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October 2007

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

FULL PUBLIC REPORT

Polymer in VISCOPLEX 0/6467

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 Ageing, 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 and Water Resources.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, 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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FULL PUBLIC REPORT**Polymer in VISCOPLEX 0/6467****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Degussa Australia Pty Ltd (ABN 16 079 823 313)
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, and Manufacture/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

US EPA (2007), Canada CEPA (2007), Korea NIER (2007)

2. IDENTITY OF CHEMICAL

MARKETING NAME

VISCOPLEX 0/6467

OTHER NAME

Acrylic copolymer

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10,000 Da

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

Criterion	Criterion met
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	Colorless waxy solid		
Melting Point / Glass Transition Temp	-40°C		
Density	930 kg/m ³ at 20°C		
Water Solubility	<u>pH</u>	<u>Conditions</u>	<u>% w/w</u>
	unbuffered	20°C, 1 day	0.026
	2	20°C, 1 day	0.025
	7	37°C, 1 day	0.019
	9	20°C, 1 day	0.037
	Water solubility was determined by dissolved organic carbon (DOC) according to the Korean Polymer Test Guideline similar to OECD TG 120.		
Particle Size	The notified polymer has a waxy consistency.		
Reactivity	Stable under normal environmental conditions.		
Degradation Products	Carbon dioxide, water, methacrylate monomers. Despite hydrolysable functionality, this should not occur at ambient environmental conditions (pH range 4-9) due to its low solubility. Hydrolysis was not tested for in the solubility test above.		

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	1	2	3	4	5
Tonnes	3-10	10-30	10-30	30-100	30-100

Use, Mode of Introduction and Operation Description

The product containing 40% of the notified polymer will be used as an additive in lubricants for industrial and commercial purposes.

The product will be imported in 175kg drums and transported by road either to Degussa Australia's storage facilities for distribution and storage or directly to the customer's storage facilities. The major customers of the product are lubricant blending facilities. In the lubricant blending facility, the imported product will be mixed with other ingredients to formulate an additive which contains 10% notified polymer. This process is automated and computer-controlled. The blended material will then be sold to industries such as automobile manufacturing plants and commercial garages. The formulated product will be dispensed using sealed delivery on the following: automobiles on the assembly line at automobile manufacturing plants; and gearboxes of cars and trucks in commercial garages.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Occupational Health and Safety Risk Assessment

The product containing the notified polymer will be transported and stored in closed containers. Dermal exposure may occur in the event of accidental breach of the packaging material.

During the blending process, workers may have dermal and/or ocular exposure to the notified polymer. However, since the mixing process is largely enclosed and automated, exposure is expected to be limited. Workers are expected to wear suitable personal protective equipment (PPE) such as nitrile rubber gloves and tightly fitting goggles.

The potential for exposure during the automated transfer of the formulated product to cars and trucks is negligible since dispensing will make use of a sealed delivery system. In the event of an accidental spill, control measures are expected to be in place.

The OHS risk presented by the notified polymer is expected to be low, given the expected low hazard of the polymer, as well as the low exposure due to the engineering controls, the good work practices and safety measures including the use of appropriate personal equipment by workers.

Public Health Risk Assessment

The notified polymer will not be sold to the public. The formulated product will be used in automobile manufacturing plants and commercial garages. Public exposure is possible in the unlikely event of transport accidents where the formulated product is spilled on roads. As there will be no exposure of the public to the product containing the notified polymer, the risk to the public is considered to be negligible. Where exposure occurs, the low hazard of the polymer translates to low risk.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

Environmental Risk Assessment

Environmental Release

Manufacture of the notified polymer will not lead to any exposure of the Australian environment, as it will occur overseas. The notified polymer will be imported into Australia in liquid form. Release to the environment is expected from spills and leaks during transport, blending and end-use operations and from residues from cleaning of equipment and import containers. Limited opportunities exist for environmental release from spills and leaks, due to the implementation of sealed delivery systems and fully automated processes, and are therefore estimated at <0.1%. In the event of a spillage, control measures are in place to minimise potential for release to the environment. Releases from equipment and container cleaning are estimated at <0.2%. Used driveline oils changed by commercial garages will be incinerated or recycled.

