

File No PLC/623

July 2006

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

**FULL PUBLIC REPORT**

**Dynacoll 7250**

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**Director  
NICNAS**

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**FULL PUBLIC REPORT**

<b>Dynacoll 7250</b>
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**1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Degussa Australia Pty Ltd (ACN 079 823 313)  
30 Commercial Drive  
Dandenong VIC 3175

Henkel Australia Pty Ltd (ABN 82 001 302 996)  
135 Canterbury Road  
Kilsyth VIC 3137

## 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, Spectral data, Residual Monomers/Impurities, Confidential Use Details, Import Volume, and Final formulation concentrations.

## 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

Canada, Japan, EU, and China

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Dynacoll 7250

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1000

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met</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

<b>Appearance at 20°C and 101.3 kPa</b>	Viscous transparent liquid
<b>Glass Transition Temp</b>	-50°C
<b>Density</b>	1200 kg/m <sup>3</sup> at 23°C
<b>Water Solubility</b>	Practically insoluble (high MW polyester)
<b>Reactivity</b>	The notified polymer is stable under normal environmental conditions. It is not expected to hydrolyse significantly except under extreme conditions of temperature and/or pH.
<b>Degradation Products</b>	Not expected to degrade under normal conditions of use. Will form oxides of carbon upon incineration.

#### 5. INTRODUCTION AND USE INFORMATION

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>	<5	<5	<5	<5	<5

USE AND MODE OF INTRODUCTION AND DISPOSAL

##### Mode of Introduction

The notified polymer will be imported in 30 kg steel cans or 200 kg drums by sea. Trained carriers will transport the notified polymer to adhesives manufacturers by road. Formulated adhesives containing the notified polymer will also be imported in either polyethylene terephthalate bags or plastic pails in quantities of 100 g to 25 kg.

##### Reformulation processes

At the formulation site, the notified polymer will be blended with other ingredients to form part of a hot melt adhesive. This process will involve manual weighing and addition to hoppers that feed a melt tumble blender. Here, the notified polymer will be mixed and heated within a closed batch system, to form the hot melt adhesive. All of these processes will be carried out under exhaust ventilation. The end product is a solid adhesive at ambient temperature. The adhesive solution in the tumble blender is fed to the substrate where it cures.

##### Use

The notified polymer is used in the manufacture of hot melt adhesives.

These adhesives may be used in the industrial manufacture of adhesive tape products. The tapes will be coated with a very thin film of molten adhesive in a continuous, automated process under exhaust ventilation. Such tapes will be used by the public and in the production of a variety of plastic, glass and cardboard products (eg for household tapes or diapers).

## **6. HUMAN HEALTH IMPLICATIONS**

### **6.1. Exposure Assessment**

#### OCCUPATIONAL EXPOSURE

Dermal and ocular exposure could occur during weighing out of liquid notified polymer prior to reformulation. Exposure to significant amounts of the notified polymer is limited because of the use of exhaust ventilation and personal protective equipment (PPE), including overalls, gloves and protective eyewear, worn while weighing is performed. Overall, exposure to significant amounts of the notified polymer during the manufacture of hot melt adhesive is limited because it is a fully automated process, and because of the engineering controls and personal protective equipment worn by workers.

Both adhesive and tape manufacturing workers could experience dermal exposure to solid adhesive containing the notified polymer, either as a hot melt adhesive or on tape products. However, in this state the notified polymer is bound in a matrix and is hence is unavailable for exposure. Exposure to molten adhesive products containing the notified polymer is limited because worker will contact the molten adhesive only intermittently. When working in areas where exposure to the liquid adhesive is possible, any exposure to workers will be limited by the need for protective clothing to prevent burns when operating near hot machinery.

Workers could also be exposed to the liquid notified polymer during the cleaning of equipment to remove adhesive residues. During hot melt adhesive manufacture, workers could experience dermal or inhalation exposure during the cleaning of the mixer and feed lines, which will be performed monthly by rinsing with solvent. Workers will wear the appropriate PPE as needed. During tape manufacture, solid adhesive residues will be removed at the end of production runs, with a scraper and soap and water. No exposure is expected from solid adhesive residues.

