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

FULL PUBLIC REPORT

Polymer in Setalux 6805 AQ-25

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**Director
NICNAS**

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FULL PUBLIC REPORT**Polymer in Setalux 6805 AQ-25****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Akzo Nobel Car Refinishes Pty Ltd (ABN 26 087 571 882)
269 Williamstown Road
Port Melbourne, VIC 3207

Nuplex Industries (Aust.) Pty Ltd (ABN 25 000 045 572)
49-61 Botany Road
Botany, NSW 2019

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

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polymer in Setalux 6805 AQ-25

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10000

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	Clear, almost colourless, very viscous liquid (Setalux 6805 AQ-25)
Melting Point/Glass Transition Temp	6.7°C (Glass transition temperature)
Density	Determined by thermogravimetric analysis. 1000 kg/m ³ (Setalux 6805 AQ-25)
Water Solubility	Not determined. Based on the structure, the notified polymer is not expected to be water soluble. The polymer is manufactured as a dispersion in water.
Dissociation Constant	The polymer contains a small amount of anionic functionality expected to have typical acidity.
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use.

5. INTRODUCTION AND USE INFORMATION

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

Import

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes*</i>	10-100	10-100	10-100	10-100	10-100

* Volume of Setalux 6805 AQ-25 containing < 30% notified polymer.

Possible Manufacture

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	50-100	50-100	100-500	100-500	100-500

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported by sea in finished paint and paint-related products in steel cans (less than 5 L volume). The notified polymer will be in the finished products at a concentration of up to 18% (up to 60% of the Setalux 6805 AQ-25 solution). The imported paint products will be transported from the dockside to the Port Melbourne warehouse, and from the warehouse to distribution outlets across Australia by road.

The notified polymer may also be manufactured as the polymer dispersion Setalux 6805 AQ-25 (concentration less than 30%). The polymer dispersion would be packed into bulk tankers, 1000 L intermediate bulk containers (IBCs) or 200 L drums. The polymer dispersion would be transported from the manufacturing plant in Wangaratta, Victoria to customer sites by road.

Reformulation/manufacture processes

The finished paint and paint-related products containing the notified polymer (< 18%) will not be reformulated and will be transported to the customers (crash repair shops) in the original packaging.

At present there are no immediate plans to reformulate or manufacture the notified polymer. However, reformulation and/or manufacturing may occur in the future. No specific details were supplied for

reformulation however a typical scenario is that the notified polymer is added to blending vessel and subsequently repackaged. The notified polymer would be manufactured by emulsion polymerisation in closed vessels at the Nuplex Wangaratta plant. After manufacture the dispersion would be filtered through sealed filters into intermediate bulk storage (20-30 tonne tanks) or directly into IBCs or drums. The manufactured dispersion would then be reformulated at customer sites to produce a range of paints.

Use

The notified polymer is used as a component of paint used in the automotive industry. This paint will be applied by spraying cars in crash repair shops.

The majority of these spray applications will occur in a spray booth. The level of ventilation present in the spray booth will vary between workshops. In smaller automotive refinishing repair shops spray applications may occur outside of a spray booth.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Manufacture

Dermal and ocular exposure may potentially occur during certain processes involving the notified polymer such as sampling, cleaning, maintenance, or by accidental spills during the packing process. However, exposure to significant amounts of the notified polymer is limited because of the largely automated processes, and the engineering controls and personal protective equipment worn by workers.

Reformulation

Exposure to the notified polymer (up to 30%) could occur during reformulation processes such as transfer and sample fillings. The level of engineering controls and PPE is not known.

Transport and storage

Transport and warehousing workers may come into dermal and ocular contact with the notified polymer through accidental leaks and spillages.

Spray painting

Spray painters may come into contact with the notified polymer at a concentration of up to 18% through dermal and ocular routes from direct contact with drips, spills and splashes during transfer of the paint formulation to the spraying equipment, manual paint application, and equipment cleaning and maintenance. Workers may also be exposed to the notified polymer (concentration up to 18%) by inhalation of paint aerosols containing the notified polymer during spray application. In the majority of car repair shops exposure is expected to be minimal as the spray paint is applied in a ventilated spray booth by workers using protective equipment. In car repair shops where spray booths are not used the level of exposure per application is expected to be greater, however, exposure could be minimised by spray application in a well ventilated area and the use of PPE in accordance with the MSDS. The notifier has estimated that a spray painter will have the potential to be exposed to the notified polymer for a maximum of 5 h/week. It is estimated that approximately 500 spray-painters around Australia will be exposed to the notified polymer on a regular basis.

