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

FULL PUBLIC REPORT

Polymer in Infineum C9290

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**Director
NICNAS**

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FULL PUBLIC REPORT**Polymer in Infineum C9290****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Infineum Australia Pty Ltd (ABN 24 084 881 863) of Level 2, 6 Riverside Quay, Southbank VIC3006.

NOTIFICATION CATEGORY

Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight details, Polymer Constituents, Residual Monomers/Impurities, Import Volumes and use details.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Korea (approved); concurrent notification in Philippines

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Infineum C9290 (contains the notified polymer at 30-70%)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1000

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Homogeneous, dark amber to reddish brown very viscous liquid at 20°C (Test guidelines: 830.6303) – tested on a 30-70% concentrate sample.
Melting Point/Glass Transition Temp	Not conducted. (polymer not extracted from solution)
Density	925 kg/m ³ at 15°C (ASTM 1298) (tested on a 30-70% concentrate sample)
Water Solubility	<0.167 x 10 ⁻³ g/L at 20°C (tested on a 30-70% concentrate sample), The solubility of the test substance was determined in HPLC-grade reagent water at 20°C using the shake flask method and analyzed by high performance liquid chromatography. Based on the results of a shake flask solubility study, the solubility of the test substance in water at 20°C was determined to be less than Limit of Quantitation (LOQ) (0.167 mg/L).
Dissociation Constant	The dissociation constant cannot be measured or estimated, because of the lack of water solubility (a pre-requisite for the test).
Particle Size	Very Viscous Liquid. Not conducted.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
Comments	The notified polymer is a high molecular weight polymer with very low water solubility and vapour pressure. Because of the physical characteristics, it is expected that the notified polymer will not be hazardous under normal conditions of use and distribution.

5. INTRODUCTION AND USE INFORMATION

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	<10,000	<10,000	<10,000	<10,000	<20,000

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer could be imported as Infineum C9290 or part of an additive package to be used at customers' blending site. It will be imported into Australia in 205L drums or bulk vessels such as iso-containers, bulk liquid containers (BLC).

Reformulation/manufacture processes

The notified polymer will not be manufactured in Australia. It is imported as Infineum C9290 or as part of a lubricant additive package at mass% ranging from 10-40%. The imported products will be reformulated at the customer's site by blending with oils and other additives to form the completed lubricants. The reformulation will be a batch process, generally producing between 5000 and 50000 L of finished lubricant. The blending will be mostly an automated process. For additive package shipped in isotanks, the process will involve a flexible transfer hose to the container by the operator, the additive being pumped out and blended in an enclosed automated system, the hoses and pumps being flushed out with clean mineral oil, and the hose being disconnected. For shipments in drums, operators will open the drum, and either tilt (manually or with a mechanical device) into a pit containing the base oil and other additives which is then pumped away into a blending kettle, or, alternatively, the operator will introduce a spear into the drum and suck the product out directly into the blending kettle. The blended finished lubricant containing < 10% notified polymer is then repackaged into smaller

containers or drums in volumes ranging from 1 to 1000L and transported to end users.

Use

The notified polymer functions as an effective lubricant additive component and is used together with other components to formulate lubricant engine oil. It is present at concentrations at <10% in lubricant engine oil.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Dock workers and transport workers are not expected to be exposed to the notified polymer except in the case of an accident involving spillage. During reformulation, dermal and ocular exposure may potentially occur during certain processes (e.g. drips and spillage during the transfer, blending and packaging processes, equipment cleaning and maintenance). However, exposure to significant amounts of the notified polymer is expected to be minimal because of the automated nature of most of the processes involved in reformulation, together with the engineering controls in place in the workplace and the personal protective equipment worn by workers. For end use workers, occupational exposure to products containing the notified polymer could occur at facilities throughout Australia. A large number of motor mechanics may be exposed to such products and dermal and ocular exposure to the notified polymer at concentrations of <10% is possible.

PUBLIC EXPOSURE

The notified polymer is intended only for use in industry and as such significant public exposure to the notified polymer is not expected. However, there is some potential for public exposure to the notified polymer at low concentrations if do-it-yourself maintenance tasks are carried out.

6.2. Toxicological Hazard Characterisation

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by toxicological endpoints observed in testing conducted on the notified polymer (a 30-70% concentrate).