Although the majority of use will be at automobile manufacturers, and most oil changes occur at commercial garages, potential release of the notified chemical to the environment may occur by individual car owners who do their own oil changes and do not use correct methods for disposal of used oil. A survey by the Australian Institute of Petroleum (AIP, 1995) indicates that of the annual sales of automotive engine oils in Australia, some 60% are potentially recoverable (ie not burnt in the 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 could be expected to be disposed of responsibly - either to oil recycling or incineration. The remaining 14% are 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 used oil (Meinhardt 2002).

According to a survey tracing the fate of used lubricating oil in Australia (Snow, 1997), only approximately 20% of used oil removed by DIY 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. In a worst case scenario involving the 14% of used oil removed by DIY enthusiasts, the notified polymer could be collected for recycling (≤ 2.8 tonnes/y), buried or disposed of in landfill (≤ 3.5 tonnes/y), disposed of in stormwater drains (≤ 0.7 tonnes/y) and used in treating fence posts, to kill weeds or disposed of in other ways (≤ 7 tonnes/y). A small proportion of the latter may potentially be disposed of to sewers. Since the use of the lubricating oils will occur throughout Australia, all releases resulting from use or disposal of used oil will be very diffused, and release of the notified material in neat concentrations is very unlikely except as a result of transport accidents.

Environmental Fate

Lubricant containing the notified polymer that is used for fuel or is incinerated is expected to combust to oxides of carbon and water vapour. The notified polymer, when disposed of to landfill or sewer, is expected to be hydrolytically stable. The low water solubility and highly hydrophobic nature as inferred from its structure indicate that it will associate with organic matter in soil and sediments, and with sludge, and slowly degrade to simple carbon compounds. The large molecular weight of the notified polymer indicates very low potential for

bioaccumulation.

Environmental Risk

Based on the proposed use pattern, the release of the notified polymer to the environment is expected to be very low. The use pattern of the notified polymer as a lubricant additive will result in limited exposure to the aquatic environment, and exposure is expected to be highly diffused. It is difficult to estimate a Predicted Environmental Concentration (PEC) because disposal of some of the DIY lubricant changes remain unaccounted for. However, release to the sewer/stormwater drains is expected to be <1% (1 tonne) of the annual import volume.

It is not possible to determine a predicted no effect concentration (PNEC) for aquatic ecosystems in order to assess the risk to aquatic organisms as no ecotoxicity data were provided. However, the polymer contains no known toxic functionality. Further, the low water solubility of the polymer and its potential to become associated with the sediments can expect to reduce the possibility of sufficient amounts to remain in solution to cause acute toxicity in the aquatic environment. Given the limited release to water it is unlikely that the polymer would exist at levels which could pose a risk to aquatic organisms, and the high molecular weight indicates a low potential for bioaccumulation.

Based on the reported exposure levels and use pattern, the polymer is not considered to pose a risk to the environment when it is stored, transported and used in the proposed manner.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment

Under the conditions of the occupational settings described, the risk to workers is considered to be acceptable.

When used in the proposed manner the risk to the public is considered to be acceptable.

Environmental risk assessment

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

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.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], 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 by incineration (for energy recovery) or disposal to landfill.

Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
 - Keep container tightly closed and store in a well-ventilated area.
 - Do not store at temperatures above 80°C.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by mechanical removal of the polluted surface (non-solid ground), or by adsorption with sand and disposal in accordance with local regulations.

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 notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

- (2) Under Section 64(2) of the Act; if
 - the function or use of the chemical has changed from an additive in lubricants, or is likely to change significantly;
 - the amount of chemical being introduced has increased from 100 tonnes, or is likely to increase, significantly;
 - if 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 MSDS of the product containing the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

9. 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 the Australian Government Department of the Environment and Heritage, Canberra.

NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

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