After application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable to exposure.

PUBLIC EXPOSURE

The notified product is for industrial use only. The public will come into contact with surfaces (car

surfaces, doors etc.) coated with the notified polymer. However, the notified polymer will be trapped within the coating and not bioavailable.

6.2. Toxicological Hazard Characterisation

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

The notified polymer is, however, a high molecular weight, insoluble polymer and the inhalation of respirable particles of this class of polymer has been linked with irreversible lung damage (US EPA, 2006). This lung damage has been attributed to 'lung overloading' and impaired clearance of the lungs, and was observed in animals exposed to high levels of toner particles.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

Although dermal and ocular exposure to the notified polymer could occur during manufacturing and reformulation processes and the handling of paint containing the notified polymer, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer.

Inhalation exposure to notified polymer aerosols could occur during the spray application of paint containing the notified polymer. However, control measures in place to reduce exposure to paint solvents, such as spray booths and PPE, would also reduce the inhalation exposure to respirable particles. Therefore, although the notified polymer belongs to a class of polymers (high molecular weight, insoluble) which have been linked with irreversible lung damage, the risk to workers is expected to be low if spray application is conducted in an adequately ventilated spray booth by workers wearing respiratory protection. Exposure and hence the risk of irreversible lung damage is greatest for workers conducting spray application without the use of engineering controls and appropriate PPE.

PUBLIC HEALTH

The notified polymer is intended for use by professional spray painters in auto repair workshops only, and will not be sold to the public. Following application, the notified polymer will become trapped within a film and will not be bioavailable. Therefore, the risk to public from exposure to the notified polymer is considered low.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Environmental release of the notified polymer is summarised in the following table.

Source of release	% Annual Volume	Released to
Residual within containers	<1%	Landfill
Accidental Spills	<1%	Landfill
Washings from manufacture/reformulation equipment cleaning	<5%	Trade Waste Sewer
Overspray from application	<30%	Landfill
Applied notified polymer.	>63%	Metal Reclamation Furnaces

ENVIRONMENTAL FATE

Notified polymer that is disposed with washings to the trade-waste sewer is expected to be removed by flocculation in the treatment plant, due to its insolubility in water, and will be disposed of to landfill.

Notified polymer that is disposed to landfill is expected to be immobile, due to its insolubility in water. Overtime, the notified polymer is expected to degrade by biotic and abiotic means to form simple oxides of carbon and hydrogen.

Applied notified polymer that is disposed of to metal reclamation facilities is expected to be thermally decomposed to form simple oxides of carbon and hydrogen.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. However, given that the notified polymer only contains a small proportion of anionic functionality, this is unlikely to apply. Any toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

7.3. Environmental Risk Assessment

Up to 5% of the total annual volume may be disposed of to the trade-waste sewer from the cleaning of manufacturing and reformulating equipment. However, this quantity of notified polymer is expected to be removed in the waste water treatment plant by flocculation, and is expected to be disposed of to landfill, where the notified polymer is expected to be immobile. Therefore, given that aquatic exposure is unlikely, the use of the notified polymer is not expected to pose an unacceptable risk to the aquatic environment.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

Manufacturing/Reformulation

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

End-Use (Spray Application)

There is Low Concern to occupational health and safety if spray application is carried out with a high level of control.

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 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 other specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself during manufacture and reformulation, however, these should be selected on the basis of all ingredients in the formulation.
- Employers should implement the following engineering controls to minimise occupational exposure to the notified chemical in formulated paint products:
 - Spray application should be conducted in a down draft spray booth

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced and in formulated paint products:
 - Avoid breathing aerosol
 - Use of paint containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999).
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer in formulated paint products:
 - Suitable respirators during spray application

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 by incineration or to landfill.

Emergency procedures

- Spills/release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

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.

11. BIBLIOGRAPHY

US EPA (Last updated 3/3/2006). High Molecular Weight Polymers in the New Chemicals Program. <http://www.epa.gov/opptintr/newchems/pubs/hmwtpoly.htm>, Accessed 19 April 2006.