File No PLC/711

September 2007

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Sancure 825

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.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	www.nicnas.gov.au

Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Lubrizol International Inc. (52073495603)
28 River Street
Silverwater NSW 2128

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, 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
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Sancure 825 (notified polymer is a component of this product)

MOLECULAR WEIGHT
Number Average Molecular Weight (Mn) >10000

REACTIVE FUNCTIONAL GROUPS
Not applicable as polymer has Mw >10,000

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met (yes/no/not applicable)*
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

Appearance at 20°C and 101.3 kPa	Hazy translucent liquid
Melting Point/Glass Transition Temp	Not Determined, polymer is manufactured as a dispersion in water and is never isolated.
Density	1040 kg/m^3 at 15.6 ^{o}C (MSDS for product)
Water Solubility	The notified polymer is supplied as an aqueous dispersion. Solubility is likely to be very low because of the high molecular weight and limited polar functionality.
Dissociation Constant	The notified polymer contains a small amount of acid functionality that is likely to exhibit typical acidity
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<5	<5	<5	<5	<5

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

Polymer in Sancure 825 will not be manufactured in Australia. It will be imported by ship through ports in Sydney and Melbourne and possibly by air. The imported product will arrive in Australia in sealed 205L drums or totes, containing 34% of the notified polymer, which will be transported to the customers by road. Once at the customer site the notified polymer will be blended into finished products such as paints containing 4 - 30% of Polymer in Sancure 825. The blended products containing the notified polymer would likely be transported from the customers warehouse for distribution to retail shops by road.

Reformulation/manufacture processes

At the customer site(s) the notified polymer will be blended into finished products containing 4 - 30% notified polymer. Mixing with additives, including driers, levelling aids, thickeners, defoamers and flatting agents, will involve manual or semi-automatic transferring of the notified polymer from the 205L containers into closed mixing systems. The final end-use products will be automatically pumped into drums or pails for industrial use and into 0.5 -4L cans for consumer use.

Use

The end use coating product will contain 4 -30% notified polymer. The coating will be used mostly for commercial applications. Commercial applications include coating of concrete, plastic, wood and metal. In general, coatings can be applied by; brush, dripping and roller.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Dermal and ocular exposure may potentially occur during reformulation and repackaging processes involving the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the semi-automated processes, the engineering controls in place, and personal protective equipment worn by workers.

Dermal and accidental ocular exposure to up to 30% notified polymer may also occur during application of the paint and floor coating. Exposure would be limited if personal protective equipment, for example overalls and protective gloves is worn. Inhalation exposure is possible if aerosols are formed during spray application.

PUBLIC EXPOSURE

Public exposure is expected as products containing the notified polymer will be for consumer use. The consumer would likely buy a 0.5-4L size container of the product containing up to 30% of the notified polymer. The coating would likely be applied to the substrate by brush or roller. Once applied the polymer will self cross-link as it continues to dry. Safety precausions should be followed including, wearing gloves and working in a well ventilated area. Once the polymer is dry it will not be bioavailable.

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.

The notified polymer is, however, a high molecular weight water insoluble polymer and the inhalation of respirable particles of this class of polymer has been linked with irreversible lung damage (US EPA, 2006). This lung damage has been attributed to 'lung overloading' and impaired clearance of the lungs.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by dermal and ocular exposure to maximum of 35% of the notified polymer is expected to be low due to low hazard and low exposure.

The risk of inhalation exposure and consequential lung damage during spray application cannot be excluded but it is expected to be low as spray application would only be done by professionals and in factory controlled environment. In this case the use of engineering controls (such as local exhaust ventilation) and PPE (such as gloves, safety glasses and respirators where ventilation is not sufficient) is recommended to minimise such exposure.

All workers are expected to be trained in appropriate chemical handling and have access to the Material Safety Data Sheet.

PUBLIC HEALTH

The general public could be exposed to up to 35% of the notified polymer via the dermal or ocular route during use of finished products containing the notified polymer for DIY coating of surfaces. After application of the coatings the notified polymer will be crosslinked within the coating the matrix and will not be bioavailable. Due to the low hazard of the notified chemical and the limited exposure of the general public the health risk for the public from the use of the products containing the notified polymer is considered low. Spray application of products by the public will not occur. Products containing the notified polymer and available to the public should contain appropriate directions for use relevant to all the ingredients of the product.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Manufacture of the notified polymer will not lead to any exposure of the Australian environment as it will occur overseas. The notified polymer will be imported into Australia as a 35% aqueous dispersion.

No releases are expected during reformulation as this is a simple blending process involving pumping from the bulk vessels to a blending tank. Procedures are expected to be automated or semi-automated. Any minor spills during transfer are expected to be collected in drip pans or overflow basins. The notifier does not expect that the aqueous dispersion of the notified polymer will require disposal, but incineration is recommended should this be necessary. Less than 1% of the aqueous dispersion containing the notified polymer (less than 50 kg notified polymer per year) is expected to be lost as container residues and equipment washings. These aqueous waste streams may be treated on-site or transported to a treatment facility, while the empty drums will be sent for reconditioning or disposed of to landfill.

The waterborne coating containing the notified polymer will be applied in industrial and consumer settings using dipping, rollers or brushes. Large scale commercial applications are likely to use dipping or rollers.

Application equipment will need to be cleaned after use. This will generally entail aqueous washing as the coatings will be water-based. Less than 5% (less than 250 kg notified polymer per year) of the imported material is expected to be released in this way, in small amounts dispersed across Australia. Residual coatings containing the notified polymer are likely to be washed to on-site treatment or collection facilities at industrial sites or directly to sewer in consumer settings. The notified polymer is likely to partition to sludge during sewage treatment as it has high molecular weight and low water solubility.

ENVIRONMENTAL FATE

Any dried residues in containers will contain the notified polymer in an immobilised form, as part of a hard, inert material. The notified polymer will similarly be immobilised in a hard, inert material on coated articles. It is unlikely that the notified polymer would leach from the cured coating after disposal to landfill of empty containers or coated articles, given its high molecular weight and low water solubility. If incinerated, the notified polymer is expected to degrade to simple oxides of carbon and nitrogen, and to water.

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 over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer.

7.3. Environmental Risk Assessment

The notified polymer is a component of a coating applied to metal, wood or plastic. Release to the aquatic environment is not expected at any point in manufacture, formulation, use or ultimate disposal. Small amounts of coating products containing the notified polymer are likely to enter sewers when brushes are rinsed with water in consumer settings, but the notified polymer has a high molecular weight and low water solubility, and can therefore be expected to partition to sludge during sewage treatment. Therefore, the risk to the environment under the proposed use pattern is expected to be low.

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

- If aerosols are formed during the use of the notified polymer, engineering and PPE controls should be used to prevent inhalation exposure.
- Other engineering controls, work practices or personal protective equipment may be required and should be selected on the basis of all ingredients in the formulation containing the notified polymer.

  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. Cured coatings containing 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.