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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

PUBLIC REPORT

Z-142

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

**Director
NICNAS**

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1741	Lubrizol International Inc	Z-142	ND*	≤ 1 tonne per annum	Component of lubricants

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

Human health risk assessment

Under the conditions of the occupational settings described, the notified chemical is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified chemical is not considered to pose an unreasonable risk to public health.

Environmental risk assessment

On the basis of the assessed use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS) as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- The notified chemical should be disposed of in accordance with local regulations for recycling, re-use or recovery.

Emergency procedures

- Spills or accidental release of the notified chemical should be handled by physical containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain

circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 64(1) of the Act; if
 - the importation volume exceeds one tonne per annum notified chemical;or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the chemical has changed from a component of lubricants, or is likely to change significantly;
 - the amount of chemical being introduced has increased, or is likely to increase, significantly;
 - the chemical has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

(Material) Safety Data Sheet

The (M)SDS of the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Lubrizol International Inc (ABN: 52 073 495 603)
28 River Street
SILVERWATER NSW 2128

NOTIFICATION CATEGORY

Limited-small volume: Chemical other than polymer (1 tonne or less per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formula, molecular weight, analytical data, degree of purity, import volume, and identity of manufacturer.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Canada (2009)
EU (2013)
New Zealand (2006)
China (2013)
Korea (2011)
Philippines (2011)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Z-142

OTHER NAME(S)

OS306965

MOLECULAR WEIGHT

> 500 Da

ANALYTICAL DATA

Reference NMR, IR, and UV spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

> 99%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Amber coloured slightly viscous clear liquid

Property	Value	Data Source/Justification
Boiling Point	≥ 327 °C at 102.8 kPa	Measured
Density	1010 kg/m ³ at 20 ± 0.5 °C	Measured
Vapour Pressure	3.0×10^{-9} kPa at 25 °C	Measured
Water Solubility	$< 1.0 \times 10^{-4}$ g/L at 20 °C	Measured.
Hydrolysis as a Function of pH	Not determined	The notified chemical contains hydrolysable functionalities. However, it

Partition Coefficient (n-octanol/water)	log Pow > 9.4	is not expected to significantly hydrolyse under environmental conditions (pH 4 – 9). Measured
Adsorption/Desorption Dissociation Constant	log K _{oc} > 5.63 Not determined	Measured Does not contain dissociable functionalities.
Flash Point	216 ± 2 °C at 102.8 kPa	Measured
Flammability	Not determined	Not expected to be flammable based on measured flash point
Autoignition Temperature	408 ± 5 °C	Measured
Explosive Properties	Predicted negative	Based on chemical structure
Oxidising Properties	Predicted negative	Based on chemical structure

DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, refer to Appendix A.

Reactivity

The notified chemical is expected to be stable under normal conditions of use.

Physical hazard classification

Based on the submitted physico-chemical data depicted in the above table, the notified chemical is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be imported into Australia as a component of finished lubricant products at concentrations up to 99.9%.

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	1	2	3	4	5
Tonnes	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1

PORT OF ENTRY

Sydney and other ports in Australia

TRANSPORTATION AND PACKAGING

The notified chemical will be imported into Australia as a component of finished lubricant products (at concentrations up to 99.9%) in 205 L drums or small containers (e.g. 1 L and 4 L). The imported products will be transported to warehouses or delivered to end-users.

USE

The notified chemical will be used as a component of lubricants used for industrial equipment or refrigeration systems at concentrations of 20-99.9%.

OPERATION DESCRIPTION

The notified chemical will not be manufactured or reformulated in Australia. At end-use sites, the finished lubricants containing the notified chemical will be transferred by automated or manual means to the fluid reservoir of the industrial equipment or refrigeration systems.

6. HUMAN HEALTH IMPLICATIONS**6.1. Exposure Assessment****6.1.1. Occupational Exposure**

CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Distribution	0-2	100-225
Equipment service workers	6-8	100-225

EXPOSURE DETAILS

Transport and storage workers may come into contact with the notified chemical in the finished lubricant products (at up to 99.9% concentration) only in the event of accidental rupture of containers.

