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

FULL PUBLIC REPORT

Polymer in Viscoplex 6-325

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**Director
NICNAS**

FULL PUBLIC REPORT**Polymer in Viscoplex 6-325****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Degussa Australia Pty Ltd (ABN: 80 005 415 752)

30 Commercial Drive

DANDENONG VIC 3175

NOTIFICATION CATEGORY

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

Polymer Constituents

Residual Monomers/Impurities

Use Details

Import Volume

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

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Viscoplex 6-325

3. COMPOSITION

The notified polymer does not contain any moderate or high concern reactive functional groups.

<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. INTRODUCTION AND USE INFORMATION

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

Import

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>	3-10	10-30	10-30	10-30	10-30

USE

Engine oil lubricant

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will not be manufactured in Australia but will be imported from Europe, in 175 kg drums as a component of Viscoplex 6-325 at a concentration of approximately 50% w/w. A sealed delivery system will be employed to transfer Viscoplex 6-325 from the shipment containers to customer's storage tanks and/or blending vessels for mixing with other ingredients. The resulting engine oil product containing 0.5% to 4% notified polymer will then be filled into drums and transported to distributors and/or a range of end-users in the automotive lubricants industry, specifically for use as an ingredient in the formulation of engine oils for industrial, commercial and consumer purposes.

The entire process of transferring lubricants is generally enclosed, automated and computer controlled. Well-trained staff will perform all loading, unloading, handling and storage of the product within Degussa or customer blending facilities. Industrial hygiene programs are implemented and include the provision and routine use of personal protective equipment (eg splash proof goggles, rubber overshoes, chemically resistant gloves, aprons, or other impervious clothing, and respiratory protection), and hazard communication programs designed to inform workers about the identity and potential hazards (if any) of chemicals used in their respective work areas. Periodic workplace inspections are also carried out to ensure that all safety procedures are in place and that employee exposures are below acceptable thresholds.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Dermal and ocular exposure may occur during certain formulation processes. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

6.2. Summary of Public Exposure

There is potential for dermal exposure by the public purchasing the formulated oils or lubricants in do-it-yourself maintenance tasks. However, exposure will be low as the formulated products contain ≤ 4 % notified polymer.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

Environmental exposure may occur if import containers are accidentally breached, or there may be minor release from cleaning and maintenance of mixing equipment. The former scenario is considered unlikely, with any spills collected onto inert absorbent material. Minimal loss is expected through

maintenance of mixing equipment.

Standard scenarios used by the DEH indicate that up to 1% would also remain in empty drums, which may be cleaned using petroleum based solvents and re-used. Assuming a worst case scenario that all import containers are cleaned and recycled and that all cleaning wastes are disposed of to sewerage treatment systems, this would equate to potential release to waste water of up to 300 kg notified chemical a year.

In addition, release to the sewer can also occur in domestic situations after oil changes and automobile maintenance, where used oil is washed down the drain. A survey by the Australian Institute of Petroleum (AIP 1995) indicates that 60% of the annual sales of automotive engine oils in Australia are potentially recoverable (i.e., not burnt in engines during use). This report also indicates that around 86% of oil changes take place in specialised automotive service centres, where old oil drained from crankcases should be disposed of responsibly - either to oil recycling or incineration. The remaining 14% of oil is removed by "do it yourself" (DIY) enthusiasts, and in these cases some of the used oil would be either incinerated, left at transfer stations where it is again likely to be recycled, or deposited into landfill. A recent report estimated that DIY activities account for between 7 to 10% of the unaccounted for used oil (MEINHARDT 2002).

According to a survey tracing the fate of used lubricating oil in Australia (Snow 1997), only around 20% of used oil removed by enthusiasts is collected for recycling, approximately 25% is buried or disposed of in landfill, 5% is disposed of into stormwater drains and the remaining 50% is used in treating fence posts, killing grass and weeds or disposed of in other ways.