<i>Endpoint</i>	<i>Result</i>	<i>Classified?</i>	<i>Effects Observed?</i>	<i>Test Guideline</i>
1. Rat, acute oral	LD50 > 2000mg/kg bw	no	No	OECD TG 423
2. Genotoxicity - bacterial reverse mutation	non mutagenic	no	No	OECD TG 471

All results were indicative of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

The OHS Risk presented by the notified polymer is expected to be low, based on the minimal occupational exposure of workers and the low intrinsic hazard of the polymer, as indicated by its physico-chemical properties and toxicity data generated on the notified polymer.

PUBLIC HEALTH

As there will be no significant exposure to the public to the notified polymer (or products containing the notified polymer) the risk to the public from exposure to the notified polymer is considered to be low. Where exposure occurs (e.g. during a spillage and do-it-yourself activities), the low hazard of the polymer translates to low risk.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Environmental release is expected to be minimal. Blending operations are performed at specially constructed sites and the notified polymer (either as Infineum C9290 or diluted within additive packages) will be delivered to and stored at the blending facilities. No environmental release is expected during transport and storage operation, except through accidental spills or leaks of the drums or steel packaged containers. Small quantities may be released to the environment during the reformulation process, when the transfer of product from storage containers to the blending tanks occurs, during the connection and disconnection of transfer hoses. Any such spills and leaks would be contained within concrete bunds at the facility and soaked up with inert absorbent material and disposed of, via the proper routes such as recycling and incineration.

Environmental release of the notified polymer in finished lubricants may also occur from end-use situations, although this is expected to be minimal. Lubricants, containing <10% of the notified polymer could either be spilt or left as residues in containers as a result of transfer operations. Most spills are likely to be adsorbed onto sawdust and incinerated, while residues left in containers would be expected to be disposed of in a similar fashion and not released to the environment.

ENVIRONMENTAL FATE

The notified polymer cannot be considered to be readily biodegradable under the strict terms and conditions of OECD Guidelines no 301C. It is a high molecular weight polymer with very low water solubility, and hence is not expected to cross any biological membrane and enter an organism's metabolic system and is unlikely to bioaccumulate.

7.2. Environmental Hazard Characterisation

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by environmental endpoints observed in testing conducted on the notified polymer (a 30-70% concentrate sample).

<i>Endpoint</i>		<i>Result</i>	<i>Effects Observed?</i>	<i>Test Guideline</i>
Ready Biodegradability: modified MITI test		Cannot be considered to be readily biodegradable	No	OECD TG 301C

All results were indicative of low hazard.

7.3. Environmental Risk Assessment

The environmental hazard from the notified polymer is considered to be minimal. The polymer is a component of a lubricant for use in industrial situations where proper disposal of material by incineration or recycling will be general practice.

Release of the notified polymer to the aquatic environment will be negligible except in cases of major spills, e.g. during transport. The low toxicity in acute daphnia study indicates a low aquatic toxicity potential. Due to its low water solubility, spills of notified polymer are expected to float on the surface, and migrate from water to the land; it is also expected to partition to sediment and wastewater solid. The high molecular weight and low water solubility will limit absorption of the molecule by all organisms. These physical characteristics will minimise the potential of the notified polymer to cross any biological membrane and enter an organism's metabolic system.

Incineration of the notified polymer would produce water vapour and oxides of carbon.

Overall, the notified polymer is not considered to pose a risk to the environment.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

8.2. Level of Concern for Public Health

There is No Significant Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

The notified polymer is not considered to pose a risk to the environment based on its reported use pattern.

9. MATERIAL SAFETY DATA SHEET

9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- A copy of the MSDS should be easily accessible to employees. Refer to the MSDS for personal protective equipment recommendations.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

- The following control measures should be implemented by customers' site to minimise environmental exposure during *use* of the notified polymer:
 - Bunding

Disposal

- The notified polymer should be disposed of by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Accident leaks and spillage should be cleaned up promptly with absorbent and put into containers for disposal. The empty drums and their residues should be disposed in accordance with government regulations.

Emergency procedures

- Spills/release of the notified polymer should be handled by recovery and/or confinement of spills where possible.
 - For small land spills, absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. If liquid is too viscous for pumping, shovel it

- up into a suitable container for recycle or disposal.
- For water spills, confine spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbent. Report spills as required to appropriate authorities.

10.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.
- or
- (2) Under subsection 64(2) of the Act:
 - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.