

File No: PLC/474

25 August 2004

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

FULL PUBLIC REPORT

Polymer in Polyurethane Dispersion 145049

This Self Assessment has been compiled by the notifier in accordance with the provisions of, and the proposed Low Regulatory Concern Chemicals (LRCC) amendments to, 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 screens the risk assessment for public health and occupational health and safety. The environmental risk assessment is screened by the Department of the Environment and Heritage. An audit of the data supporting this assessment will be conducted by NICNAS.

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**Director
Chemicals Notification and Assessment**

FULL PUBLIC REPORT**Polymer in Polyurethane Dispersion 145049****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Dow Chemical (Australia) Ltd, 541-583 Kororoit Creek Road Altona Vic 3018

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

- Chemical name
- CAS number
- Structural formula
- Polymer constituents
- Import volume
- Details of use

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)

No previous permits or certificates

NOTIFICATION IN OTHER COUNTRIES

United States – Manufactured under Polymer Exemption Criteria of TSCA

Korea – Substance Clearance date: Oct/02/03 / Examination no: 2003-207

Canada – Substance notified (and accepted) as a Polymer of Low Concern (PLC) – Cleared for import into Canada as of 01.23.04 - NSN Reference number 12943.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S) Syntegra YM 2100 Polyurethane Dispersion / DOW ID 1200 Polyurethane Dispersion / (Note: These represent names of the finished products that contain approx. 50% of the notified polymer substance).

3. COMPOSITION

Functional group equivalent weight is not applicable to the finished polymer.

The polymer is a fully reacted 'finished' substance and as such there are no 'real' functional groups on which to base a FGEW calculation.

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Not applicable
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS [L](#)

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	1	10	20	30	40

USE

The notified polymer is a component of formulated surface coatings and adhesives

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will not be manufactured in Australia. Product will be imported in container loads in either totes (300 gallon), drums (55 gallon) or both. On delivery to the wharf, product is transferred to customer warehouses in all main capital cities where totes or drums are removed from containers and stored awaiting use.

Typical local processing operations involve three major stages: Bulk Storage, Mixing, and Packaging. The probable end use application is also addressed.

1. Bulk Storage: It is estimated that approximately 1% of dispersion product remains in the containers of which about 50% would be the notified polymer. Based on an annual import volume of 25MT (5 year maximum) of new polymer, the maximum residual left in the containers after bulk storage would be 250 Kg / yr.

2. Mixing: We estimate that approximately 1% of blended product remains in the mixer of which about 20% would be the notified polymer. Based on an annual import volume of 25MT (5 year maximum) of new polymer, the maximum residual left in the mixer after blending would be 247 Kg / yr.

3. Packaging: Finished adhesive products would contain approximately 20% of the notified polymer and it is estimated that approximately 1% of the finished adhesive remains in the container after use. Based on the maximum import volume of 25MT of new polymer, a maximum residual after use would be 245 Kg/yr.

A maximum annual estimate of total residual polymer from processing operations would be 742 Kg /yr or 0.03% of the total imported volume.

Note: These operations are controlled by the formulator.

Adhesive End Use: The notified polymer 'cures' to the substrate after adhesive application.

For estimates of the disposition of these residual polymer volumes, please see comments below for Section 6.1.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

Minimal to no environmental exposure is anticipated. It is estimated that 99% of raw material will be converted to useful products. It is recommended that any waste amounts of dispersion product containing the notified polymer are sent to a licensed, permitted recycler, reclaim, incinerator, or other thermal destruction device. Finished coatings and adhesives containing the polymer will 'cure' to form an inert solid bound to a given substrate.

Below is an estimate of environmental exposure resulting from each of the processing steps noted above. These estimates are based on the manufacturing experience with similar polymer substances and represent typical expected releases resulting from thermal destruction of these substances:

1. BULK STORAGE: Based on an annual import volume of 25MT (5 year maximum) of new polymer, the maximum residual left in the containers after bulk storage would be 250 Kg / yr. Utilizing an incineration efficiency factor of 99.99% would result in a maximum emission of 0.025 Kg/yr of notified polymer.

2. MIXING: Based on an annual import volume of 25MT (5 year maximum) of new polymer, the maximum residual left in the mixer after blending would be 247 Kg / yr. Utilizing an incineration efficiency factor of 99.99% would result in a maximum emission of 0.0247 Kg/yr of notified polymer.

3. PACKAGING: Based on the maximum import volume of 25MT of new polymer, a maximum residual after use would be 245 Kg / yr. Utilizing an incineration efficiency factor of 99.99% would result in a maximum emission of 0.0245 Kg/yr of notified polymer.

A maximum annual estimate of total polymer releases would be 0.0742 Kg /yr or 0.000003% of the total imported volume.

