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

FULL PUBLIC REPORT

Polymer in Dynapol LS 436-12

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**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	4
1. APPLICANT AND NOTIFICATION DETAILS	4
2. IDENTITY OF CHEMICAL	4
3. COMPOSITION.....	4
4. INTRODUCTION AND USE INFORMATION.....	4
5. PROCESS AND RELEASE INFORMATION.....	5
5.1. Operation Description.....	5
6. EXPOSURE INFORMATION	5
6.1. Summary of Environmental Exposure.....	5
6.2. Summary of Occupational Exposure	6
6.3. Summary of Public Exposure	6
7. PHYSICAL AND CHEMICAL PROPERTIES.....	6
8. HUMAN HEALTH IMPLICATIONS.....	6
8.1. Toxicology.....	6
8.2. Human Health Hazard Assessment.....	6
9. ENVIRONMENTAL HAZARDS.....	6
9.1. Ecotoxicology	6
9.2. Environmental Hazard Assessment	6
10. RISK ASSESSMENT.....	6
10.1. Environment	7
10.2. Occupational health and safety	7
10.3. Public health	7
11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	7
11.1. Environmental risk assessment	7
11.2. Human health risk assessment	7
11.2.1. Occupational health and safety.....	7
11.2.2. Public health.....	8
12. MATERIAL SAFETY DATA SHEET	8
12.1. Material Safety Data Sheet	8
13. RECOMMENDATIONS.....	8
13.1. Secondary notification	9

FULL PUBLIC REPORT**Polymer in Dynapol LS 436-12****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, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Import Volume (per notifier), and Site of Reformulation.

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, Canada DSL, Japan METI, China IECS, NZ ERMA (Ref no. 20041)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Dynapol LS 436-12 (60% notified polymer)

3. COMPOSITION

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
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

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>	12	30	30	30	30

USE

As an elastifying component for use in the manufacture of solvent based pigment dispersions (which will then be incorporated into coloured inks and paints) and industrial can coatings.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will not be manufactured in Australia but will be imported as a 60% component of the product Dynapol LS 436-12 in 200 kg net one-way drums. The drums will be transported by specialist carriers to Degussa Coatings & Colorants for use in pigment formulation or distribution to a manufacturer of industrial can coatings. Storage of the product at port or at these facilities is fully bonded.

At formulation areas, the product will be weighed and manually added to a mixing vessel with other ingredients and mechanically mixed under local exhaust ventilation. The resulting pigment dispersions (<40% notified polymer) will be transferred to filling lines for packaging, typically in 20 L containers. The laboratory technician will perform testing and adjustment to the formulation if necessary. Pigment dispersions will then be sold to end use products formulators for incorporating into coloured inks and paints at <1% notified polymer.

During end use applications, industrial spray painters and do-it-yourself enthusiasts will apply the paints or coatings (available in 1 L and 4 L containers) with brushes, rollers or spray equipment.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

Release of polymer during transportation, storage and formulation

The notified polymer will not be manufactured in Australia. Environmental release during importation, storage and transportation is unlikely except in the event of accidental spillage. Reformulation is expected to take place at two sites in Australia: one manufacturing pigment dispersions and one manufacturing can coatings. Release of waste polymer generated from these processes is expected to be less than 4%, which would include 1% remaining in empty import containers and 3% resulting from cleaning of plant equipment and filling lines. When paint tinting takes place in house, losses from this are expected to be between 1-2% arising from the cleaning of plant equipment and residue in empty containers. The contaminated solvent containing the notified polymer resulting from cleaning procedures during reformulation and in-house tinting of paint will be incinerated.

Release of polymer from use

The majority of the polymer will be tied to the fate of the finished product. Being typically formulated at concentrations of <1% in products whose end use causes the notified polymer to become entrained and hence would result in a low environmental impact. Empty cans and pails (1 and 4 L capacity) with 1% dry paint residue (containing approximately 300 kg of the notified polymer per annum) will be consigned to landfills. During spray painting the majority of the overspray containing the notified polymer (12,000 kg/year based on a 60% efficiency) will be bound to sheets or paper forming an inert matrix, which will be disposed of to landfill or be incinerated. Alternatively overspray will be allowed to settle on the ground. Up to 300 kg of the notified polymer may be disposed of to the sewer systems during cleaning of application equipment, especially the brushes or rollers used by DIY home painters. Waste polymer may be expected to partition to the sediment of an aquatic environment. Based on the high molecular mass and insoluble nature of the polymer it is predicted to have large K_{ow} and K_{oc} values and should not hydrolyse despite having potentially hydrolysable groups. Also, the notified polymer is not expected to cross biological membranes due to its high molecular weight and therefore is not expected to bioaccumulate.

