

File No PLC/694

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

**FULL PUBLIC REPORT**

**DEGALAN LP 65/12**

This Assessment has been compiled in accordance with the provisions of 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 conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment and Water Resources.

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**Director  
NICNAS**

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**FULL PUBLIC REPORT****DEGALAN LP 65/12****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Degussa Australia Pty Ltd (ABN 16 079 823 313)  
30 Commercial Drive, Dandenong VIC 3175

## 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 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)

No

## NOTIFICATION IN OTHER COUNTRIES

USA (2001); Korea (2003); Canada (2003)

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

DEGALAN LP 65/12

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn)	>10000
% of Low MW Species < 1000	< 2
% of Low MW Species < 500	< 2

## 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

OR

The notified polymer meets the PLC criteria.

#### 4. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	Small bead
<b>Melting Point/Glass Transition Temp</b>	57°C
<b>Density</b>	638 kg/m <sup>3</sup> at 20°C
<b>Water Solubility</b>	Approximately 5 g of the test substance in 500 mL of water in triplicates were shaken at 20°C for 24 h. After filtration the content of dissolved organic carbon in the water phase was determined according to DIN EN 1484 by combustion and IR detection for the resulting carbon dioxide. This was performed at 22°C (pH 2 and 9) and at 37°C (pH 7) with the following results: 2 × 10 <sup>-3</sup> g/L at 22°C (pH = 2) 3 × 10 <sup>-3</sup> g/L at 22°C (pH = 9) 16 × 10 <sup>-3</sup> g/L at 37°C (pH = 7)
<b>Dissociation Constant</b>	Estimated pKa > 6.4 based on small amount of the carboxyl bearing monomer in the notified polymer.
<b>Particle Size</b>	Median diameter 140 µm
<b>Reactivity</b>	Stable under the conditions in which it is used, thermal decomposition > 250°C
<b>Degradation Products</b>	None under normal conditions of use. Hydrolysis is possible but unlikely under ambient environmental condition.

#### 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>	30-100	30-100	100-300	100-300	100-300

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### Mode of Introduction

Import in form of small beads at concentration > 99% packed in 25 kg bags (made out of paper with PE-liner).

###### Reformulation/manufacture processes

The notified polymer is not manufactured in Australia.

The notified polymer will be delivered from the producer in Europe in form of small beads packed in 25 kg bags (made out of paper with PE-liner) to paint manufacturers in Australia. The paint manufacturers will use the new polymer as a coating component.

In industrial and commercial paint shops the coating is obtained by dissolving the polymer in organic solvents. After forming of this binder solution, common coating additives, pigments and fillers may be added. All these components should be well mixed together by means of a dissolver. The concentration of the notified polymer in the coating component is approximately up to 30%. After this process the coating component will be filled up into cans, drums or containers depending on the

customers' demands.

The obtained coating component is coated onto the substrates with brushes, rollers or by spray and curtain coating in cabins.

#### **Use**

Coating component

## **6. HUMAN HEALTH IMPLICATIONS**

### **6.1. Exposure Assessment**

#### OCCUPATIONAL EXPOSURE

During transport and storage, workers are unlikely to be exposed to the notified polymer except when the drum container is accidentally broken.

Dermal and ocular exposure can occur during the mixing process. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls, automation of the process, and personal protective equipment worn by workers.

Spray painters will come into contact with the notified polymer through dermal, inhalation and ocular routes. The risk of exposure, however, will be minimal as application is done in a ventilated spray booth with workers using protective equipment. After application and once dried, the coating containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

#### PUBLIC EXPOSURE

Coating formulations containing the notified polymer at up to 5% may be used by do-it-yourself (DIY) users. Dermal and ocular exposure may occur during the coating process but it is generally recommended to wear personal protection such as safety glasses and gloves.

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

### **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

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.

#### PUBLIC HEALTH

The notified polymer is intended for use by DIY users (up to 5% notified polymer). As the polymer is considered to be of low hazard, with appropriate personal protective equipment the overall risk to the public from exposure to the notified polymer is low.

Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be low because the notified polymer is bound within a matrix and is unlikely to be bioavailable.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Exposure Assessment

#### ENVIRONMENTAL RELEASE

The notified polymer will be imported in the form of beads packed in 25 kg bags. The imported product will be transported to paint manufacturers for coating manufacture. At the paint manufacturer's site the notified polymer is dissolved in organic solvents and blended with other ingredients to form coating components for metals and will be stored in 800 cm<sup>3</sup> cans, 180 L drums and 1000 L containers. The residue remaining in the spent packaging is <1%. All the residues will be incinerated or disposed of by landfill. The final coating contains <5% of the notified polymer. If an accidental spillage occurs, solvents can drain into the ground and evaporate into the air whereas the notified polymer will be recovered with appropriate equipment and be incinerated. The cleaning of the mixing vessel and other used equipment will be performed with organic solvents. Usually they will be recovered in the factory and reused many times for the same cleaning process.

At the end-users' site, the formulated coating product containing the notified polymer may be applied by paint brush, roller, spray or curtain coating equipment. Overspray from application is expected to account for  $\leq 30\%$  of the import volume. Overspray will be recovered in a water curtain spray cabin. The flocculated overspray will be dried and disposed of to landfill or incinerated. If rollers, brushes or sprayers are cleaned with solvents, the contaminated solvent will be recovered and either burnt or recycled with reprocessing equipment. The remaining coating material dries inside the containers which will be recycled. During the recycling process, the residues will be incinerated.

#### ENVIRONMENTAL FATE

Applied notified polymer will be cured, and will become non-bioavailable in the cured surface coating matrix. Notified polymer that is disposed of to landfill is expected to associate with soil and sediment, and due to its insolubility in water the notified polymer is not expected to be mobile. Over time, the notified polymer should degrade by abiotic processes to form simple carbon containing compounds. Notified polymer that is disposed of by incineration is expected to be thermally degraded to form simple oxides of carbon and sulphur.

### 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 nutrients elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of polymer backbones. This is unlikely to apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions, which would bind to the functional groups

### 7.3. Environmental Risk Assessment

Release to the aquatic environment is not anticipated except in the unlikely event of a major spill during transportation. If it were released into the aquatic environment, the notified polymer is expected to partition to particulate matter and accumulate in sediments. The notified polymer is unlikely to pose adverse ecotoxicological effects in the aquatic compartment.

In the longer term, most of the notified polymer used in metal coatings will eventually be incorporated in metal recycling programs or sent to landfill for disposal following its lifecycle. During metal reclamation, the notified polymer would be destroyed in furnaces and converted to water vapour and oxides of carbon and sulphur.

It is expected that the majority of notified polymer used in the construction industry will eventually be disposed of to landfill, where the notified polymer is expected to be immobile and should slowly degrade to simple oxides of carbon and sulphur.

## 8. CONCLUSIONS

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

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

### 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 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 incineration or to landfill.

#### Emergency procedures

- Spills and/or accidental 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.