#### PUBLIC EXPOSURE

The notified polymer is intended only for use in industry and as such public exposure to the notified polymer in the imported form is not expected. The notified polymer that has been formulated into solid hot melt adhesives will also not be available to the public.

The notified polymer will only be sold to the public in the form of finished articles. There is potential for extensive public exposure to articles such as adhesive tapes, the adhesive of which is partly comprised of the notified polymer. This exposure is predicted to be mainly dermal, to the small quantities of the notified polymer bound within the adhesive on the tape. For the use in disposable diapers, due to the intermittent accidental contact and immobilisation of the polymer within the adhesive, exposure should be low.

### **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.

### **6.3. Human Health Risk Assessment**

#### OCCUPATIONAL HEALTH AND SAFETY

Although exposure to the notified polymer could occur during hot melt adhesive or tape manufacture, the risk to workers is considered to be low due to the use of PPE and the intrinsic low hazard of the notified polymer.

#### 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 (eg tapes). However, the risk to public health will be negligible because the notified polymer is of low hazard, present in small quantities and bound within a matrix.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Exposure Assessment**

#### ENVIRONMENTAL RELEASE

The polymer is a component of a hot melt adhesive. The polymer will be blended with other ingredients to form the hot melt adhesive then automatically applied to tape to form industrial adhesive tape. Release during the adhesive tape manufacture is expected to be limited to approximately 25 kg per annum, as most of the hot melt adhesive may be recovered from spills and the cleaning of manufacturing equipment for re-use. During reformulation where the polymer is blended, it is expected that approximately 150 kg will be released from spills, container residue and equipment cleaning, where a hot organic solvent will be used.

Empty containers will be landfilled whilst other waste will be disposed by landfill or incineration.

The polymer as part of the adhesive tape will be disposed of at the end of the useful life of the product in which the adhesive tape is used. Some possible uses include packaging, general adhesive tapes, disposable diapers, footwear and interior automotive trim. The vast majority of the products will be landfilled with these items. In the case of automotive interior trim any polymer adhering to metal components will be combusted during the metal recycling. Small quantities from packaging and paper applications may enter the sewer. It is expected that due to the product's water insolubility, it will report to the sewage sludge.

#### ENVIRONMENTAL FATE

The polymer is water insoluble and as part of the hot melt adhesive will remain in intimate contact with the adhesive tape and consequently the product in which the tape is used. The vast majority of the product will be disposed of to landfill where it will undergo degradation by abiotic and biotic processes to form landfill gases, namely methane and oxides of carbon; and water vapour. If the product is disposed of by incineration then the polymer will be combusted to form oxides of carbon and water vapour. Any polymer adhering to metal surface during the metal recycling process will likewise be combusted. Small quantities may enter the sewer from recycling of packaging and paper products. Being water insoluble the polymer is expected to report to the sludge which is expected to be incinerated.

### **7.2. Environmental Hazard Characterisation**

No ecotoxicological data were submitted. The polymer is water insoluble and is unlikely to cross biological membranes due to its insolubility and high molecular weight. Polymers without significant ionic functionality are of low concern to the aquatic environment, even though they are expected to be persistent.

### **7.3. Environmental Risk Assessment**

Approximately 175 kg per annum of the notified polymer will be released during manufacture. The remainder of the maximum 5 tonnes per annum imported will be incorporated into hot melt adhesive tape. The majority of the product will be disposed of to landfill. As the polymer is designed as an adhesive and is water insoluble, it will remain intimately bound to the products in which the polymer is used. The polymer will undergo in situ degradation, with no significant quantities expected to enter waterways. Small quantities entering the sewer from recycling of packaging and paper products is expected to report to the sewerage sludge and not enter waterways in any significant amount.

Although there is no ecotoxicology data, non-ionic polymers of  $NAMW > 1000$  are of low concern. Based on the environmental hazard and use pattern the risk to the environment is considered low.

## **8. CONCLUSIONS**

### **8.1. Level of Concern for Occupational Health and Safety**

There is No Concern to occupational health and safety under the conditions of the occupational settings described.

**8.2. Level of Concern for Public Health**

There is Negligible 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 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 by authorised landfill.

## Emergency procedures

- Accidental spills/release of the notified polymer should be handled by physical containment and collection followed by authorised landfill.

**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.