, and lapping sludge) containing oil. 12 01 21 spent grinding bodies and grinding materials other than those mentioned in 12 01 20. 12 01 wastes from shaping and physical and mechanical surface treatment of metals and plastics. 12 WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS. 13 01 05 non-chlorinated emulsions. 13 02 05 mineral-based non chlorinated engine ,gear and lubricating oils. 13 02 06 synthetic engine, gear and lubricant oils. 13 02 07 readily biodegradable engine, gear and lubricating oils. 13 02 Waste engine ,gear and lubricating oils. 13 08 02 other emulsions. 13 08 99 wastes not otherwise specified. 13 08 oil waste not otherwise specified. 13 OIL WASTES AND WASTES OF LIQUID FUELS(except edible oils and those in chapters 15,12 and 19). 15 01 02 plastic packaging. 15 02 absorbents, filter materials, wiping cloths and protective clothing. 15 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS,FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED. 08 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS.

General information

	Can be incinerated if in compliance with local and national regulations. Dispose of in compliance with all local and national regulations.

Disposal methods

	Dispose of this material and its container to hazardous or special waste collection point.

Disposal of packaging

	Empty containers can be sent for disposal or recycling.

Further information

	Allocation of the correct EWC Number should be done in accordance with the european Waste Catalogue and should be carried out in agreement with an EA authorised waste disposal company.

SECTION 14: Transport information

14.1. UN number

	The product is not classified as dangerous for carriage.

14.2. UN proper shipping name

	The product is not classified as dangerous for carriage.

14.3. Transport hazard class(es)

	The product is not classified as dangerous for carriage.

14.4. Packing group

	The product is not classified as dangerous for carriage.

14.5. Environmental hazards

	The product is not classified as dangerous for carriage.

14.6. Special precautions for user

	The product is not classified as dangerous for carriage.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

	The product is not classified as dangerous for carriage.

Further information

	The product is not classified as dangerous for carriage.

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SECTION 15: Regulatory information

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

Regulations	COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. Regulation (EC) No 1907/2006 REACH, Regulation (EC) No 1272/2008 CLP. The Health and Safety at Work Act 1974. Workplace Exposure Limits EH40. COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

15.2. Chemical safety assessment

	A chemical safety assessment has not been conducted.

SECTION 16: Other information

Other information

Revision	This document differs from the previous version in the following areas:. 15 - Regulations.
Text of Hazard Statements in Section 3	Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.

Further information

	The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process.

SAFETY DATA SHEET

according to Regulation (EU) 2015/830

KEMET LIQUID DIAMOND TYPE K

Revision 18

Revision date 2018-06-28

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

1.1. Product identifier

Product name	KEMET LIQUID DIAMOND TYPE K

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

Product Use	[SU3] Industrial uses: Uses of substances as such or in preparations at industrial sites; [SU0] Other; [PC0] Other;

1.3. Details of the supplier of the safety data sheet

Company	Kemet International Ltd
Address	Parkwood Trading Estate Maidstone Kent ME15 9NJ
Web	www.kemet.co.uk
Telephone	+44 (0)1622 755287
Fax	+44 (0)1622 670915
Email	sales@kemet.co.uk
Email address of the competent person	nroper@kemet.co.uk

1.4. Emergency telephone number

Emergency telephone number	01622755287
Company	Kemet International Ltd 09.00-17.00 Poison Centre England 0854 46 47 Scotland 08454 24 24 24

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.2. Classification - EC 1272/2008	: EUH066; Asp. Tox. 1: H304;

2.2. Label elements

Hazard pictograms	
Signal Word	Danger
Hazard Statement	EUH066 - Repeated exposure may cause skin dryness or cracking. Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.

