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

FULL PUBLIC REPORT

Flex-Light Prism PIC Polymer

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**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	3
1. APPLICANT AND NOTIFICATION DETAILS	3
2. IDENTITY OF CHEMICAL	3
3. COMPOSITION.....	3
4. INTRODUCTION AND USE INFORMATION.....	3
5. PROCESS AND RELEASE INFORMATION.....	4
5.1. Distribution, Transport and Storage.....	4
5.2. Operation Description.....	4
5.4. Release.....	4
5.5. Disposal	4
6. PHYSICAL AND CHEMICAL PROPERTIES.....	4
7. TOXICOLOGICAL INVESTIGATIONS	5
8. ECOTOXICOLOGICAL INVESTIGATIONS	5
9. RISK ASSESSMENT	5
9.1. Environment	5
9.1.1. Environment – exposure assessment.....	5
9.1.2. Environment – hazard assessment	5
9.1.3. Environment – risk characterisation.....	5
9.2. Human health.....	5
9.2.1. Occupational health and safety – exposure assessment	5
9.2.2. Public health – exposure assessment.....	6
9.2.3. Human health - effects assessment	6
9.2.4. Occupational health and safety – risk characterisation	6
9.2.5. Public health – risk characterisation.....	6
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	6
10.1. Hazard classification.....	6
10.2. Environmental risk assessment.....	6
10.3. Human health risk assessment	6
10.3.1. Occupational health and safety.....	6
10.3.2. Public health.....	6
11. MATERIAL SAFETY DATA SHEET	7
11.1. Material Safety Data Sheet	7
11.2. Label	7
12. RECOMMENDATIONS.....	7
12.1. Secondary notification	8
13. BIBLIOGRAPHY	8

FULL PUBLIC REPORT**Flex-Light Prism PIC Polymer****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT

Macdermid Graphic Arts Inc.
29 Dennis Street, Campbellfield, VIC 3061

NOTIFICATION CATEGORY

The notified polymer meets the PLC criteria.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Polymer structure, composition and formulae

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

Flex-Light Prism PIC Polymer

Number Average Molecular Weight (Mn) >10,000

3. COMPOSITION

DEGREE OF PURITY

100 %

RESIDUAL MONOMERS

All residual monomers were used up in the reaction

REACTIVE FUNCTIONAL GROUPS

Low concern hydroxyl groups

4. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be manufactured locally.

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>	1.8	1.8	1.8	1.8	1.8

USE

The notified polymer is used as a coating resin in the printing industry. It is intended to be exported for use in the coating of printing plates.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURER

Notifier's plant in Victoria

TRANSPORTATION AND PACKAGING

The product containing the notified polymer will be packaged into polypropylene pails with 16 kg packaging.

5.2. Operation Description

Manufacturing process:

The ingredients are discharged into a stainless steel reactor (capacity of 2.5 tonnes), which is operated at around 60-70 °C. The whole process is around 6-8 hours production time. During sampling, a very small amount of waste (neutralised with low concentrated ammonia solution) is collected by accredited contractors. The whole manufacturing process is to be carried out in a closed system. The concentration of the notified polymer in the final product is 64%.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The polymer is manufactured in batches within an enclosed reactor vessel located within a bund of capacity 30 tonnes (estimated batch size 850 to 950 kg). In the event of vessel rupture or chemical spill, the drainage system is equipped with a shut-off valve to control emissions to stormwater. Environmental release of the notified polymer is unlikely during manufacturing.

RELEASE OF CHEMICAL FROM USE

The polymer will be packaged into 16 kg containers which will be exported.

5.5. Disposal

The cleaning of the reactor vessel is by solvent. The spent solvent is removed by waste contractor provided by the solvent supplier. During manufacturing, small quantities of the vessel constituents are sampled for testing. Following neutralisation with low concentrated ammonia, these samples are then disposed of as waste, collected by waste contractor.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear and viscous liquid (product)
Melting Point/Freezing Point	Not provided
Density	980 kg/m ³ (sourced from the material safety data sheet (MSDS) for the product)
Water Solubility	Not determined quantitatively. Water solubility of Flex-Light Prism PIC Polymer was assessed qualitatively by

CSIRO Molecular Science, who indicated that the notified polymer is insoluble in water on the basis of high molecular weight as the lowest MW polymer is ~1600 together with the low solubility of the monomers.

