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

**FULL PUBLIC REPORT**

**Polymer in Adhesion Resin EP 3350**

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**Director  
Chemicals Notification and Assessment**

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**FULL PUBLIC REPORT****Polymer in Adhesion Resin EP 3350****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Degussa Coatings & Colorants Pty Ltd (ABN 16 079 823 313)  
30 Commercial Drive  
DANDENONG VIC 3175

## NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name  
Other Names  
Molecular Formula  
Structural Formula  
CAS Number  
Polymer Constituents  
Exact Use  
Import Volume  
Molecular weight  
Spectral data and means of identification

## 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 TSCA in May 16<sup>th</sup> 1995 (PMN P-94-1847)

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Adhesion Resin EP 3350 (50% of the notified polymer in a solution of tripropylene glycol, diacrylate)

**3. COMPOSITION**

## PLC CRITERIA JUSTIFICATION

Functional Group	Category	Equivalent Weight (FGEW)
None	Moderate/High Concern	

<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
No Substantial Degradability	Yes
Not Water Absorbing	Yes
Low Concentrations of Residual Monomers	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

The chemical will be imported as a 50% solution in tripropylene glycol diacrylate. The polymer will be imported into Australia by Degussa Coatings and Colorants Pty Ltd in 25 kg polyethylene canisters or 200 kg closed head, screw cap drums.

##### 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>	1-3	1-3	1-3	1-3	1-3

##### USE

Adhesion Resin EP 3350 will be used in water based polyurethane coatings such as those used to coat wooden floor boards.

#### 5. PROCESS AND RELEASE INFORMATION

##### 5.1. Operation Description

The notified polymer will be imported into Australia as a 50% solution in tripropylene glycol diacrylate contained in polyethylene 25 kg canisters or closed head screw cap 200 kg steel drums. It will be transported from the wharf to the Degussa Coatings and Colorants Pty. Ltd warehouse by truck and subsequently supplied to customers who will formulate the product into water based polyurethane floor coatings. These customers will formulate Adhesion Resin EP 3350 into water based polyurethane coatings at approximately 3% (or 1.5% of the notified polymer). These polyurethane floor coatings will be sold in 4L or 15L steel containers.

The majority (90%) of the water based polyurethane floor coating products, containing the notified polymer will be sold to commercial applicators. During application, the product containing the notified polymer will be manually weighed or the liquid measured, transferred to a mixing vessel and applied by roller (estimated 75% of the applied product), brush (10%) or spray (15%) application. A small proportion (up to 10%) of the water based polyurethane floor coatings will be purchased by the public for 'do-it-yourself' application. It is expected that these polyurethane coatings will be applied by roller or brush application.

#### 6. EXPOSURE INFORMATION

##### 6.1. Summary of Occupational Exposure

There is little potential for occupational exposure to the notified polymer during transport and storage of the imported product or the finished product coatings.

However, exposure to the notified polymer during formulation, use and disposal of the product coatings is possible. During the formulation process, the main exposure route for the notified polymer will be dermal. Inhalation exposure is unlikely as the notified polymer is expected to be non volatile and the formation of aerosols is not expected. Skin and eye irritation and skin sensitisation may occur

during the transfer of the imported product into mixing vessels and filling operations for formulating the polyurethane coatings. The hazard is due to the presence of the solvent, tripropylene glycol diacrylate in the imported product and is not due to the notified polymer component. Engineering controls and personal protective equipment (PPE) (ie. ventilation, impervious gloves, safety goggles and coveralls) implemented to provide sufficient protection against these effects, also reduce exposure to the notified polymer to low levels.

The majority of the polyurethane coating products will be used in commercial applications. Skin sensitisation due to the solvent component of the polyurethane coatings may occur during transfer of the polyurethane coating product to a mixing vessel and application of the floor coating by roller, brush or spray via dermal or inhalation exposure. As exposure can be high and skin sensitisation may occur, workers will be expected to use appropriate controls (ventilation, coveralls and impervious gloves) during the use of the formulated coating. Therefore, exposure to the polymer will be minimised by these precautions. Once the applied coating has cured (dried in air), the polymer will not be available for exposure or uptake.

Exposure to the notified polymer can also occur during cleaning of equipment with solvent and disposing of the contaminated solvent. Again, work practices and PPE used to protect workers against the hazards of solvents should minimise exposure to the notified polymer.

## **6.2. Summary of Public Exposure**

The notified polymer will be predominantly used by commercial applicators however some members of the public (10%) may purchase and apply the product in 'do-it-yourself' type applications. Household users of the coating may be exposed to drips and splashes. The polymer cures as it dries, so public contact with the polymer following application is unlikely to result in significant exposure. Despite the main use of the product being in public spaces, public exposure by dermal contact with the dried coating film is expected to be negligible. Inhalation exposure of particulates may occur during sanding.

## **6.3. Summary of Environmental Exposure**

### **6.3.1. Environmental Release**

Release to the environment during shipping, transport and warehousing will only occur in the unlikely event of accidental spills or leaks of the canisters, drums or steel packaged containers.

There is a potential for release during formulation of the water based polyurethane coatings and application. The formulation process will take place at the customer site and in the unlikely event that a spill occurs it will be contained by existing plant bunding and collected for disposal to landfill. The notifier estimates that up to 15 kg/annum of the polymer may be lost due to spills and leaks. Equipment washings from formulation processes may result in <23 kg/annum of notified polymer being released to the environment. Washings are collected into holding tanks, which are emptied on a regular basis by licensed contractors for disposal to landfill. Some residue will also remain in the empty import canisters or drums after use. It is estimated that <30 kg/annum (or <15 kg/annum of notified polymer), will remain as residue. Drums are either re-conditioned by external recycling contractors and re-used with the residue being collected and disposed of to landfill, or sent straight to landfill. All canisters are disposed of to landfill.