KEMET LIQUID DIAMOND TYPE K

2.2. Label elements

Precautionary Statement: Response	P301+P310 - IF SWALLOWED: IF SWALLOWED: Immediately call a POISON CENTER/doctor/ . P331 - Do NOT induce vomiting.
Precautionary Statement: Storage	P405 - Store locked up.
Precautionary Statement: Disposal	P501 - Dispose of contents/container to

2.3. Other hazards

Other hazards	Avoid Static Electrical Discharge. May form Explosive/Flammable vapour/air mixtures.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

EC 1272/2008

Chemical Name	Index No.	CAS No.	EC No.	REACH Registration Number	Conc. (%w/w)	Classification
Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified		64742-47-8	917-488-4	01-2119458943-27	20 - 30%	: EUH066; Asp. Tox. 1: H304;
Diamond Abrasive (Synthetic Diamond)		7782-40-3	231-953-2	01-2119852677-24	1 - 10%	

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air. Seek medical attention.
Eye contact	Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention.
Skin contact	Wash off immediately with plenty of soap and water. Remove contaminated clothing.
Ingestion	DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.

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

Inhalation	Upper respiratory irritation, irritation of nose, throat and airway. Nausea, vomiting. Unconsiousness and convulsions can occur.
Eye contact	May cause temporary eye irritation or eye damage due to the abrasive nature of the product.
Skin contact	Prolonged contact may cause redness, irritation and dryness.
Ingestion	Harmful if swallowed. The product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hrs) May cause discomfort if swallowed, nausea, vomiting and central nervous system depresion.

4.3. Indication of any immediate medical attention and special treatment needed

	If you feel unwell, seek medical advice (show the label where possible). Treat Symptomatically.
Inhalation	Remove the affected person from the source of contamination immediately.
Eye contact	May cause irritation to eyes. Rinse immediately with plenty of water for 15 minutes holding the eyelids open.
Skin contact	Repeated exposure may cause skin dryness or cracking.
Ingestion	May be harmful if swallowed and enters airways.

General information

	If you feel unwell, seek medical advice (show the label where possible). Keep the affected person warm and at rest. Remove contaminated clothing. Wash all contaminated clothing before reuse.

SECTION 5: Firefighting measures

5.1. Extinguishing media

	Use extinguishing media appropriate to the surrounding fire conditions.

5.2. Special hazards arising from the substance or mixture

KEMET LIQUID DIAMOND TYPE K

5.2. Special hazards arising from the substance or mixture

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

5.3. Advice for firefighters

Wear:. Self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation of the working area. Keep personnel away from spill. Evacuate personnel to a safe area.

6.2. Environmental precautions

Do not allow product to enter drains.

6.3. Methods and material for containment and cleaning up

Clean spillage area thoroughly with plenty of water. Absorb with inert, absorbent material. Transfer to suitable, labelled containers for disposal.

6.4. Reference to other sections

See section 2 ,7, 8 & 9. for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Wear suitable protective equipment. Do not breathe gas/fumes/vapour/spray. Use in a well ventilated area.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a cool, dry, well ventilated area. Keep containers tightly closed.

7.3. Specific end use(s)

Use as Supplied. For use as a metal working lubricant/coolant in industrial applications only.

Suitable packaging

Mild steel containers. Plastic containers. Polytetrafluoroethylene (PTFE). Stainless steel containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Mechanical ventilation recommended.

8.1.1. Exposure Limit Values

Diamond Abrasive (Synthetic Diamond)	**WEL 8-hr limit ppm:**	**WEL 8-hr limit mg/m3:**
	WEL 15 min limit ppm:	**WEL 15 min limit mg/m3:**
	WEL 8-hr limit mg/m3 total inhalable dust: 10	**WEL 15 min limit mg/m3 total inhalable dust:** -
	WEL 8-hr limit mg/m3 total respirable dust: 4	**WEL 15 min limit mg/m3 total respirable dust:** -
Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	**WEL 8-hr limit ppm:**	**WEL 8-hr limit mg/m3:** 1200
	WEL 15 min limit ppm:	**WEL 15 min limit mg/m3:**
	WEL 8-hr limit mg/m3 total inhalable dust:	**WEL 15 min limit mg/m3 total inhalable dust:**
	WEL 8-hr limit mg/m3 total respirable dust:	**WEL 15 min limit mg/m3 total respirable dust:**