End-use

Workers may be exposed (dermal and ocular) to the notified chemical at up to 99.9% concentration during the transfer of lubricants into machinery and equipment maintenance. Exposure is expected to be minimised through the use of automated systems and/or personal protective equipment (PPE) including gloves, goggles and protective clothing. Inhalation exposure is not expected given the very low vapour pressure (3.0×10^{-9} kPa at 25 °C) of the notified chemical.

6.1.2. Public Exposure

The public is not expected to be exposed to the notified chemical given its intended use as a lubricant in industrial applications.

6.2. Human Health Effects Assessment

No toxicity data were submitted for the notified chemical.

The notified chemical has a high molecular weight and is of low water solubility; hence absorption across biological membranes is not expected. The notified chemical does not contain any structural alerts of concern.

Health hazard classification

As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation**6.3.1. Occupational Health and Safety**

Based on the structure and physico-chemical properties the notified chemical is not expected to cause local or systemic toxicity effects. Furthermore, exposure is expected to be limited by the expected use of PPE including gloves, goggles and protective clothing. Therefore, the risk to the health of workers is not considered to be unreasonable.

6.3.2. Public Health

The public is not expected to be exposed to the notified chemical given its intended use as a lubricant in industrial applications. Therefore, the risk to public health is not considered to be unreasonable.

7. ENVIRONMENTAL IMPLICATIONS**7.1. Environmental Exposure & Fate Assessment****7.1.1. Environmental Exposure**

RELEASE OF CHEMICAL AT SITE

The notified chemical will not be manufactured nor reformulated in Australia. It will be imported into Australia as a finished lubricant formulation. Significant release of the notified chemical to the environment is not expected during transport and storage except in the unlikely event of accidental spills or leaks.

RELEASE OF CHEMICAL FROM USE

The finished products containing the notified chemical will be used as a lubricant for industrial equipment or refrigeration systems. Release during its use may come from spills when pouring lubricants into fluid reservoirs, which is expected to be negligible.

RELEASE OF CHEMICAL FROM DISPOSAL

After use, empty import drums containing residues of the notified chemical (0.1% of the total import volume) are expected to be steam cleaned, with the residual waste sent to on-site wastewater treatment facilities. Assuming 0.1% of the notified chemical remains in the empty drums after use, 1 kg/yr ($1 \text{ tonne/yr} \times 0.1\%$) of the notified chemical will be sent to the on-site waste treatment. It is estimated by the notifier that up to 98% of the notified chemical may be removed during waste treatment processes. Therefore, the amount of the notified chemical released to sewer from the cleaning of empty drums is estimated to be 0.02 kg/yr ($1 \text{ kg/year} \times 2\%$). The wastewater will be further treated at the sewage treatment plants. Therefore, the release of the notified chemical to surface waters is expected to be limited from the cleaning of empty drums.

The used lubricant formulation containing the notified chemical, which is expected to be disposed of in accordance with the State/Territory regulations, is likely to be recycled for calorific value. The major release of the notified chemical to the environment will come from inappropriate disposal of waste or used oils. However this type of release should be limited as the product is intended for industrial use by trained professionals.

7.1.2. Environmental Fate

No environmental fate data were submitted. Most of the notified chemical will be thermally decomposed during use or oil recycling for calorific value. A very small amount of the notified chemical, which is 0.02 kg/yr, from cleaning of empty drums may be released to sewer. In Sewage Treatment Plants (STPs), the majority of the notified chemical is expected to partition to sludge due to its high $\log K_{oc}$ value ($\log K_{oc} > 5.63$). Sludge from the wastewater treatment plants containing the notified chemical is expected to be disposed of to landfill or applied to agricultural soils. Notified chemical released to surface water is expected to partition to sediment based on its low water solubility and affinity to soil/sediment. The notified chemical is expected to be bioaccumulative due to its high $\log Pow$ value. However, it is not expected to be bioavailable due to its very low water solubility and anticipated limited release to the aquatic environment. Notified chemical sent to landfill or spilt on the ground is expected to sorb strongly to soil and sediment due to its high $\log K_{oc}$ value. It is anticipated to ultimately be degraded into water and oxides of carbon by thermal decomposition or by natural processes in water, soil and landfill.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) has not been calculated for the notified chemical as, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. According to its very low water solubility, it is not expected that the notified chemical will be bioavailable in the aquatic environment at ecotoxicologically significant levels.

