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

**FULL PUBLIC REPORT**

**X 2473**

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**Director  
Chemicals Notification and Assessment**

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**FULL PUBLIC REPORT****X 2473****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

International Sales and Marketing Pty Ltd (ABN: 36 467 259 314)

262 Highett Road

HIGHETT VIC 3190

## NOTIFICATION CATEGORY

Limited: Polymer with NAMW  $\geq 1000$  (greater than 1 tonne per year).

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name

Other name(s)

CAS Number

Molecular Formula

Structural Formula

Molecular Weight

Spectral Data

Purity

Identity of Toxic or Hazardous Impurities

% Weight of Toxic or Hazardous Impurities

Non Hazardous Impurities

Identity of Additives/Adjuvants

% Weight of Additives/Adjuvants

Manufacture/Import Volumes

Manufacturing Process

Identity of Sites

## VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows:

Water Solubility

Hydrolysis as a function of pH

Partition Coefficient

Adsorption/Desorption

Autoignition Temperature

## PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

## NOTIFICATION IN OTHER COUNTRIES

None

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

X2473

## METHODS OF DETECTION AND DETERMINATION

ANALYTICAL      Infrared spectroscopy,  $^1\text{H}$ ,  $^{13}\text{C}$ , and  $^{29}\text{Si}$  NMR spectroscopy

## METHOD

**3. COMPOSITION**

DEGREE OF PURITY  
>90%

## DEGRADATION PRODUCTS

The polymer is stable under normal conditions. There are no degradation products. In the case of fire and full oxidation the following decomposition products may arise:- SiO<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O

## LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

The loss of residual reactants, impurities, and antioxidant into solution is likely.

**4. INTRODUCTION AND USE INFORMATION**

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

The notified polymer will not be manufactured in Australia. It will be imported in high concentration as the major active ingredient of an industrial product. The product will be used in the manufacture of coatings, containing up to 1.2% notified polymer.

## 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>	1-3	1-3	3-10	3-10	3-10

## USE

The notified polymer will be used in water – based wood and furniture coatings and high build coatings to reduce or eliminate microfoam.

**5. PROCESS AND RELEASE INFORMATION****5.1. Distribution, Transport and Storage**

PORT OF ENTRY  
Sydney

## TRANSPORTATION AND PACKAGING

The notified polymer will be imported as an industrial product. The product will be imported in 25 kg pails. Following reformulation, the final coating products will be packaged in 4L, 10L, 20L, and 200L drums.

**5.2. Operation Description****Coating Manufacture**

## Grinding Stage

The pigment, resin, and notified polymer are weighed into a mixer and are subjected to high-speed shear to produce a mill base. The ingredients are metered directly into the mixer or manually added from bags, drums, or pails.

## Letting down stage

The mill base is transferred into mixing vessel and the remaining resins and additives are added under constant stirring at low speed. Samples are removed at this stage for quality control testing in the laboratory, after which the batch is adjusted to specification.

## Filling stage

The finished product containing up to 1.2% by weight of the notified polymer is fed from the mixing vessel through a filter into 4L, 10L, 20L, and 200L drums.

**Industrial Coating Application**

The industrial paints will be used coatings for wood and furniture. They will be applied by airless spraying in spray booths.

**5.3. Occupational exposure***Number and Category of Workers*

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
<b>Transport and Warehousing</b>	Not provided	Not provided	Not provided
<b>Coating manufacture</b>	Not provided	Not provided	Not provided
Grinding Stage			
Letting down Stage			
QC testing			
Filling Stage			
Equipment Cleaning/Maintenance			
<b>Industrial Coating Application</b>	Not provided	Not provided	Not provided
Spray painting			
Cleaning of Equipment			

*Exposure Details***Transport and warehousing**

Workers are not expected to be exposed to the notified substance, as they will be handling closed containers. Exposure is possible in the event of accidental spillage.

**Paint manufacture**

Grinding stage: In this stage, blending of the notified polymer and other ingredients occur. This process is performed in well-ventilated areas. The notified polymer will be manually added from pails and this may lead to dermal and ocular exposure to drips and spills of the notified polymer. Workers involved in the process are expected to wear overalls, impervious gloves, and eye protection, and safety boots.

Letting down stage: the millbase produced in the in pigment dispersion stage is mixed with resin and additives. QC samples are taken at this stage. The same handling and control measures that are used in the pigment dispersion stage are to be used at this stage.

Filling stage: filling of the finished coatings into cans, pails, and drums is carried out in well ventilated area with workers wearing overalls, impervious gloves and eye protection.