KEMET LIQUID DIAMOND TYPE K

8.2. Exposure controls

8.2.1. Appropriate engineering controls	Ensure adequate ventilation of the working area. Mechanical ventilation recommended.
8.2.2. Individual protection measures	Avoid contact with eyes and skin. Adopt best Manual Handling considerations when handling, carrying and dispensing. Apron (Plastic or rubber). Rubber boots.
Eye / face protection	Approved safety goggles. Wear Splash-proof eye goggles manufactured and tested according to EN 166.
Skin protection - Handprotection	Use Chemical resistant gloves according to EN 374. Suitability and durability of the glove is dependant on glove material and duration of contact. Glove material, thickness and breakthrough time data is currently unavailable. Consult the glove manufacturer for further information. Fluorinated rubber - FKM (>0.5mm >480 min. >0.3mm > 60 mim). Niltrile rubber - NBR (> 0.3mm > 480 mins.).
Respiratory protection	Wear:. Suitable respiratory equipment. If mechanical ventilation is insufficient to maintain OEL below the specified limits as a temporary measure a respirator to EN143 P2 /P3 may be used. PPE should only be used when necessary and is not a substitute for mechanical ventilation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid/Liquid
Colour	Cream/Off white
Odour	Characteristic
Odour threshold	No data available
pH	No data available
Melting point	Not applicable.
Initial boiling point	100 °C
Flash point	> 90 °C
Evaporation rate	No data available
Upper Explosive Limit	7 %
Lower Explosive Limit	0.6 %
Vapour pressure	No data available
Vapour density	No data available
Partition coefficient	No data available
Autoignition temperature	> 240
Viscosity	≈ 4 mm2/s 20 C (BS EN Brookfield)
Solubility	Miscible in water

9.2. Other information

Conductivity	No data available
Surface tension	No data available
Specific gravity	0.95 g/cm³
Gas group	No data available
Benzene Content	No data available
Lead content	No data available
VOC (Volatile organic compounds)	Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity

KEMET LIQUID DIAMOND TYPE K

10.1. Reactivity

	Avoid sparks, flames, heat and sources of ignition.

10.2. Chemical stability

	Stable under normal conditions.

10.3. Possibility of hazardous reactions

	None expected under normal conditions of use.

10.4. Conditions to avoid

	Heat, sparks and open flames.

10.5. Incompatible materials

	Strong acids. Strong oxidising agents.

10.6. Hazardous decomposition products

	Incomplete combustion will produce toxic and noxious fumes including carbon monoxide and carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

	No data is available on this product.
Acute toxicity	Oral Rat LD50 = >5000 mg/kg. Dermal Rabbit LD50 = >5000 mg/kg. Inhalation Rat LC50/8 h = >5000 mg/l Vapours.
Respiratory or skin sensitisation	There is no evidence that the material can lead to respiratory hypersensitivity. Not a skin sensitiser but prolonged contact can cause irritation and possiible dermatitis.
Germ cell mutagenicity	No mutagenic effects reported.
Carcinogenicity	No carcinogenic effects reported.
Reproductive toxicity	No teratogenic effects reported.
STOT-single exposure	Not relevant.
STOT-repeated exposure	Not relevant.
Aspiration hazard	The fluid can enter the lungs and cause damage.

11.1.4. Toxicological Information

Diamond Abrasive	**Dermal Rat LD50:** >2000 mg/kg **Inhalation Rat LC50/4 h:** >5.2 mg/li	**Oral Rat LD50:** >2000 mg/Kg
Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	**Inhalation Rat LC50/8 h:** >5000 mg/l vapour **Dermal Rabbit LD50:** >5000 mg/kg	**Oral Rat LD50:** >5000 mg/kg

11.1.8. Symptoms related to the physical, chemical and toxicological characteristics

	May cause irritation to the respiratory system.In high concentrations vapours are narcotic and may cause headache, fatigue, dizziness and nauzia along with CNS depression. If swallowed the product may enter the lungs due to its low viscosity and lead to the raapid development of serious pulmonary lesions. Ingestion may cause gastrointestinal irritation, nausia, vomiting and diarrrhoea. May cause CNS depression. Prolonged contact may cause redness, irritation and dryness.