7.2.1. Predicted No-Effect Concentration

A Predicted No-Effect Concentration (PNEC) was not calculated as no ecotoxicological data were submitted and there will be very low potential for aquatic exposure.

7.3. Environmental Risk Assessment

A Risk Quotient ($RQ = PEC/PNEC$) is unable to be quantified as a PEC and PNEC were not calculated. There is no significant aquatic release of the notified chemical anticipated based on the reported use pattern. Moreover, the notified chemical has very low water solubility and hence, is not expected to be bioavailable. On the basis of the assessed use pattern, the notified chemical is not expected to pose an unreasonable risk to the environment.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES**Boiling Point** $\geq 327\text{ }^{\circ}\text{C}$ at 102.8 kPa

Method OECD TG 103 Boiling Point.
 EC Council Regulation No 440/2008 A.2 Boiling Temperature.
 Remarks Determined by Differential Scanning Calorimetry.
 Test Facility Harlan (2013a)

Density 1010 kg/m^3 at $20 \pm 0.5\text{ }^{\circ}\text{C}$

Method OECD TG 109 Density of Liquids and Solids.
 EC Council Regulation No 440/2008 A.3 Relative Density.
 Remarks Pycnometer method.
 Test Facility Harlan (2013a)

Vapour Pressure $3.0 \times 10^{-9}\text{ kPa}$ at $25\text{ }^{\circ}\text{C}$

Method OECD TG 104 Vapour Pressure.
 EC Council Regulation No 440/2008 A.4 Vapour Pressure.
 Remarks Determined using vapour pressure balance.
 Test Facility Harlan (2013b)

Water Solubility $< 1.0 \times 10^{-4}\text{ g/L}$ at $20 \pm 5\text{ }^{\circ}\text{C}$

Method OECD TG 105 Water Solubility
 Remarks Flask method. On completion of the equilibration period, the samples were clear, colourless solutions with excess test item present. However, after filtration the samples were clear, colourless and free from excess test items. The concentration of test item in the sample solutions was determined by HPLC.
 Test Facility Harlan (2013a)

Partition Coefficient (n-octanol/water) $\log \text{Pow} > 9.4$

Method OECD TG 117 Partition Coefficient (n-octanol/water).
 Remarks HPLC method. The test was carried out at approximately neutral pH. As the test substance contains no dissociating groups within the environmentally relevant pH range, the test item was tested in a non-ionised form.
 Test Facility Harlan (2013a)

Adsorption/Desorption $\log K_{oc} > 5.63$
– screening test

Method OECD TG 121 Adsorption - Desorption Using an HPLC Method.
 Remarks Test substance contains no dissociating groups within the environmentally relevant pH range. Therefore, the test was carried out at approximately neutral mobile phase.
 Test Facility Harlan (2013c)

Flash Point $216 \pm 2\text{ }^{\circ}\text{C}$ at 102.8 kPa

Method EC Council Regulation No 440/2008 A.9 Flash Point.
 Remarks Closed cup
 Test Facility Harlan (2013d)

Autoignition Temperature $408 \pm 5\text{ }^{\circ}\text{C}$

Method EC Council Regulation No 440/2008 A.15 Auto-Ignition Temperature (Liquids and Gases).
 Test Facility Harlan (2013d)

Explosive Properties

Predicted negative

Method	EC Council Regulation No 440/2008 A.14 Explosive Properties.
Remarks	Based on the chemical structure the notified chemical was predicted not to have explosive properties.
Test Facility	Harlan (2013d)

Oxidizing Properties

Predicted negative

Method	EC Council Regulation No 440/2008 A.17 Oxidizing Properties (Solids).
Remarks	Based on the chemical structure the notified chemical was predicted not to have oxidising properties.
Test Facility	Harlan (2013d)

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