Particle Size	Not applicable
Flammability	Not provided
Flash Point	>100°C (product)

7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

8. ECOTOXICOLOGICAL INVESTIGATIONS

No ecotoxicological data were submitted..

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Environmental release during manufacturing is unlikely due to safety and control systems. A small (unspecified) quantity of waste containing the notified polymer will be generated during batch testing and from solvent washing of the reactor vessel. Polymer and solvent wastes will be collected by a waste contractor. The solvent is recycled and the residual sludge is sent to landfill. Environmental release is not expected through use due to its complete export.

In general, abiotic and slow biotic processes would be largely responsible for the degradation of landfill wastes containing the notified polymer. As a consequence of its low water solubility, the notified polymer is likely to be immobilised through adsorption to organic components of soils.

9.1.2. Environment – hazard assessment

The notified polymer is expected to have a low acute toxicity due to its low water solubility and high molecular weight.

The notified polymer is unlikely to bioaccumulate due to its high molecular weight, which will inhibit passage through biological membranes (Connell, 1989).

9.1.3. Environment – risk characterisation

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

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Workers likely to be exposed to the notified polymer are those involved in transport and storage, manufacturing and packaging. It is estimated that 2 production operators and a chemist are to be involved in the production process.

Dermal and ocular exposure to the notified polymer may occur during blending and sampling, when cleaning up spills and equipment and when packing the product containing the notified polymer (at 64%) into 16 kg pails for export. However, exposure to significant amounts of the

notified polymer is limited because the formulation process is expected to be enclosed and automated. Inhalation exposure is not expected to be significant as the process is enclosed and exhaust ventilation is employed.

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

9.2.2. Public health – exposure assessment

The notified polymer is manufactured at the notifier's plant and exported. The public may only be exposed to the notified polymer if there is a spill during transport.

9.2.3. Human health - effects assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The MSDS for the notified polymer indicate the following:

- contact with eyes may cause irritation resulting in redness, stinging and lacrimation;
- Skin contact may cause irritation in individuals with sensitive skin
- Acute inhalation may cause irritation to the respiratory system at elevated temperatures;
- Repeated or prolonged with skin may lead to irritation and possible contact dermatitis.

These effects are due to diluents in the product containing the notified polymer.

9.2.4. Occupational health and safety – risk characterisation

Exposure to the notified polymer may only occur during reformulation, packaging, transport and storage. The OHS risk presented by the notified polymer is expected to be low due to the following reasons:

- The manufacturing process is automated and fully enclosed, and exhaust ventilations will be employed;
- The notified polymer is expected to be of low hazard (the % of MW <500 and <1000 was negligible and there are no high concern reactive functional groups present);
- Spills during transport and packaging are expected to be minimal and can only occur if there is a packaging breach.

9.2.5. Public health – risk characterisation

As there will be no exposure of the public to the notified polymer the risk to the public from exposure to the notified polymer is considered low.

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

10.1. Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

10.2. Environmental risk assessment

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

10.3. Human health risk assessment

10.3.1. Occupational health and safety

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

10.3.2. Public health

There is Negligible Concern to public health as the notified polymer will be manufactured locally and exported.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the product containing the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the product containing the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. 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 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

Disposal

The notified polymer should be disposed of in accordance with the methods proposed in the submission by licensed waste contractor and in accordance with local jurisdiction waste management guidance, including disposal of waste sludges to an approved landfill.

Storage

- The following precautions should be taken by the manufacturer regarding storage of the notified polymer:
 - Adherence to the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (DOTARS, 1996).

Emergency procedures

- Spills/release of the notified polymer should be handled by trained personnel in accordance with the material safety data sheet provided by the manufacturer.

Transport and Packaging

- *Australian Code for the Transport of Dangerous Goods by Road and Rail* (DOTARS, 1996).
- *International Maritime Dangerous Goods Code* (IMO, 2000).

12.1. 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.
- (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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

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