SECTION 12: Ecological information

12.1. Toxicity

KEMET LIQUID DIAMOND TYPE K

12.1. Toxicity

Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	**Daphnia EC50/48h:** 1000.0000 mg/l	**Algae IC50/72h:** 1000.0000 mg/l
	Fish LC50/96h: 1000.0000 mg/l	**Algae EC50/72h:** >1000 mg/l
KEMET LIQUID DIAMOND TYPE K	**Daphnia EC50/48h:** 1000.0000 mg/l	**Algae IC50/72h:** 1000.0000 mg/l
	Fish LC50/96h: 1000.0000 mg/l	

No data is available on this product.

12.2. Persistence and degradability

This product is expected to be readily biodegradable.

12.3. Bioaccumulative potential

The product is not expected to bioaccumulate. Not relevant. Substance is UVCB. Standard tests for this endpoint are not appropriate.

Partition coefficient

KEMET LIQUID DIAMOND TYPE K	No data available

12.4. Mobility in soil

No data is available on this product. Substance is UVCB. Standard tests for this endpoint are not appropriate.

12.5. Results of PBT and vPvB assessment

No data available. Not classified as PBT/vPvB by current Eu Criteria.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

12 01 07 mineral- based machining oils free of halogens (except emulsions and solutions). 12 01 09 machining emulsions and solutions free of halogens. 12 01 10 synthetic machining oils. 12 01 15 machining sludges other than those mentioned in 12 01 14. 12 01 18 metal sludge (grinding, honing, and lapping sludge) containing oil. 12 01 21 spent grinding bodies and grinding materials other than those mentioned in 12 01 20. 12 01 wastes from shaping and physical and mechanical surface treatment of metals and plastics. 12 WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS. 13 01 05 non-chlorinated emulsions. 13 02 05 mineral-based non chlorinated engine ,gear and lubricating oils. 13 02 06 synthetic engine, gear and lubricant oils. 13 02 07 readily biodegradable engine, gear and lubricating oils. 13 02 Waste engine ,gear and lubricating oils. 13 08 02 other emulsions. 13 08 99 wastes not otherwise specified. 13 08 oil waste not otherwise specified. 13 OIL WASTES AND WASTES OF LIQUID FUELS(except edible oils and those in chapters 15,12 and 19). 15 01 02 plastic packaging. 15 02 absorbents, filter materials, wiping cloths and protective clothing. 15 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS,FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED.

General information

Can be incinerated if in compliance with local and national regulations. Dispose of in compliance with all local and national regulations.

Disposal methods

Dispose of this material and its container to hazardous or special waste collection point.

Disposal of packaging

Empty containers can be sent for disposal or recycling.

Further information

KEMET LIQUID DIAMOND TYPE K

Further information

	Allocation of the correct EWC Number should be done in accordance with the european Waste Catalogue and should be carried out in agreement with an EA authorised waste disposal company.

SECTION 14: Transport information

14.1. UN number

	The product is not classified as dangerous for carriage.

14.2. UN proper shipping name

	The product is not classified as dangerous for carriage.

14.3. Transport hazard class(es)

	The product is not classified as dangerous for carriage.

14.4. Packing group

	The product is not classified as dangerous for carriage.

14.5. Environmental hazards

	The product is not classified as dangerous for carriage.

14.6. Special precautions for user

	The product is not classified as dangerous for carriage.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

	The product is not classified as dangerous for carriage.

Further information

	The product is not classified as dangerous for carriage.

SECTION 15: Regulatory information

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

Regulations	COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. The Health and Safety at Work Act 1974. Workplace Exposure Limits EH40. COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

15.2. Chemical safety assessment

	A chemical safety assessment has not been conducted.

