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

FULL PUBLIC REPORT

Polymer in Kaneka Silyl MAX951 and Kaneka Silyl MAX923

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 Heritage.

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**Director
NICNAS**

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FULL PUBLIC REPORT**Polymer in Kaneka Silyl MAX951 and Kaneka Silyl MAX923****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Mitsui & Co (Australia) Limited (ABN 64 004 349 795)
Level 46
Gateway
1 Macquarie Place
Sydney NSW 2000

Soudis Australia Pty Ltd (ABN 814 265 527)
Unit 1, 1932 Beach Rd
Malaga WA 6944

Retel Australasia Pty Ltd (ABN 48 096 399 361)
(Trading as Fixtech Marine Solutions)
Level 3
14 Mt Gravett-Capalaba Rd
Upper Mt Gravatt QLD 4122

Gorilla Adhesives Pty (ABN 12 101 264 313)
Level 2
580 George St
Sydney NSW 2000

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

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

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

Flammability
Explosivity

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

US EPA (1997)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
 Polymer in Kaneka MAX951
 Polymer in Kaneka MAX923

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

The notified polymer contains one reactive functional group (RFG) that is considered to be of High Concern. In the notified polymers the equivalent weight (FGEW) of the RFG is >5,000 and thus meets the PLC criteria.

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
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 Hazardous 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

Imported in finished sealant and/or adhesive products, in 290 mL polyethylene cartridges and 600 mL foil sachets.

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>	50	50	50	50	50

USE

Component (20-70%) of sealant and/or adhesive products for use in the construction industry and for do-it-yourself (DIY) consumer use.

5. PROCESS AND RELEASE INFORMATION**5.1. Operation Description**

The notifier will receive pre-packaged cartridges/sachets of sealant and/or adhesive products containing the notified polymer, ready for use. The notifier's distributors will sell these to contractors and retailers. The products will then be used for professional construction applications and sold to consumers for DIY use.

The products are used by gunning out of the cartridges. Upon contact with moisture in air, the product will cure and harden to an elastic solid. This will form an inert, stable network structure. A wide range of construction materials may be bonded with products containing the notified polymer.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

The notified polymer will be imported in pre-packed cartridges and foil sachets. During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Once it is gunned from the cartridge, the adhesive or sealant containing the notified polymer may be worked using trowels or similar implements. The product is then cured into an inert matrix and is hence unavailable for exposure.

6.2. Summary of Public Exposure

The sealants containing the notified polymer will be available for trade and public sale. The product will be applied directly from the cartridges, and may be worked using trowels or similar implements. Public exposure to the uncured and cured product is most likely to be through dermal contact. Once cured it is expected that the polymer will not be bioavailable.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

The notified polymer will be imported into Australia in preformulated sealant and/or adhesive products (20-70% notified polymer) contained in small (290 mL and 600 mL) ready to use packages. Consequently, there will be no release through reformulation of the notified polymer. The sealant and/or adhesive products will be used by both professional (mainly in the construction industry) and DIY applicators.

The notifier has not provided an estimate of polymer waste generated from the application of the notified polymer to substrates. However, it is likely that up to 5% (2500 kg) per annum of notified polymer waste will be produced as residual inert material adhering to building material substrates, and this would be wiped up with rags or paper towels. Once exposed to the atmosphere, the material would react with water vapour and become incorporated into a semi solid (elastic) mass. The rags and paper would be disposed of to existing waste streams established for building products. This waste is likely to ultimately reside in landfill.

Up to 12 mL (2% of a 600 mL cartridge) of the product containing the notified polymer will be left as residual waste in used cartridges. This equates to 1000 kg waste polymer per annum from this route. This will be reacted with atmospheric moisture to form an inert material. Cartridges and cured polymer will be disposed of to landfill along with household and commercial waste streams.

Overall, up to 3500 kg of waste polymer is likely to be generated from the application of the polymer to building materials.

6.3.2. Environmental Fate

The majority of the cured/cross-linked notified polymer will be incorporated as part of sealant/adhesive masses in building materials. When buildings are demolished, it is likely that the building materials and associated cured notified polymer will be placed into landfill, or may possibly be incinerated with building wastes.

The notified polymer contains functional groups that are susceptible to hydrolysis, however, this is not likely to occur in the normal environmental pH range (4-9).

The notified polymer is not expected to be readily biodegradable but, on prolonged exposure to bacterial action, the polymer is expected to be substantially mineralised. In landfill the notified polymer and its breakdown products will slowly degrade as a consequence of microbiological processes with release of gases such as carbon oxides, methane, and silicates. Incineration would destroy the material with release of water vapour, oxides of carbon, and silicates.

Bioaccumulation of the notified polymer is unlikely because of its high molecular weight.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Light yellow viscous liquid
Melting Point	-41°C (MAX951) -0.1°C (MAX923)
Density	980-1020 kg/m ³
Water Solubility	5 x 10 ⁻⁴ g/L at 25°C (MAX951) 8 x 10 ⁻⁴ g/L at 25°C (MAX923)
Dissociation Constant	The notified polymer does not contain dissociable functional groups.
Particle Size	N/A
Flash Point	266°C (MAX951) Cleveland open 181.6°C (MAX923) SETA closed
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

The following toxicological end-points were submitted for an analogous chemical:

<i>Endpoint</i>	<i>Result</i>	<i>Classified?</i>	<i>Effects Observed?</i>
Genotoxicity – bacterial reverse mutation	non mutagenic	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.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Nonionic polymers with a number average molecular weight in excess of 1000 are generally of low concern for ecotoxicity because they generally have negligible water solubility.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer is imported in building sealants and adhesive formulations which would only be exposed to the environment as part of a crosslinked polymer mass with little potential for leaching or escape of fugitive vapours.

It is expected that up to 2500 kg of the chemical will be placed into landfill with residues from application activities, and a further maximum of 1000 kg in spent sealant cartridges and compacted foil sachets with other industrial wastes. At the end of their serviceable lives, building materials containing the notified polymer would most likely be placed into landfill with other industrial wastes, or could possibly be incinerated. Although the new compound is unlikely to be readily biodegradable, in a landfill situation the sealant mass containing the notified polymer is likely to undergo slow decomposition to water and gases which may include oxides of carbon, and silicates. Incineration of building wastes will generate oxides of carbon and silicates.

No ecotoxicity data for the notified polymer were provided in the notification statement, but very little of the chemical is expected to be released to the water compartment. If the polymer is released to water it is likely to rapidly react and become an inert mass.

The low aquatic exposure of the polymer as a result of the proposed use indicates that the overall environmental risk should be low.

10.2. Occupational Health and Safety

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

10.3. Public Health

Public exposure is likely to be limited to dermal exposure to the uncured and cured product. However, the risk to public health will be negligible because of the absence of hazards associated with the notified polymer in the uncured form. Once cured, the polymer is unlikely to be bioavailable.

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 of the occupational settings described.

11.2.2. Public health

There is No Significant 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 an MSDS for the imported product containing the notified chemical as part of the notification statement. 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, 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.

Disposal

- The notified polymer should be disposed of by incineration or to landfill.

Emergency procedures

- If incidental spillage occurs during normal operating procedures, it should be contained and soaked up with inert absorbent material (sand, soil or vermiculite) and placed in a sealable container for appropriate disposal.

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.