File No PLC/562

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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in F-25

This Self 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 Heritage. The data supporting this assessment will be subject to audit by NICNAS.

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
JohnsonDiversey Australia Pty. Ltd (ABN 90000 065 725)
29 Chifley Street
Smithfield NSW 2164 Australia

NOTIFICATION CATEGORY
Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical Name, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers.

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
USA (1988), Canada (unknown date), China (2003)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
F-25 (containing the notified polymer)

3. COMPOSITION

POLYMER CONSTITUENTS

PLC CRITERIA JUSTIFICATION

The polymer contains no moderate or high concern functional groups.

Criterion	*Criterion met*
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. INTRODUCTION AND USE INFORMATION

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

This polymer will be imported in a water based polymer emulsion and then formulated in Australia into a clear water-based coating used to prime wood door skins and hardboard.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	10	15	30	35	40

USE

The notified polymer is used in emulsion polymers formulated into water-based wood primers for architectural coatings. The notified polymer comprises only about 3% of the total emulsion polymer solids used in the coating.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will be imported into Australia in a 45% solids water-based polymer emulsion contained in a closed head plastic drum. The notified polymer will make up about 3% of the total polymer solids used in this emulsion. It will be transported from the port to a warehouse by truck where it will be formulated into a primer coating. During formulation, the notified polymer will be weighed using automated technology and then transferred to a mixing vessel. Once combined with other ingredients, the coating is applied to door-skins as a base primer. The coating process is an airless carousel robotic spray process that does not require human exposure. In the event of a spill, employees will wear appropriate personal protective equipment depending on the hazards of the collective coating formulation. The notified polymer comprises 1% by weight or less of the final coating formulation.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

While transporting and warehousing this polymer, it is unlikely that workers will come into dermal or ocular contact with the notified polymer. Worker exposure during formulation is expected to be low because of the automated nature of the process. The coating formulation is applied to the door-skin using an airless robotic coater with no human exposure. Workers operate the equipment via electronic controls and are not exposed during the coating process. In the case of a process upset, workers are instructed to wear impermeable gloves, eye protection and appropriate protective clothing. Since process upset is rare, exposure will be minimal.

Once the coating has dried, the polymer becomes part of a dried coating and exposure is limited.

6.2. Summary of Public Exposure

The notified polymer will not be available to the public. The public will come into contact with the notified polymer upon purchasing a primed door requiring painting. At this point the polymer is not readily available for exposure.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

The notified polymer may reach the environment through residual material remaining in the paint container. If 1% of the formulated paint remains in the container, this would translate to less than 0.1% of the notified substance remaining in the container. In this instance the residual substance would become part of the sludge during container recycling. If container recycling does not occur, the residual material would remain in the container and evaporation would result in a very thin, harmless polymer layer on the inside of the container.

Under normal coating use, the loss of the notified polymer is expected to be limited to loss during over spray which is estimated at 5%. The spraying process does include reuse of over spray. Loss during equipment cleaning is estimated at 1%.

The only mechanism for the notified polymer to reach the environment during shipping, transport, or warehousing is through an accidental spill or packaging leak. In the event that a spill occurs, it will be contained followed by the use of an absorbent material for cleanup. Waste from the spill will be sent to an off site waste disposal facility.

Once the polymer is formulated into a dried coating, the fate of the polymer will be related to that of the wood door. If the wood is recycled, the coating will become part of the sludge layer.

6.3.2. Environmental Fate

The notified polymer is hydrolytically stable and will not readily biodegrade. The notified polymer will associate with sediment and organic phases of soil and sediment and be immobile due to its low water solubility and high molecular weight. While the substance is not readily degradable, it will undergo slow degradation through both biotic and abiotic processes generating carbon dioxide and water. Incineration of the notified polymer would result in its destruction and the generation of water and oxides of carbon.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	Whitish liquid (in product)
Melting Point/Glass Transition Temp	Approximately 100 ˚C (in product)
Density	1130 kg/m^3 (in product)
Water Solubility	< 10 mg/L at 20ºC
Reactivity	Stable under normal environmental conditions.
Degradation Products	Small amounts of monomer produced on heating to 300ºC.

7.1. Comments

Water solubility and hydrolytic stability were conducted on numerous similar compositions using OECD Methodology. Water solubility was conducted per OECD 120 and Hydrolysis was conducted using OECD 111 and IR Spectroscopy. This polymer is hydrolytically stable. Based on the lack of polar or hydrophilic groupings in the notified polymer, the actual solubility is expected to be <1 mg/L.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

The following toxicological endpoints were submitted::

Endpoint	*Result*	*Classified?*	*Effects Observed?*
1. Rat, acute oral	LD50 >5000 mg/kg bw	no	no
2. Rabbit, skin irritation	non-irritating	no	no
3. Rabbit, eye irritation	non-irritating	no	no

All results were indicative of low hazard.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The toxicology results support this classification.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

Nonionic polymers which have molecular weights greater than 1000 are of low concern.

10. RISK ASSESSMENT

10.1. Environment

Very minimal environmental exposure is expected during the import and end use of the notified polymer. The notified polymer may reach the environment through residual material remaining in the paint container. If 1% of the formulated paint remains in the container, this would translate to less than 0.1% of the notified substance remaining in the container. It is expected that any waste generated during the application process would be disposed of in approved landfills as inert solid waste.

In addition spraying and cleaning operations are expected to generate minimal waste. Any waste generated during the use will be collected by licensed waste contractors and be incinerated. Because the polymer is non-threatening to the environment and releases are minimal, this polymer will not adversely affect the environment.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is extremely low based on the hazard and low exposure. In addition, the personal protective equipment and engineering controls further limit exposure.

10.3. Public Health

The notified polymer is not sold to the public and is only used by industrial ink formulators and printing press operators. Once the polymer is applied and dried, it becomes part of the door and hence is not bioavailable. Risk to the public is considered very low.

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 described in this document.

11.2.2. Public health

There is negligible concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided a MSDS for the imported product containing the notified polymer in accordance with the schedule item B 12 of the *ICNA Act*. 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 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.

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer in formulated paint products:
  - Use of spray paints containing the notified polymer should be in accordance with the NOHSC National Guidance Material for Spray Painting.

- Service personnel should wear disposable gloves and ensure adequate ventilation is present when removing coating containing the notified polymer and during routine maintenance and repairs.

- 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 coater to minimise environmental exposure during use of the notified polymer:
  - Exhaust ventilation

Disposal

- The notified polymer should be disposed of to landfill or incineration.
- Empty containers should be sent to local recycling or waste disposal facilities.

Emergency procedures

- Spills/release of the notified polymer should be handled by absorption with sand and putting into a suitable container for disposal. Contaminated containers can be re-used after cleaning.

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.