Exposure to drips and spills of the product containing up to 1.2% notified polymer may occur during makeup and filling.

**Industrial Paint Application**

The paint products containing the notified chemical would be used could be applied many substrates in the domestic or commercial/industrial markets but primarily is targeted for industrial airless spray application to wood and furniture.

Dermal and ocular exposure to the notified polymer at up to 1.2% during industrial paint application may occur when the paints are mixed and sprayed and during the cleaning of the equipment.

The industrial spray paints will be applied in spray booths, respirators, gloves, coveralls, and goggles (or safety glasses) and filtered exhaust systems tend to be used.

**5.4. Release****RELEASE OF CHEMICAL AT SITE**

The notified polymer will be imported into Australia in 25 kg pails from Germany for use in water based wood and furniture coatings. The notified polymer will be added at very low levels (<1.2%) during coatings production and negligible losses are expected. Approximately 1% of the notified

polymer may be left in the original containers once emptied, which is equivalent to less than 100kg of waste per annum.

#### RELEASE OF CHEMICAL FROM USE

The paint products in which the notified polymer would be used are primarily targeted for use in industrial airless spray application to wood and furniture. A piston pump using an air pressure of around 3-4 bars operates the airless spray. There is expected to be a 30% overspray from this process but it will be performed in a spray booth with water downdraft. The residue is collected in this water draft and the water is then collected and disposed of by an approved wastewater contractor.

Application equipment will be cleaned with water and this residue is also collected and disposed of as described above.

Residual paint in containers would be approximately 1% of the total volume, this residue contains less than 1.2% notified polymer and represents less than 100 kg per annum of the notified polymer. Residual paint in containers would be allowed to dry before either recycling the can or disposal as solid waste.

#### 5.5. Disposal

Wastes containing the notified polymer will be disposed of to landfill. Wastewater from overspray and cleaning of equipment will be collected and disposed of by an approved wastewater contractor.

#### 5.6. Public exposure

The public is unlikely to be exposed to the notified polymer during transport, storage, and manufacture, except in the event of an accidental spill.

Due to the wide range of applications of the coatings in the domestic and industrial environments, public exposure via dermal contact with dried surfaces coated with paints is likely.

### 6. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	Slightly yellow liquid.
<b>Boiling Point</b>	Not determined
<b>Density</b>	987 kg/m <sup>3</sup> at 25°C
Remarks	Test report not provided
<b>Viscosity</b>	~ 50 mPa.s at 25°C
Remarks	Test reports not provided.
<b>Vapour Pressure</b>	Not determined
Remarks	Due to the high molecular weight of the polymer, the vapour pressure is expected to be low under ambient conditions..
<b>Water Solubility</b>	Not determined.
Remarks	<p>The notifier reports that water solubility testing is technically impossible. The notifier indicates that the notified polymer is water miscible (dispersible) in any ratio. Due to the polymer's self-emulsifying property it is reported to be not truly water soluble, forming instead an emulsion.</p> <p>This is consistent with the literature (Hamelink, 1992) which indicates that silicones are noted for being extremely hydrophobic, and the most common linear siloxanes are completely insoluble in water. Only one of the other functional groups could confer some water solubility, but the group's chain length is too short to have any impact.</p>

**Hydrolysis as a Function of pH**

Not determined

Remarks            The notified polymer is expected to stable in the environmental pH range of 4 to 9. Under extreme conditions (elevated temperatures, very acidic or very basic conditions) the silicone backbone may degrade. In addition, the substituent chains may be separated from the backbone when exposed to the above described extreme conditions.

**Partition Coefficient (n-octanol/water)**

Not determined

Remarks            The notifier reports that the octanol/water partitioning measurements were technically impossible. The notifier indicates that due to the emulsifying properties of the polymer, that no clear phase separation between water and octanol was observed.

**Adsorption/Desorption**

Not determined

Remarks            The notified polymer is expected to have a high affinity for soil and sediment and be immobile in the environment due to its low expected water solubility and likely hydrophobic nature.

**Dissociation Constant**

Not applicable.

Remarks            Based on the structural formula of the notified polymer there are no functional groups that are expected to dissociate.

**Particle Size**

Not determined

Remarks            The notified polymer is a liquid.

**Flammability Limits**

Not determined

**Flash Point**

117°C

Remarks            Test report not provided.

**Autoignition Temperature**

Not determined

Remarks            Test not applicable for liquid.

**Explosive Properties**

Not determined

Remarks            The notified polymer is not expected to be explosive based on its structure.