SECTION 16: Other information

Other information

Revision	This document differs from the previous version in the following areas:. 9 - 9.1. Information on basic physical and chemical properties (Viscosity).
Text of Hazard Statements in Section 3	EUH066 - Repeated exposure may cause skin dryness or cracking. Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.

Further information

	The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process.

KEMET LIQUID DIAMOND TYPE K

SAFETY DATA SHEET

according to Regulation (EU) 2015/830

KEMET LUBRICATING FLUID TYPE K

Revision 22

Revision date 2018-04-18

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

1.1. Product identifier

Product name	KEMET LUBRICATING FLUID TYPE K

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

Product Use	[SU3] Industrial uses: Uses of substances as such or in preparations at industrial sites; [SU0] Other; [PC24] Lubricants, greases, release products;

1.3. Details of the supplier of the safety data sheet

Company	Kemet International Ltd
Address	Parkwood Trading Estate Maidstone Kent ME15 9NJ
Web	www.kemet.co.uk
Telephone	+44 (0)1622 755287
Fax	+44 (0)1622 670915
Email	sales@kemet.co.uk
Email address of the competent person	nroper@kemet.co.uk

1.4. Emergency telephone number

Emergency telephone number	01622755287
Company	Kemet International Ltd 09.00-17.00 Poison Centre England 0854 46 47 Scotland 08454 24 24 24

Further information

ERC 12b Industrial processing of articles with abrasive techniques	ERC 12b Industrial processing of articles with abrasive techniques.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.2. Classification - EC 1272/2008	: EUH066; Asp. Tox. 1: H304;

2.2. Label elements

Hazard pictograms	

KEMET LUBRICATING FLUID TYPE K

2.2. Label elements

Signal Word	Danger
Hazard Statement	EUH066 - Repeated exposure may cause skin dryness or cracking. Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.
Precautionary Statement: Response	P301+P310 - IF SWALLOWED: IF SWALLOWED: Immediately call a POISON CENTER/doctor/ . P331 - Do NOT induce vomiting.
Precautionary Statement: Storage	P405 - Store locked up.
Precautionary Statement: Disposal	P501 - Dispose of contents/container to an approved waste disposal plant (in accordance with local/regional/national/international regulation).

2.3. Other hazards

Other hazards	Avoid Static Electrical Discharge. May form Explosive/Flammable vapour/air mixtures. Not classified as PBT/vPvB by current Eu Criteria.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

EC 1272/2008

Chemical Name	Index No.	CAS No.	EC No.	REACH Registration Number	Conc. (%w/w)	Classification
Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified		64742-47-8	917-488-4	01-2119458943-27		: EUH066; Asp. Tox. 1: H304;
Tri Propylene Glycol Mono Methyl Ether		25498-49-1	247-045-4	01-2119450087-41 01-2119450087-41		
Polyoxy ethylene (40) Sorbitan Septoleate		63089-85-0				

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air. Seek medical attention.
Eye contact	Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention.
Skin contact	Wash off immediately with plenty of soap and water. Remove contaminated clothing.
Ingestion	DO NOT INDUCE VOMITING. Drink 1 to 2 glasses of water. Seek medical attention.

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

Inhalation	Upper respiratory irritation, irritation of nose, throat and airway. Nausea, vomiting. Unconsiousness and convulsions can occur.
Skin contact	Prolonged contact may cause redness, irritation and dryness.
Ingestion	Harmful if swallowed. The product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hrs) May cause discomfort if swallowed, nausea, vomiting and central nervous system depresion.

4.3. Indication of any immediate medical attention and special treatment needed

	If you feel unwell, seek medical advice (show the label where possible). Treat Symptomatically.

General information

	If you feel unwell, seek medical advice (show the label where possible). Keep the affected person warm and at rest. Remove contaminated clothing. Wash all contaminated clothing before reuse.

SECTION 5: Firefighting measures

5.1. Extinguishing media

	Use extinguishing media appropriate to the surrounding fire conditions.