Additional End Use Information: Once the finished adhesive product is 'cured', it then becomes a solid material that is bonded to a given substrate. At this point the notified polymer substance is an inert solid and poses little potential for exposure risk to the environment or the public at large.

Disposal, including the choosing of sites for disposal is a customer responsibility. We place no special condition on our customers regarding the disposal of the notified substance.

6.2. Summary of Occupational Exposure

There is limited opportunity for human contact. The imported polyurethane dispersion product (containing the polymer) would be compounded along with filler materials and other additives at the formulator site to produce the finished coatings and adhesives. Activities associated with this process could include handling of bulk dispersion, mixer charging, and packaging of finished product. Chemical goggles, body-covering clothing and gloves are standard protective equipment. No new or additional safety practices are anticipated to be needed at the formulator site in order to handle the polymer.

Conclusions:

- Dermal and ocular exposure can 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.
- General ventilation is typically adequate for most conditions. additional controls and / or PPE may be necessary if mists are generated during processing.
- During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.
- Workers involved in the handling of products containing the new substance will be provided with product MSDS and appropriate container labels.
- To date, there have been no reported incidents of work related injuries or diseases associated with the use of this polymer substance or products containing this substance.

6.3. Summary of Public Exposure

The notified polymer will not be available to the public. Members of the public may come into contact with products containing the (cured) notified polymer.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Polymer is a Solid (supplied as a white liquid dispersion in water)
Melting Point/Glass Transition Temp	No Data
[Vicat Softening Temperature 49N, 50°C/h]	No Data
Density	> 1.00
Water Solubility	Dispersion as supplied is dilutable; polymer component is insoluble.
Dissociation Constant	Not applicable.
Particle Size	Polymer supplied as a liquid dispersion.
Reactivity	Stable under recommended storage conditions.
Degradation Products	The polymer component is not expected to biodegrade.

8. HUMAN HEALTH IMPLICATIONS

Comparison of the structure of the notified polymer with other similar polymers indicates that single dose oral toxicity of this polymer is probably very low.

Brief contact with skin may cause slight skin irritation with local redness. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

May cause moderate eye irritation, but corneal injury to eyes is unlikely.

No adverse effects are anticipated from a single exposure to vapors.

No adverse human health effects have been reported.

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

No toxicological data were submitted.

No residual amines are anticipated. The polymer is considered stable under normal conditions. It is not a cationic polymer or a polymer that is expected to become cationic in the aquatic environment. It is not a polymer that is designed to (or can be expected to) degrade, decompose, or depolymerize. No bioconcentration of the polymeric component is expected because of its high molecular weight.

The notified polymer is not expected to be hazardous to aquatic or terrestrial organisms.

10. RISK ASSESSMENT

10.1. Environment

Accidental spills aside, the polymer will not be released to the environment. Adhesives or other materials manufactured using the polymer may ultimately be disposed of in landfill where they are not expected to degrade or become mobile. The risk to the environment presented by the notified polymer is considered low.

The notified polymer is not expected to be toxic to aquatic or terrestrial life. Because of the high molecular weight, no bioconcentration of this polymer is expected. The polymer will remain in the soil or sink and remain in the sediment of an aquatic environment. The polymer is water insoluble, inert and not expected to biodegrade. No adverse environmental effects have been reported.

10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low.

10.3. Public health

The notified polymer will not be available to the public. 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 bound within a matrix/chemically stable/resistant to degradation and unlikely to be bioavailable.

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

11.2. Environmental risk assessment

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

11.3. Human health risk assessment

11.3.1. Occupational health and safety

There is low concern to occupational health and safety under the conditions of the occupational settings described.

11.3.2. Public health

There is Negligible Concern to public health when used to produce the components /materials described.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS in accordance with the schedule item B 12 of the Industrial Chemicals (Notification & Assessment) Act 1989. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

The following personal protective equipment is recommended in accordance with good occupational health and safety practice

- Chemical goggles, clean, body-covering clothing, and chemical gloves resistant to this material

In misty atmospheres, use an approved particulate respirator

No specific engineering controls, work practices or additional 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

No bioconcentration of the polymer is expected because of its high molecular weight and the polymer is not expected to biodegrade.

Disposal

It is recommended that any waste amounts of dispersion product containing the polymer substance are sent to a licensed, permitted, ; recycler, reclaimer, incinerator, or other thermal destruction device.

Storage

- The following precautions should be taken by distributors and product end-users regarding storage of the notified polymer / dispersion product:
 - Store between 40-110F (4-43C). Avoid Freezing.

Emergency procedures

- Spills/release of the notified polymer / dispersion should be handled by Isolate area. Keep unnecessary and unprotected personnel from entering area. Spilled material may cause a slipping hazard. Use appropriate safety equipment.
- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Contain spilled material if possible. Absorb with material such as clay or sand. Wash the spill site with large quantities of water.

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.

No additional secondary notification conditions are stipulated.