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

FULL PUBLIC REPORT

Polymer in Vithane 3950

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**Director
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FULL PUBLIC REPORT**Polymer in Vithane 3950****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Dragon Chemical Co Pty Ltd (ABN 64 006 501 453) of 46-48 Kilby Road, Kew East, VIC 3102.

NOTIFICATION CATEGORY

The notified polymer meets the PLC criteria.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: Chemical name, CAS number, molecular and structural formula, molecular weight, polymer constituents, residual monomers and impurities, and import volumes.

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

Not provided.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Vithane 3950 (containing 35% notified polymer).

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL METHOD IR

Remarks An IR spectrum was provided.

TEST FACILITY Analytical and Computational Technology Center (2000).

3. COMPOSITION

DEGREE OF PURITY

High.

RESIDUAL MONOMERS

All residual monomers are below the relevant cut-offs for classification of the notified polymer as a hazardous substance.

4. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be imported in 200 L plastic drums.

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>	10-30	30-100	30-100	30-100	30-100

USE

The notified polymer is a component of Vithane 3950 which is used as a binder in coatings for vertical blinds. Vertical blinds are used in domestic and commercial situations.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURER/RECIPIENTS

Dragon Chemical Co Pty Ltd of 46-48 Kilby Road, Kew East, VIC 3102.

TRANSPORTATION AND PACKAGING

The notified polymer will be imported in 200 L plastic drums, and the reformulated product will be packaged in packaged into consumer-sized 200 L drums.

5.2. Operation Description

The notified polymer will be imported as a component of the product, Vithane 3950, comprising 35% of the product. It will be reformulated into coatings by customers. The final concentration of the notified polymer in coatings is 10%. The final product is used in coatings for vertical blinds.

5.3. Occupational exposure

Number and Category of Workers at one facility.

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Waterside workers	5		
Transport & warehouse workers	5-10		
Formulators	2-3	6-8 h/day	150 d/year
Roller coater operators	4-6	6-8 h/day	150 d/year
Blind makers	8-10	6-8 h/day	200 d/year

Exposure Details

Vithane 3950 containing the notified polymer will be formulated into coatings at 2-3 customer sites in Australia.

Vithane 3950 will be pumped into stainless steel mixing vessels and mixed with other components to produce an aqueous coating containing 10% notified polymer. The formulated coating will be gravity fed or pumped into 200 L drums. Exhaust ventilation systems are present in the mixing room. Formulators at the blinding sites wear safety glasses, impervious gloves, coveralls and safety boots.

At the coating sites, the coating is pumped directly from the drums to roller coater trays, and transferred by roller to non-woven material. The coated materials are dried in ovens prior to further processing of vertical blinds. An exhaust ventilation system is present above the roller coaters. Coating operators are instructed to wear safety glasses, impervious gloves, coveralls and safety boots.

The blind makers cut the coated material and manufacture the vertical blinds.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The imported polymer will be initially stored in warehouses with concrete floors and bunding to prevent release. Any spills will be taken up by adsorbent material and disposed of at a licensed landfill site. Releases are expected to be minimal.

When formulated into the coatings for use, releases will be limited to residues left in the drums and spills that occur. Spills will be taken up by adsorbent material and disposed of at a licensed landfill site and empty drums will be either sent to a licensed drum reconditioner or taken to waste landfill site. It is estimated that approximately 0.5% could be lost via each process and at the maximum use rate it is estimated that a total of 500 kg per annum. The drum residues will mainly (>80%) be in the form of dried polymer, which is expected to be inert.

RELEASE OF CHEMICAL FROM USE

During coating of the non-woven fabric and manufacturing of vertical blinds, any wash water will be re-used in subsequent batches. Residues and other small amount of polymer from cleaning equipment, floors and other areas, either as wet material or dry polymer, will also go to landfill. Releases to the environment will be limited.

Once the fabric is coated and oven dried, the polymer will be inert and bound to the fabric. The notified polymer is not expected to be released from the fabric. The blind manufacturers will cut the fabric containing the polymer in its inert form to make the vertical blinds.

5.5. Disposal

Almost all of the imported polymer will be disposed of at landfill or incinerated with the finished vertical blinds, to which the polymer is bound. Small amounts (~1%) will be disposed of at landfill from drum residues and during the preparation of fabric coatings.