5.2. Special hazards arising from the substance or mixture

	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or

KEMET LUBRICATING FLUID TYPE K

5.2. Special hazards arising from the substance or mixture

vapours.

5.3. Advice for firefighters

Wear:. Self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation of the working area. Keep personnel away from spill. Evacuate personnel to a safe area.

6.2. Environmental precautions

Do not allow product to enter drains.

6.3. Methods and material for containment and cleaning up

Clean spillage area thoroughly with plenty of water. Absorb with inert, absorbent material. Transfer to suitable, labelled containers for disposal.

6.4. Reference to other sections

See section 2 ,7, 8 & 9. for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Wear suitable protective equipment. Do not breathe gas/fumes/vapour/spray. Use in a well ventilated area.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a cool, dry, well ventilated area. Keep containers tightly closed.

7.3. Specific end use(s)

Use as Supplied. For use as a metal working lubricant/coolant in industrial applications only.

Suitable packaging

Mild steel containers. Plastic containers. Polytetrafluoroethylene (PTFE). Stainless steel containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Mechanical ventilation recommended.

8.1.1. Exposure Limit Values

KEMET LUBRICATING FLUID TYPE K

8.1.1. Exposure Limit Values

Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	WEL 8-hr limit ppm:	WEL 8-hr limit mg/m3: 1200
	WEL 15 min limit ppm:	WEL 15 min limit mg/m3:
	WEL 8-hr limit mg/m3 total inhalable dust:	WEL 15 min limit mg/m3 total inhalable dust:
	WEL 8-hr limit mg/m3 total respirable dust:	WEL 15 min limit mg/m3 total respirable dust:
KEMET LUBRICATING FLUID TYPE K	WEL 8-hr limit ppm:	WEL 8-hr limit mg/m3: 1200 Supplier Recommendation
	WEL 15 min limit ppm:	WEL 15 min limit mg/m3:
	WEL 8-hr limit mg/m3 total inhalable dust:	WEL 15 min limit mg/m3 total inhalable dust:
	WEL 8-hr limit mg/m3 total respirable dust:	WEL 15 min limit mg/m3 total respirable dust:
Tri Propylene Glycol Mono Methyl Ether	WEL 8-hr limit ppm:	WEL 8-hr limit mg/m3: None assigned
	WEL 15 min limit ppm:	WEL 15 min limit mg/m3:
	WEL 8-hr limit mg/m3 total inhalable dust:	WEL 15 min limit mg/m3 total inhalable dust:
	WEL 8-hr limit mg/m3 total respirable dust:	WEL 15 min limit mg/m3 total respirable dust:

DNEL: Derived no-effect level.

Exposure Pattern - Workers

Tri Propylene Glycol Mono Methyl Ether	Long-term - inhalation - Systemic effects	187 mg/m³		
	Long-term - inhalation - Local effects	10 mg/m³	Long-term - dermal - Systemic effects	96 mg/kg
	Long-term - dermal - Local effects	16.08 mg/kg		

Exposure Pattern - General population

Tri Propylene Glycol Mono Methyl Ether	Long-term - inhalation - Systemic effects	19 mg/m³		
	Long-term - inhalation - Local effects	1.6 mg/m³	Long-term - dermal - Systemic effects	41 mg/kg
	Long-term - dermal - Local effects	8.04 mg/kg	Long-term - oral - Systemic effects	8.2 mg/kg
	Long-term - oral - Local effects	8.04 mg/kg		

8.2. Exposure controls

8.2.1. Appropriate engineering controls	Ensure adequate ventilation of the working area. Mechanical ventilation recommended.
8.2.2. Individual protection measures	Avoid contact with eyes and skin. Adopt best Manual Handling considerations when handling, carrying and dispensing. Apron (Plastic or rubber). Rubber boots.
Eye / face protection	Approved safety goggles. Avoid contact with eyes.
Skin protection - Handprotection	Use Chemical resistant gloves according to EN 374. Suitability and durability of the glove is dependant on glove material and duration of contact. Breakthrough time glove material and thickness data are currently not available. Contact the glove manufacturer for more information.