Consequently, assuming that oil removed by professional mechanics is disposed of appropriately, negligible release of the notified chemical should result from these professional activities. Assuming that 14% of used oil (i.e., 14% of the 60% remaining after combustion in engines) is removed and discarded by DIY enthusiasts, it may be estimated that with an import volume of up to 30 tonnes, around 2520 kg of notified polymer will be released to the environment from such activities annually. Again using the standard scenario, it can be estimated that around 630 kg will be buried or disposed of in landfill, 126 kg will reach stormwater drains, and around 1260 kg will be used to treat fence posts, kill weeds or be otherwise disposed of.

Since the use of the lubricating oils will occur throughout Australia, all releases resulting from use or disposal of used oil are likely to be diffuse, and release of the notified polymer in high concentrations is very unlikely except as a result of transport accidents.

6.3.2. Environmental Fate

The polymer is not highly water soluble (expected water solubility <10 ppm), and is likely to preferably partition to sediments and organic fraction of soils. The high molecular weight indicates a low potential to bioaccumulate.

Although the notified polymer contains hydrolysable groups, hydrolysis will not occur in the environmental pH range due to the low water solubility. In landfill, the notified polymer will associate with sediments and organic phases of the soil matrix and therefore be immobile.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa
Melting Point/Glass Transition Temp
Density
Water Solubility

Rubber-like
 N/A
 9.2 x10⁻⁴ kg/m³ at 20 °C
 Approximately 10 mg/L

Reactivity
Degradation Products

The notifier estimated the above based on a test result of water solubility below 2.1 mg/L for similar (compositionally and in molecular weight) polymers. The water solubility can be expected to be low due to the presence only of hydrophobic groups.
 Stable under normal environmental conditions
 None under normal conditions of use

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data for the notified polymer are available. However, the notifier has submitted a summary of the available toxicological data for several analogous polymers as read across data. Based on similar physical and chemical properties and monomeric composition the analogous polymers are expected to have similar toxicity profiles.

<i>Endpoint</i>	<i>Result</i>	<i>Classified as hazardous?</i>	<i>Effects Observed?</i>
Rat, acute oral (Analogue 2)	LD50 >5000 mg/kg bw low toxicity	no	Not provided.
Rat, acute oral (Analogue 3)	LD50 >5000 mg/kg bw low toxicity	no	Not provided.
Rat, acute oral (Analogue 4)	LD50 > 5000 mg/kg bw low toxicity	no	Not provided.
Rat, acute dermal (Analogue 2)	LD50 >5000 mg/kg bw low toxicity	no	Not provided.
Rat, acute dermal (Analogue 3)	LD50 >5000 mg/kg bw low toxicity	no	Not provided.
Rat, acute dermal (Analogue 4)	LD50 >5000 mg/kg bw low toxicity	no	Not provided.
Rabbit, skin irritation (Analogue 1)	non-irritating	no	Not provided.
Rabbit, skin irritation (Analogue 2)	slightly irritating	no	Not provided.
Rabbit, skin irritation (Analogue 3)	non-irritating	no	Not provided.
Rabbit, skin irritation (Analogue 4)	slightly irritating	no	Not provided.
Rabbit, eye irritation (Analogue 1)	slightly irritating	no	Not provided.
Rabbit, eye irritation (Analogue 2)	slightly irritating	no	Not provided.
Rabbit, eye irritation (Analogue 3)	slightly irritating	no	Not provided.
Rabbit, eye irritation (Analogue 4)	slightly irritating	no	Not provided.
Rat, repeat dose Dermal toxicity – 14 days. (Analogue 3)	NOEL > 1000 mg/kg bw/day	no	yes

All results were indicative of low hazard.

8.1.2. Discussion of observed effects

Toxicological testing was not performed on the notified polymer itself. In a 14 day repeat dose study analogue 3 was applied (10 applications total) to the skin of rabbits at 0, 0.25, 0.50, 1.00 g/kg bw/day. Analogue 3 did not produce any systemic effect but did produce moderate to severe irritation at all doses.

