File No SAPLC/62

September 2007

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Foamstar W-220

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and Ageing and the Department of the Environment and Water Resources has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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:

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Cognis Australia Pty Ltd (ABN: 87 006 374 456)
4 Saligna Drive
Tullamarine VIC 3043

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, Manufacture/Import Volume.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
TSCA (1998), Canada (2001)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Foamstar W-220 (90% notified polymer)

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

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	Yellow to dark amber liquid
Melting Point/Glass Transition Temp	-73.48 °C (midpoint)
Density	1170 kg/m^3 at 20°C
Water Solubility	> 100 g/L at 20ºC
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	<3	<3	<5	<5	<5

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

No manufacture of the notified polymer will occur in Australia. Import will be as an ingredient in Foamstar W-220 defoamer (concentration of 90%). Imports will be by sea to major ports and by road or rail to customer's warehouses. The commercial form of the notified polymer will be imported in either 20 L plastic kegs or 200 L plastic lined steel drums and sold directly to customers without further repacking.

Reformulation processes

Formulation of coatings containing the notified polymer will be conducted in stainless steel blenders. FoamStar W-220 (90% notified polymer) will be pumped directly from the imported 200 L drums (located on scales) into the blender. Typically, two such batches would be completed per day of use. The notified polymer will be blended with other coating ingredients and after quality control the batch will be transferred (via a closed system) to a multi-head filling machine to fill epoxy lined paint cans (1, 2, 4, 10 or 20 L capacity). Both the blending and filling-off processes will be automated. The final concentration of the notified polymer in paint products will be 0.3% to 0.5%.

Use

The notified polymer will be an ingredient in products imported for use as a defoamer in paints, stains, and surfactant solutions. The final products are likely to be applied by brushing, spraying and possibly flow-coating. Some of the final product is likely to be used by members of the public for 'do-it-yourself' applications.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Reformulation

During the reformulation process, dermal exposure of workers to the notified polymer may occur while transferring the notified polymer from import containers to the blending vessel. Worker exposure will be minimised by the use of appropriate engineering controls including automated and enclosed systems, with local exhaust ventilation present at all potential vapour or mist release points; and by the wearing of appropriate protective clothing including safety glasses, impervious gloves, coveralls and safety boots.

End use

During the use of formulated coatings containing the notified polymer at concentrations of <0.5%, there is potential for dermal, ocular and inhalation exposure when handling the coating liquid before and during application. Exposure should be minimised by the use of personal protective equipment, such as gloves. During spraying operations, exposure is expected to be minimised by the use of ventilation, and personal protective equipment such as respiratory protection.

PUBLIC EXPOSURE

Members of the public may be dermally exposed to the notified polymer at maximum concentrations of 0.5% when handling surface coatings that contain the notified polymer. However, the notified polymer is not expected to be bioavailable following curing onto the surface, and hence exposure should be negligible.

Dermal and ocular exposure of the public to the notified polymer may occur as a result of drips, spills and splashes of the coating product when using it during 'do-it-yourself' applications. It is likely that the general public do not wear PPE, however, exposure is expected to be low due to infrequent uses and relatively short use durations. In addition, following curing of the coating, exposure to the notified polymer is not expected due to its encapsulation within a polymer matrix.

6.2. Toxicological Hazard Characterisation

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by toxicological endpoints observed in testing conducted on the notified polymer or analogue polymer.

Endpoint	*Result*	*Classified?*	*Effects Observed?*	*Test Guideline*
1. Rat, acute oral (analogue)	LD50 > 2000 mg/kg bw	no	no	OECD TG 401 OECD TG 423
2. Skin Irritation	Non-irritant [b]	no	no	Dermal irritection assay [a]
3. Eye Irritation	Minimal irritant [c]	no	yes	Ocular irritection assay [a]

[a] Irritection studies are *in vitro* assays that mimic the effects produced when irritants are applied to the skin or eyes.