KEMET LUBRICATING FLUID TYPE K

8.2. Exposure controls

Respiratory protection	Fluorinated rubber - FKM (> 0.5mm > 480 mins). Niltrile rubber - NBR (> 0.3mm > 480 mins).
	Wear:. Suitable respiratory equipment. Self-contained breathing apparatus. If mechanical ventilation is insufficient to maintain OEL below the specified limits as a temporary measure a respirator to EN143 P2 /P3 may be used. PPE should only be used when necessary and is not a substitute for mechanical ventilation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Clear
Odour	Characteristic/Alcoholic
Odour threshold	No data available
pH	Not applicable.
Melting point	No data available
Initial boiling point	≈ 200
Flash point	75
Evaporation rate	600
Vapour pressure	No data available
Vapour density	No data available
Relative density	0.85
Partition coefficient	No data available
Autoignition temperature	> 240 °C
Viscosity	< 5 °C @ 20 °C
Explosive properties	No data available
Oxidising properties	No data available
Solubility	Slightly miscible in water

9.2. Other information

Conductivity	No data available
Surface tension	No data available
Gas group	Not applicable.
Benzene Content	Not applicable.
Lead content	Not applicable.
VOC (Volatile organic compounds)	Not applicable.

Water solubility

Slightly soluble.

SECTION 10: Stability and reactivity

10.1. Reactivity

Avoid sparks, flames, heat and sources of ignition.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None expected under normal conditions of use.

10.4. Conditions to avoid

Heat, sparks and open flames.

10.5. Incompatible materials

KEMET LUBRICATING FLUID TYPE K

10.5. Incompatible materials

	Strong acids. Strong oxidising agents.

10.6. Hazardous decomposition products

	Incomplete combustion will produce toxic and noxious fumes including carbon monoxide and carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

	No data is available on this product.
Acute toxicity	Oral Rat LD50 = >5000 mg/kg. Dermal Rabbit LD50 = >5000 mg/kg. Inhalation Rat LC50/8 h = >5000 mg/l Vapours.
Respiratory or skin sensitisation	There is no evidence that the material can lead to respiratory hypersensitivity. Not a skin sensitiser but prolonged contact can cause irritation and possiible dermatitis.
Germ cell mutagenicity	No mutagenic effects reported.
Carcinogenicity	No carcinogenic effects reported.
Reproductive toxicity	No teratogenic effects reported.
STOT-single exposure	No known effects based on the information supplied. Not relevant.
STOT-repeated exposure	No known effects based on the information supplied. Not relevant.
Aspiration hazard	The fluid can enter the lungs and cause damage.

11.1.4. Toxicological Information

Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	**Inhalation Rat LC50/8 h:** >5000 mg/l vapour	**Oral Rat LD50:** >5000 mg/kg
	Dermal Rabbit LD50: >5000 mg/kg	
Tri Propylene Glycol Mono Methyl Ether	**Dermal Rat LD50:** >15440	**Oral Rat LD50:** 3500
	Dermal Rabbit LD50: 15400	

11.1.8. Symptoms related to the physical, chemical and toxicological characteristics

	May cause irritation to the respiratory system.In high concentrations vapours are narcotic and may cause headache, fatigue, dizziness and nauzia along with CNS depression. If swallowed the product may enter the lungs due to its low viscosity and lead to the raapid development of serious pulmonary lesions. Ingestion may cause gastrointestinal irritation, nausia, vomiting and diarrrhoea. May cause CNS depression. Prolonged contact may cause redness, irritation and dryness.

SECTION 12: Ecological information

12.1. Toxicity

Distillates (Petroleum) Hydrotreated Light Kerosine-Unspecified	**Daphnia EC50/48h:** 1000.0000 mg/l	**Algae IC50/72h:** 1000.0000 mg/l
	Fish LC50/96h: 1000.0000 mg/l	**Algae EC50/72h:** >1000 mg/l
Tri Propylene Glycol Mono Methyl Ether	**Daphnia EC50/48h:** 10000.0000 mg/l	**Fish LC50/96h:** 11619.0000 mg/l

	No data is available on this product.