**Reactivity**

Remarks            Expected to be stable under normal environmental conditions.

**7. TOXICOLOGICAL INVESTIGATIONS**

No toxicity data were submitted

**8. ENVIRONMENT****8.1. Environmental fate**

No environmental fate data were submitted.

**8.2. Ecotoxicological investigations**

No ecotoxicity data were submitted.

## **9. RISK ASSESSMENT**

### **9.1. Environment**

#### **9.1.1. Environment – exposure assessment**

It is expected that the exposure to the notified polymer in the environment will be low. The notifier expects residues in original import containers to represent 1% (<100 kg per annum at market maturity) and waste residues in final paint cans to also represent 1% (<100 kg per annum at market maturity). These polymer wastes are expected to be disposed of in an inert, hardened form in landfill.

Losses through overspray during application are expected to be 30%. Assuming 30% of the entire import volume at market maturity is collected as overspray in spray booths, less than 3 tonnes of the notified polymer may require disposal each year using an approved wastewater contractor.

Once the paint is dried the polymer will become inert by the hardening process. Therefore, leaching in landfill is unlikely to occur. The notified polymer is stable at environmental pH and abiotic or slow biotic processes are expected to be largely responsible for the degradation of the notified polymer disposed of to landfill. Incineration of the notified polymer would result in the production of water and oxides of carbon and silicon.

In view of the high molecular weight of the notified polymer, its bioaccumulation potential is considered to be low (Cornell, 1989). Should the polymer enter the aquatic environment via the sewer, it is expected to partition into sludge, from where it may enter landfill during land disposal of the sludge (Watts et. al 1995).

#### **9.1.2. Environment – effects assessment**

No ecotoxicological data were submitted. The product is considered a weak water pollutant (German Law) and should not be allowed to enter soil, waterways or wastewater canals.

#### **9.1.3. Environment – risk characterisation**

The majority of the notified polymer will be incorporated in coatings on wood and furniture, and should become inert by the hardening process. It will remain on the timber until it is gradually worn down. At the end of its life it will either be removed by sanding or disposed of to landfill bound to the surface it was applied to. If removed by sanding, the coating containing the notified polymer will be broken up into particulate matter and most likely disposed of to landfill.

Up to 200 kg of residue waste in cans and imported containers is expected to be disposed of to landfill each year in an inert and hardened form; the waste may also be incinerated. Furthermore, up to 3 tonnes of waste could require disposal as result of overspray using an approved wastewater contractor.

The main aquatic hazard would arise through accidental spillage or intentional release to sewer, however, as a consequence of its low expected water solubility, the notified polymer will associate with sediment and degraded through slow abiotic and biotic processes. The MSDS contains adequate direction for dealing with such spills. Should a spill occur it is imperative that all efforts are directed at avoiding the spill entering the waterways.

Based on the relatively low import volumes and use/disposal practices outlined above, the likely environmental risk of the notified polymer is expected to be low.

### **9.2. Human health**



### 9.2.1. Occupational health and safety – exposure assessment

Occupational exposure to the notified polymer is expected to be greater for workers involved in the paint manufacture than for workers handling the notified polymer in final paint products. Paint manufacture worker will be exposed to the notified polymer at high concentrations in the imported industrial product. Those workers handling the finished paint products will be exposed to the notified polymer at up to 1.2% in the paint products. The frequency of exposure will be greater for paint application workers but high levels of engineering controls will minimise exposure during spray application.

#### **Paint manufacture**

Occupational exposure may occur during the formulation of the final product. Dermal and ocular exposure may occur during the charging of mixing vessels in the grinding stage, QC testing in the letting down stage and in the filling stage. Workers charging mixing vessels will be exposed to high concentration of the notified polymer, while those involved in the letting down and filling stage will be exposed to paint products containing up to 1.2% notified polymer.

Occupational exposure will be minimised by use of the appropriate personal protection equipment. Overalls, impervious gloves, eye protection and safety boots are used during the manufacture stage. The laboratory, manufacturing and warehousing areas are well ventilated.

#### **Industrial paint application**

Occupational exposure may occur during the use of the final product. Dermal and ocular exposure may occur during the mixing, spraying of the finished paint product and during the cleaning of the equipment

Occupational exposure will be minimised by use of the appropriate personal protection equipment. Industrial spray paints will be applied in spray booths, respirators, gloves and overalls and goggles (safety glasses) and filtered exhaust systems are normally used.

#### **Transport and storage**

Occupational exposure during the transport and storage and distribution of imported product containing the notified polymer and finished paint product is unlikely to occur unless there is an accidental spillage or packaging breach.