5.6. Public exposure

Vithane 3950 will not be sold to the public. However, the public will come into contact with finished vertical blinds coated with the notified polymer. Exposure to the notified polymer will be minimal since the dried polymer is bound to the fabric.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Vithane 3950 is a hazy colourless liquid with mild amine odour.
Melting Point/Freezing Point	0°C (as water)
Remarks	From the MSDS for Vitenane 3950
Density	Approximately 1 060 kg/m ³
Remarks	From the MSDS for Vitenane 3950
Water Solubility	Not determined
Remarks	In alkaline solutions (> pH 8) the notified polymer will be present as a salt and as such is expected to be soluble in water. However as the corresponding acid, the notified polymer is expected to be less soluble.
Hydrolysis as function of pH	Not determined
Remarks	Hydrolysis of the ester linkages is possible but would be expected to be very slow under environmental conditions (pH 4-9). Hydrolysis of the urethane linkages is possible but would not be expected under environmental conditions (pH 4-9).
Partition coefficient	Not determined

Remarks Given the notified polymer's expected water solubility and likely hydrophilic nature it would partition into the aqueous phase, except in its acid form.

Adsorption/desorption Not determined

Remarks In its acid form the notified polymer is expected to adsorb to, or be associated with, soil/sediment and organic matter and be immobile in soil due to its low water solubility.

Dissociation constant Not determined

Remarks In its acid form the notified polymer is expected to have typical carboxylic acid functionalities, which are known to have pKa's between 4-5.

Particle Size Not determined.

Flammability Non-combustible.

Remarks From the MSDS for Vitenane 3950

Explosive Properties Material can splatter above 100°C. Dried product can burn.

Remarks From the MSDS for Vitenane 3950

7. TOXICOLOGICAL INVESTIGATIONS

No Toxicological data were submitted.

8. ENVIRONMENT

No environmental toxicological data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

The imported polymer will be either disposed of at landfill as dry residues or bound to fabric, or incinerated with the finished articles. Once in the landfill, it is expected to be immobile and will slowly degraded through abiotic and biotic processes to eventually yield oxides of carbon and nitrogen.

The polymer is not expected to cross biological membranes or to bioaccumulate (Connell, 1990).

During use of the finished articles, vertical blinds, any environmental exposure is unlikely since the notified polymer is cured into an inert matrix.

9.1.2. Environment – effects assessment

Due to the lack of reactive groups, high molecular weight and inability to penetrate biological membranes, the notified polymer is expected to have a low toxicity.

9.1.3. Environment – risk characterisation

As environmental exposure is limited to landfill and the polymer itself is expected to present a low hazard to organisms in the environment, the hazard is expected to be low.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

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

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

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

9.2.2. Public health – exposure assessment

The notified polymer will not be sold to the public except in the form of finished articles. Although there is potential for public contact to vertical blinds containing the notified polymer, the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

9.2.3. Human health - effects assessment

The notified polymer meets the PLC criteria and therefore low hazard is expected due to the lack of reactive groups and the inability of the polymer to penetrate biological membranes.

9.2.4. Occupational health and safety – risk characterisation

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 (NOHSC, 1999), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

9.2.5. Public health – risk characterisation

The product containing notified polymer is intended for use by workers in manufacturing plants only, and will not be sold to the public. Following application, the notified will become trapped within a film and will not be bioavailable. Therefore, the risk to public from exposure to the notified polymer is considered to be low.

10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS**10.1. Hazard classification**

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

10.2. Environmental risk assessment

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

10.3. Human health risk assessment**10.3.1. Occupational health and safety**

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

10.3.2. Public health

There is Low Concern to public health under the conditions of the public health settings described.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the [product containing the polymer](#) provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the [products containing the polymer](#) provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. 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

- The following control measures should be implemented by reformulators and applicants to minimise environmental exposure during formulation and use of the notified polymer:
 - Do not allow the chemical to enter drains or waterways.

Disposal

- The notified polymer should be disposed of by incineration or landfill in accordance with local regulations.

Emergency procedures

- Spills/release of the notified polymer should be handled by containing with absorbent material, then transfer the absorbents to separate containers for recovery or disposal. Spills should not be allowed to enter sewers, stormwater drains or waterbodies.

12.1. 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 Section 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

- (2) Under Section 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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

Connell DW (1990) General characteristics of organic compounds which exhibit bioaccumulation. In Connell DW, (Ed) Bioaccumulation of Xenobiotic Compounds. CRC Press, Boca Raton, USA.

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