12.2. Persistence and degradability

	This product is expected to be readily biodegradable.

12.3. Bioaccumulative potential

	The product is not expected to bioaccumulate. Not relevant. Substance is UVCB. Standard tests for this endpoint are not appropriate.

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Partition coefficient

	KEMET LUBRICATING FLUID TYPE K No data available

12.4. Mobility in soil

No data is available on this product. Substance is UVCB. Standard tests for this endpoint are not appropriate.

12.5. Results of PBT and vPvB assessment

No data available. Not classified as PBT/vPvB by current Eu Criteria.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

12 01 07 mineral- based machining oils free of halogens (except emulsions and solutions). 12 01 09 machining emulsions and solutions free of halogens. 12 01 10 synthetic machining oils. 12 01 15 machining sludges other than those mentioned in 12 01 14. 12 01 18 metal sludge (grinding, honing, and lapping sludge) containing oil. 12 01 21 spent grinding bodies and grinding materials other than those mentioned in 12 01 20. 12 01 wastes from shaping and physical and mechanical surface treatment of metals and plastics. 12 WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS. 13 01 05 non-chlorinated emulsions. 13 02 05 mineral-based non chlorinated engine ,gear and lubricating oils. 13 02 06 synthetic engine, gear and lubricant oils. 13 02 07 readily biodegradable engine, gear and lubricating oils. 13 02 Waste engine ,gear and lubricating oils. 13 08 02 other emulsions. 13 08 99 wastes not otherwise specified. 13 08 oil waste not otherwise specified. 13 OIL WASTES AND WASTES OF LIQUID FUELS(except edible oils and those in chapters 15,12 and 19). 15 01 02 plastic packaging. 15 02 absorbents, filter materials, wiping cloths and protective clothing. 15 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS,FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED.

General information

Can be incinerated if in compliance with local and national regulations. Dispose of in compliance with all local and national regulations.

Disposal methods

Dispose of this material and its container to hazardous or special waste collection point.

Disposal of packaging

Empty containers can be sent for disposal or recycling.

Further information

Allocation of the correct EWC Number should be done in accordance with the european Waste Catalogue and should be carried out in agreement with an EA authorised waste disposal company.

SECTION 14: Transport information

14.1. UN number

The product is not classified as dangerous for carriage.

14.2. UN proper shipping name

The product is not classified as dangerous for carriage.

14.3. Transport hazard class(es)

The product is not classified as dangerous for carriage.

14.4. Packing group

The product is not classified as dangerous for carriage.

14.5. Environmental hazards

The product is not classified as dangerous for carriage.

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14.6. Special precautions for user

	The product is not classified as dangerous for carriage.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

	The product is not classified as dangerous for carriage.

Further information

	The product is not classified as dangerous for carriage.

SECTION 15: Regulatory information

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

Regulations	COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC. Regulation (EC) No 1907/2006 REACH, Regulation (EC) No 1272/2008 CLP. The Health and Safety at Work Act 1974. Workplace Exposure Limits EH40. COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

15.2. Chemical safety assessment

	A chemical safety assessment has not been conducted.

Further information

	The risks related to the main ingredient, R66/EUH066 and R65/H304 relate to the potential for dermal contact and lung damage. The risks arising are solely related to the physico-chemical properties of the substance. The risks can therefore be controlled by implementing risk management measures tailored to the specific hazard so an exposure scenario is not required.

SECTION 16: Other information

Other information

Revision	This document differs from the previous version in the following areas:. 15 - Regulations.
Text of Hazard Statements in Section 3	EUH066 - Repeated exposure may cause skin dryness or cracking. Asp. Tox. 1: H304 - May be fatal if swallowed and enters airways.

Further information

	The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any other process.