Polyurethane coatings containing the notified polymer will be applied to flooring areas predominantly by professional applicators. The notifier estimates that approximately 30 kg/annum of the notified polymer from coating products will be lost due to cleaning of the application equipment and will be disposed of via the drain into the sewer. The losses from overspray during spray application of the coatings are likely to be 10% (45 kg/annum). The overspray may fall on and will adhere to the adjacent surfaces such as walls, ground etc. The notifier estimates that <23 kg/annum of the notified polymer contained in coating products would remain as residue in the steel containers after emptying. This will be ultimately be disposed of to landfill along with the containers.

The remainder of the notified polymer will be bound in the coating matrix and not be available for direct release to the environment. Disposal of timber may be through landfill or recycling, and the fate of the coating will be related to that of the timber. Sanding of the timber may result in exposure to the notified polymer as a particulate.

### 6.3.2. Environmental Fate

The waste generated in formulating water based polyurethane coatings and that remaining in the empty import canisters and drums and polyurethane coating containers will ultimately be disposed of to landfill. Leaching of the polymer from landfill is unlikely, given the low water solubility of the substance. Waste from cleaning equipment in the application of the polyurethane coating and loss due to overspray will be washed into the drain and end up in the sewer. Due to its structural properties, the polymer will likely adsorb to sewage sludge and be removed at sewage treatment plants. The notified polymer is expected to be hydrolytically stable and to not be readily biodegradable. Polyurethane coatings will dry to form an inert coating on coated surfaces. The coating will gradually wear away by human traffic and be slowly dispersed on shoes. At the end of its useful life it will be removed by professional applicators and presumably replaced by another coat of a similar product. The coating containing the notified polymer will be broken up into solid particulate matter in the sanding/removal process and most likely disposed of as household garbage. The polymer is not expected to cross biological membranes, due to the low solubility and high molecular weight, and should not bioaccumulate.

## 7. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	The imported polymer solution is a yellowish liquid with a characteristic odour.
<b>Melting Point/Glass Transition Temp</b>	Approximately 60°C (polymer solution)
<b>Density</b>	1100 kg/m <sup>3</sup> (polymer solution)
<b>Water Solubility</b>	Practically insoluble in water (polymer solution).
<b>Reactivity</b>	Reacts with oxidising agents.
<b>Degradation Products</b>	Small amounts of monomers and oxides of carbon produced on combustion.

## 8. HUMAN HEALTH IMPLICATIONS

### 8.1. Toxicology

No toxicological data were submitted.

### 8.2. Human Health Hazard Assessment

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

## 9. ENVIRONMENTAL HAZARDS

### 9.1. Ecotoxicology

No toxicological data were submitted.

### 9.2. Environmental Hazard Assessment

Nonionic polymers which have molecular weights greater than 1000 are of low concern.

## 10. RISK ASSESSMENT

### 10.1. Environment

The majority of the notified polymer will be incorporated at a low level into polyurethane coatings and, once applied and dried, pose little risk to the environment. Wastes will be disposed of to landfill where the notified polymer is expected to adsorb to soil and sediment and slowly degrade through biotic and abiotic processes ultimately to water and oxides of carbon.

Minor amounts <50 kg per annum of the notified polymer are expected to enter the sewage system, from a large number of point sources. This indicates that environmental exposure to

the notified chemical is likely to be very diffuse. Adsorption to sludge, soil and sediment as well as swift dilution in receiving waters should reduce environmental concentrations to negligible levels.

Given the minimal environmental exposure, the overall environmental hazard is expected to be low.

#### **10.2. Occupational Health and Safety**

The OHS risk presented by the notified polymer is expected to be low, based on low hazard and low exposure as well as the engineering controls and personal protective equipment used by workers.

#### **10.3. Public Health**

The potential for public exposure to the notified polymer during all stages of its life cycle is considered to be very low. Polyurethane coatings containing the notified polymer will generally be applied by professional applicators, however a small portion of customers are likely to be members of the public. Once applied to the surface, the polyurethane coating hardens and dries. Public exposure by dermal contact with the dried film is expected to be negligible. Dermal and ocular exposure to the notified polymer in the coatings is expected during application and accidental oral exposure may occur in children. It is expected that the public will have intermittent exposure to only small amounts of coatings containing small proportions of the notified polymer. Based on the above information, it is considered that the notified polymer will not pose a significant risk to public health when used in the proposed manner.

### **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 as a component of polyurethane coating systems.

### **12. MATERIAL SAFETY DATA SHEET**

#### **12.1. Material Safety Data Sheet**

The notifier has provided the MSDS (Attachment 1) for the polymer solution in accordance with the schedule item B 12 of the *ICNA Act*. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### **13. RECOMMENDATIONS**

#### CONTROL MEASURES

##### Occupational Health and Safety

- No specific engineering controls or work practices 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.

- Personal protective equipment required during formulation are
  - Eye protection (safety glasses or goggles)
  - Impermeable gloves
  - Industrial clothing and footwear
- 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

- The following control measures should be implemented by the notifiers customers to minimise environmental exposure during formulation of the polyurethane coating solutions:
  - Bunding;
  - Exhaust ventilation with filtering of emissions

#### Disposal

- The notified polymer should be disposed of to landfill or incinerated;
- Empty containers should be sent to local recycling or waste disposal facilities.

#### Emergency procedures

- Spills/release of the notified polymer should be handled by absorbing with sand and put into suitable containers for disposal. Contaminated containers can be re-used after cleaning.
- Do not flush the product containing the notified polymer into surface water or sewer systems.

### 14.1. 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.
  - [list of circumstances]

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.