### 9.2.2. Public health – exposure assessment

There is potential for public exposure in the event of an accident spillage during transportation. The spills should be kept out of municipal sewers and open bodies of water, collected immediately with absorbent materials (e.g. sand, earth) and contained for recovery or disposal. Waste should be sent to landfill or incineration in accordance with local state and federal regulation. Since the notified chemical is only supplied to industrial customers, direct exposure to the concentrated material by the public is unlikely. There is potential for public exposure to the notified polymer when applying the paint products containing X 2473. As the concentration of the notified chemical in the paint products is very low and the paint products are primarily targeted for industrial application to wood and furniture, public exposure to the notified chemical during application of the paints is minimal.

### 9.2.3. Human health - effects assessment

No toxicological data were provided.

The notified polymer has a high molecular weight and is therefore unlikely to cross biological membranes.

It contains a high concern reactive functional group with a functional group equivalent weight of around 1000. This may lead to skin irritant effects for concentrated polymer solutions.

The MSDS states that the product is considered to be “harmless if used in the correct manner”. Eye contact may produce an oil film over the eye-ball causing a harmless reversible shortlasting dimness of sight.

#### **9.2.4. Occupational health and safety – risk characterisation**

Occupational exposure to the notified polymer can occur when handling the imported product containing the notified polymer. During paint manufacture, dermal and ocular exposure to notified polymer may occur when the imported product is charged into the blending vessels. Based on the physico-chemical data provided, absorption across biological membranes is unlikely. However, the notifier has suggested that the ocular exposure will produce an oil film over the eyeball causing a harmless reversible temporary dimness of sight. Workers handling the notified polymer at levels present in the imported product should wear protective eyewear to prevent ocular exposure. For good industrial hygiene practise, workers should also wear gloves and overall when handling the imported product containing the notified polymer to minimise dermal exposure.

The maximum concentration of the notified polymer in the finished paint product is 1.2%. At this concentration, the risk of dermal and ocular effects would be minimal. The personal protection (gloves, overall and eye protection) generally used by end users should be sufficient to minimise exposure.

#### **9.2.5. Public health – risk characterisation**

Public exposure to the notified polymer is expected to be low, since the paint products, containing a low concentration of the notified chemical, are intended primarily for industrial use. In addition, the expected toxicity of the notified polymer is low. Thus it is expected that the notified polymer is unlikely to pose a significant health hazard to the public.

### **10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS**

#### **10.1. Hazard classification**

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

and

Based on the available data the notified polymer can not be classified using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations, 2003). This system is not mandated in Australia and carries no legal status but is presented for information purposes.

#### **10.2. Environmental risk assessment**

On the basis of the risk characterisation presented in this report, the polymer is not considered to pose a risk to the environment based on its report 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 Negligible Concern to public health when used as described in the submission.

## 11. MATERIAL SAFETY DATA SHEET

### 11.1. Material Safety Data Sheet

The MSDS of the notified polymer by the notifier were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 notified 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

### REGULATORY CONTROLS

#### Hazard Classification and Labelling

- The following safety phrases should be used for the notified chemical as introduced:
  - S24/25 Avoid contact with skin and eyes
  - S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
  - S28 After contact with skin, wash immediately with plenty of soap-suds
  - S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

### CONTROL MEASURES

#### Occupational Health and Safety

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical as introduced, and in the finished paint products:
  - Prevent spills and splashes
  - NOHSC Exposure Standards for all components of the final paint products should not be exceeded in the workplace.
  - Use of spray paints containing the notified polymer should be in accordance with the NOHSC National Guidance Material for Spray Painting (NOHSC, 1999b)
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical as introduced, as diluted for use, in the finished paint product
  - Chemical resistant gloves, protective clothing, and safety goggles or safety glasses

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 chemical 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 end users to minimise

environmental exposure during use of the notified chemical:

- Do not pour paint residues down the drain. Unwanted paints should be brushed out on newspaper, allowed to dry and then disposed of via domestic waste collections. Empty paint containers should be left open in a well-ventilated area to dry out. When dry recycle steel containers via steel can recycling program. Disposal of empty containers via domestic recycling programs. Disposal of empty paint containers via domestic recycling programs may differ between local authorities. Check with local council first.

#### Disposal

- Once dry the notified polymer should be disposed of by landfill or by incineration.

#### Emergency procedures

- Spills/release of the notified polymer should be handled by collecting with non combustible absorbent materials and placing in a suitable container for disposal according to Local, State and Federal Government waste regulations.

### 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(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

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