6.2. Summary of Occupational Exposure

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

Inhalation, dermal contact and some ocular exposure due to splashes and spillages can occur during certain formulation processes, equipment cleaning and spray paint applications. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

All loading, unloading and handling of the product within the Degussa and its customer blending facilities are expected to be performed by well-trained staff. Industrial hygiene programs are implemented which include the provision and routine use of personal protective equipment (eg splash proof goggles, rubber overshoes, chemically resistant gloves, aprons, or other impervious clothing, and respiratory protection), and hazard communication programs designed to inform workers about the identity and potential hazards (if any) of chemicals used in their respective work areas. Periodic workplace inspections are also carried out to ensure that all safety procedures are in place and that employee exposures are below acceptable thresholds.

In the case of industrial spray painters, they will wear appropriate respiratory protection, goggles, impermeable gloves and overalls to minimise exposure in accordance with the MSDS. Appropriate engineering controls will also be in place.

6.3. Summary of Public Exposure

The can coating containing the notified polymer is intended for use in industry only. There is potential for dermal exposure by the public purchasing the formulated paints in do-it-yourself maintenance tasks. However, exposure will be low because the formulated products contain <1% notified polymer and are presented in small size containers. After application and once dried, the paint containing the notified polymer is cured into an inert matrix and hence is unavailable to exposure.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	White opaque flowing emulsion in water
Melting Point/Glass Transition Temp	185°C / -5°C (Dynapol LS 436-12)
Density	1100 kg/m ³ at 20°C (Dynapol LS 436-12)
Water Solubility	Insoluble
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

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 therefore can be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

The hydrophobic nature of the notified polymer indicates that the majority would adsorb onto particles of sediment and sludge, and therefore would not remain in the water compartment and be available for assimilation by aquatic organisms. The overall environmental hazard is thus expected to be low.

10. RISK ASSESSMENT

10.1. Environment

The products containing the notified polymer are likely to be used throughout Australia. The major environmental exposure is expected to be due to the disposal of waste to landfill (from the coatings manufacture and application). Large portions of old paint are removed before repainting and are disposed of to landfill or fall onto the ground. If spilt on land, the notified polymer is expected to become immobilised in the soil layer. Due to its low water solubility and encapsulation in the coating, the polymer will remain bound within the soils and sediments and is expected to be slowly degraded by biotic and abiotic processes.

The waste polymer may be discharged in domestic wash waters to sewage treatment plants (STPs) through washing of brushes etc. If a worst case scenario is considered as follows with no removal of the notified polymer in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated to be 0.21 µg/L.

Amount entering sewer annually	300 kg
Population of Australia	20 million
Amount of water used per person per day	200 L
Number of days in a year	365
Estimated PEC _{aquatic} (River)	0.21 µg/L
Estimated PEC _{aquatic} (Ocean)	0.021 µg/L

Based on dilution factors of 1 and 10 for inland and ocean discharges of STP-treated effluents, the PECs of the notified polymer in freshwater and marine water may approximate 0.21 or 0.021 µg/L, respectively.

It is not possible to estimate a risk quotient to aquatic organisms without ecotoxicity data. However, nonionic polymers with NAMW >1000 are expected to be of low concern. Based on the proposed use pattern, the release of the notified polymer to the aquatic environment is expected to be low and dispersed. Adsorption to sludge, soil and sediment as well as dilution in receiving waters should reduce environmental concentrations to acceptable levels. Abiotic or slow biotic processes are expected to degrade the notified polymer eventually.

10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

10.3. Public health

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 present at low concentrations and bound within a matrix once the paint is cured.

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

11.1. Environmental risk assessment

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

11.2. Human health risk assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

There is Low Concern to public health when used in accord with directions printed on the label of consumer size paint products.

12. MATERIAL SAFETY DATA SHEET

12.1. 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.

13. 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.

- In the interest of occupational health and safety, the following guidelines and precautions should be observed for use of Dynapol LS 436-12 and its end use products:
 - Adequate local and general ventilation in areas of formulation and application of paints, including the spray booth;
 - Documented standard operating instructions and procedures;
 - Adequate training for staff in handling paint products, including enforcing the adherence of industrial spray painters to the National Guidance Material for Spray Painting;
 - Implementation of general health surveillance and monitoring programs as required.
- 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 formulators to minimise environmental exposure during formulation and application of the paint containing the notified polymer:
 - Do not allow the notified polymer and paint products containing it to enter sewer or containers to contaminate drains, waterways or sewer.

Disposal

- The notified polymer wastes generated during industrial application should be disposed of through a licensed waste contractor.

Emergency procedures

- Spills/release of the notified polymer should be handled by qualified personnel. Do not flush into surface water or sanitary sewer system. Take up the spills mechanically or with an adsorbent material, either sand, diatomaceous earth, universal adsorbent or saw dust and dispose of appropriately.

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.