[b] The Human Irritancy Equivalent (HIE) score determined in this study was 0.21, which suggests a Predicted Dermal Irritancy Classification of 'non-irritant' (this classification covers the range from 0 – 0.90).

[c] The Irritection Draize Equivalent (IDE) score determined in this study was 8.0, which suggests a Predicted Ocular Irritancy Classification of 'minimal irritant' (this classification covers the range from 0 – 12.5).

All results were indicative of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY
Although exposure to the notified polymer could occur during reformulation and end use processes, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer, the low concentration of the notified polymer in end use products, and the use of protective measures including local exhaust ventilation and PPE.

PUBLIC HEALTH
Although exposure to the notified polymer could occur during 'do-it-yourself' applications, the risk to members of the public is considered to be low due to the low frequency of use of such coatings, the intrinsic low hazard of the notified polymer, and the low concentration of the notified polymer in end use products.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE
Small quantities of waste may be generated by cleaning up minor spills, cleaning out manufacturing equipment and rinsing out drums into the coating-blending process. No aqueous waste will be disposed of through the site waste treatment plant.
The washings from factory operations will be sent to solvent recycler if internal use cannot be made by blending into solvent-containing products. Residues in imported drums (~0.5%) and containers will be sent to landfill by licensed waste disposal contractors.
Once applied to surfaces, the coating cures and becomes an article. The notified polymer is trapped within the paint matrix and unavailable for release.

ENVIRONMENTAL FATE
In summary, introduction of the notified polymer is not expected to pose a significant risk to the environment. Notified polymer that is disposed of to landfill is expected to associate with soil and sediments, and be immobile. Over time the notified polymer is expected to degrade via abiotic and biotic means to form simple carbon based compounds. Any notified polymer that is disposed of by incineration is expected to be thermally degraded to form various oxides of carbon and water vapour.

Waste model

Landfill from absorbing spills/leaks and maintenance jobs	1.00%
Landfill from traces left in drums isolated at drum recylers	0.50%
Incinerator from drum recycling facility	0.10%
Loss to landfill or incinerator when paint is removed, eventually, from substrate at the end of its life.	98.40%
	100.00%

7.2. Environmental Hazard Characterisation

The notified polymer has a structure that includes significant portions that would be hydrophilic and the polymer is significantly soluble in water. Therefore, there is no concern that it could be likely to bioaccumulate.

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by environmental endpoints observed in testing conducted on an analogue polymer.

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*

Algal Toxicity (analogue)	10 < EC50 < 100 mg/L	yes	OECD TG 201

The above result is indicative of slight hazard.

7.3. Environmental Risk Assessment

As noted above, there are no scenarios that would be expected to result in significant loss to any compartment of the environment. The quantities to be used as trace additives in coatings applied in a widespread way indicates that no significant loss could occur that could lead to a concentration in aqueous or soil compartment that would cause any adverse effect.

The notified polymer meets the PLC criteria and therefore is considered to be of low concern to the aquatic environment. Approximately 6% of the polymer is expected to become waste during repacking and application, and up to 20% may be released as overspray. This quantity is collected and disposed of by licensed waste contractors, therefore there is no release to sewer or to the subsequent aquatic environment. Based on the low toxicity and low exposure the polymer is not expected to pose a risk to the environment.

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 MSDS of a product containing the notified polymer provided by the notifier was reviewed by NICNAS. 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 *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], 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 recycling or re-use where possible, or, if unrecoverable, incinerated or sent to landfill if approved by local EPA.

Emergency procedures

- Spills/release of the notified polymer should be prevented from entering watercourses.

11. REGULATORY OBLIGATIONS

Secondary Notification
This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under Section 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 Section 64(2) of the Act; if
- the function or use of the chemical has changed from use as a defoamer in paints, stains and surfactant solutions, or is likely to change significantly;
- the amount of chemical being introduced has increased from 5 tonnes per annum, or is likely to increase, significantly;
- if the chemical has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.