8.2. Human Health Hazard Assessment

The notified polymer may be a slight skin and eye irritant. It is likely to be of low acute toxicity.

9. ENVIRONMENTAL HAZARD

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Non-ionic polymers of high NAMW are of low concern.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer will be imported in formulated lubricant oils. The main environmental exposure is expected to result from inappropriate disposal of waste lubricant product, assuming

a worst case scenario that about 14% of oil changes in Australia are performed by DIY enthusiasts. Because of the volume of notified polymer imported annually, this would equate to potential release of around 630 kg to landfill (or buried), 126 kg to stormwater drains, and around 1260 kg to treat fence posts, kill weeds or be otherwise disposed of.

This disposal is, however, widespread across Australia. Most of the improperly released notified polymer due to DIY activities is likely to become associated with soils or sediments, as will the notified polymer released to landfill as container residues. The notified polymer released into the aquatic environment would be expected to become associated with the sediments due to its estimated low water solubility.

It is difficult to estimate the Predicted Environmental Concentration (PEC) of the notified polymer released into the stormwater drains, which have the potential to directly enter the aquatic environment. However, a worst case estimated PEC might be calculated if it is assumed that all of the notified polymer that is expected to be released into the stormwater drains into a single metropolitan area with a geographical footprint of 500 square kilometres and an average annual rainfall of 50 cm. With a maximum annual release into this localised stormwater system of 42 kg and the annual volume of water drained from this region estimated to be approximately $250 \times 10^6 \text{ m}^3$, the resultant PEC in aquatic ecosystems is approximately $0.504 \text{ } \mu\text{g/L}$. This result reflects a worst case scenario, as releases of the polymer would be much more diffuse than indicated here, and also at substantially reduced levels. Given that the notified polymer is not very water soluble, it may be expected that it will strongly bind to soils and sediment, further reducing risk to aquatic organisms. Notified polymer in potential rinsings from containers that are processed through waste water treatment systems are likely to flocculate during the treatment process therefore not be released to the aquatic environment in any significant quantities.

Overall, the environmental risk from the proposed blending and use of the notified polymer is expected to be low. However, the potential exists for physical fouling of aquatic organisms by undissolved material in the advent of a sizeable release to waterways. For this reason, the notified polymer should be prevented from entering waterways.

10.2. Occupational Health and Safety

The OH&S risk presented by the notified polymer is expected to be low due to its low toxicity and low potential for worker exposure. The notified polymer may be present in formulations containing hazardous ingredients.

10.3. Public Health

Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is present at low concentrations and unlikely to be bioavailable.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Environmental Risk Assessment

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

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

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

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

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

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- In the interest of occupational health and safety, the following guidelines and precautions should be observed for use of the notified polymer as introduced
 - Avoid drips and spills;
 - Use gloves, safety glasses and overalls
 - 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.
- 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.

Disposal

- The notified polymer should be disposed of in accordance with all Local, State and Federal regulations at an approved waste disposal facility. This will include burning wastes and products containing the polymer in an enclosed, controlled burner for fuel value or disposed of by supervised incineration. The notified polymer must not enter waterways.
- Contaminated packaging should be emptied optimally and may be reused after appropriate professional cleaning. Packaging that cannot be cleaned should be disposed of professionally.

Emergency procedures

- Spills on non-solid ground (e.g. soil etc) should be removed mechanically. Spills on solid surfaces (e.g. concrete) should be absorbed with dry sand, possibly by heating. Dispose of contaminated material in accordance with regulations.
- The spilled material should be prevented from contaminating soil/subsoil and entering drains, surface water, ground water or wastewater.

13.1. 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.

14. BIBLIOGRAPHY

AIP (1995) AIP Survey of Used Oil. Australian Institute of Petroleum Ltd.

MEINHARDT (2002) Used Oil in Australia. Prepared by MEINHARDT Infrastructure & Environment Group for Environment Australia.

Snow R (1997) Used Oil Management. Paper presented at the Used Oil Management Conference, Brisbane, August 1997, Queensland Dept. Environment.