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August 2017

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

150763T

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (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 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 Energy.

This Public Report is 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

TABLE OF CONTENTS

SUMMARY

The following details will be published in the NICNAS *Chemical Gazette:*

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1984	Tremco Pty Ltd	150763T	ND*	≤ 50 tonne/s per annum	Component of industrial sealant

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification
As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia.

Human health risk assessment
Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unreasonable risk to public health.

Environmental risk assessment
On the basis of the reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following engineering controls to minimise occupational exposure to the notified polymer during repackaging processes:
  - Enclosed, automated processes where possible

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
  - Avoid contact with skin

- As no toxicity data are available for the notified polymer or its monomers, a person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
  - Coveralls
  - Impervious gloves
  - Goggles

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- A copy of the SDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

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 polymer 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 polymer has a number-average molecular weight of less than 1,000;

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the polymer has changed from component of industrial sealant, or is likely to change significantly;
  - the amount of polymer being introduced has increased, or is likely to increase, significantly;
  - the polymer has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the polymer 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.

Safety Data Sheet
The SDS of the notified polymer and products containing the notified polymer provided by the notifier were reviewed by NICNAS. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Tremco Pty Ltd (ABN: 25 000 024 064)
Unit 1/2 Park Road
RYDALMERE NSW 2116

NOTIFICATION CATEGORY
Limited: Synthetic polymer with Mn ≥ 1,000 Da.

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, analytical data, degree of purity, polymer constituents, residual monomers, impurities, additives/adjuvants, use details and import volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed as follows: all physico-chemical endpoints.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
150763T
Polyurethane polymer (TSRN 51721300-5401P)

MOLECULAR WEIGHT
Mn > 1,000 Da

ANALYTICAL DATA
Reference FTIR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY
> 98%

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES
The notified polymer is a component of a viscous liquid and any residual monomers will be available for release.

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Colourless liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Imported in aqueous solution
Boiling Point	Not determined	Expected to decompose prior to boiling
Density	1.016 kg/m^3	SDS
Vapour Pressure	Not determined	Expected to have a high vapour pressure based on molecular weight
Water Solubility	Not determined	Cannot be evaluated for the notified polymer due to the presence of end-groups that readily react with water to form carbon dioxide and insoluble polymeric species
Hydrolysis as a Function of pH	Not determined	The notified polymer contains end-groups that readily

		react with water to form carbon dioxide and insoluble polymeric species
Partition Coefficient (n-octanol/water)	Not determined	The notified polymer is expected to react with water and octanol to form carbon dioxide and insoluble polymeric species
Adsorption/Desorption	Not determined	The notified polymer is expected to bind to soil or sediments based on its high molecular weight and the presence of potential cationic functional groups
Dissociation Constant	Not determined	The notified polymer contains potential cationic functionalities and is likely to be ionised in the environmental pH range (4 - 9)
Flash Point	> 93.3 °C	SDS
Flammability	Not determined	Not expected to be highly flammable based on flash point.
Autoignition Temperature	Not determined	Not expected to autoignite under normal conditions of use.
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	Contains no functional groups that would imply oxidising properties.

DISCUSSION OF PROPERTIES
The notified polymer is supplied in a viscous liquid and any residual monomers will be available for release.

Reactivity
The notified polymer is expected to be stable under normal conditions of use.

Physical hazard classification
Based on the submitted physico-chemical data depicted in the above table, the notified polymer is not recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified polymer will be imported into Australia at ≤ 30% concentration in sealant products.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 50	< 50	< 50	< 50	< 50

PORT OF ENTRY
Sydney

IDENTITY OF MANUFACTURER/RECIPIENTS
Tremco Pty Ltd

TRANSPORTATION AND PACKAGING
The notified polymer (at ≤ 30% concentration) will be imported in 200 L drums (for repackaging into 300 mL cartridges or 600 mL plastic 'sausage' style packages), or in end-use products of 300 mL cartridges or 600 mL plastic 'sausage' style packages.

USE
The notified polymer will be used as a component of industrial sealant products at ≤ 30% concentration.

OPERATION DESCRIPTION

Repackaging
At the repackaging site, the product containing the notified polymer (at ≤ 30% concentration) will typically be pressed (using automated processes) into an enclosed pipe system and into end-use packaging.

End use
Sealants containing the notified polymer (at ≤ 30% concentration) will be applied at building and construction sites. The sealants may be applied to substrates using manual or compressed air-assisted application guns.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

Category of Worker	*Exposure Duration (hours/day)*	*Exposure Frequency (days/year)*
Transport and warehouse	1 – 2	100 - 150
Repackaging	8	12 - 24
Trade sales	1	200
End-users	8	100 - 200

EXPOSURE DETAILS
Transport and warehouse workers may come into contact with the notified polymer (at ≤ 30% concentration) only in the event of accidental rupture of containers.

Repackaging
Repackaging is expected to be largely enclosed and automated. However, workers may be exposed (dermal and ocular) to the notified polymer (at ≤ 30% concentration) during transfer processes, cleaning and maintenance. Dermal and ocular exposure to workers should be mitigated through the expected use of personal protective equipment (PPE) including protective coveralls, impervious gloves and goggles. Inhalation exposure is not expected given the low vapour pressure of the notified polymer, the viscous form it is imported in, and the enclosed processes.

End-use applications
At end-use sites, dermal and ocular exposure to sealants containing the notified polymer (at ≤ 30% concentration) may occur during preparation and transfer of packaging to application gun, application and cleaning processes. Exposure at other times is expected to be limited by the automated and/or enclosed nature of the application processes. The potential for exposure should be minimised through the use of PPE (overalls, goggles and gloves) by workers.

Workers may come into contact with sealants containing the notified polymer after application to substrates. However, once the sealant has dried, the notified polymer will be bound within a polymer matrix and will not be available for exposure.

6.1.2. Public Exposure
The sealants containing the notified polymer (at ≤ 30% concentration) are intended for industrial use and will not be available to the public. The public may have dermal contact with sealants containing the notified polymer after they have been applied. However, once the sealant has dried, the notified polymer will be bound within a polymer matrix and will not be available for exposure.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

The notified polymer is not expected to be absorbed across biological membranes to a significant extent based on its high molecular weight (Mn > 1,000 Da).

The notified polymer contains alkoxy silane groups, which are a potential concern for skin irritation and lung toxicity (from inhalation of vapours or aerosols). However, the risk of irritation or lung toxicity may be limited by the molecular weight of the notified polymer and percentage of low molecular weight species (< 15% were < 1,000 Da) (Hulzebos *et al*., 2005, US EPA, 2010)

Health hazard classification
As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety
The notified polymer has the potential to be irritating to the skin and toxic to the lung due to the presence of alkoxy silane groups. However, the risk of irritation and lung effects from exposure to the notified polymer may be limited by the high molecular weight (> 1,000 Da) and low percentage (< 15%) of low molecular weight species < 1,000 Da.

During repackaging and end use, workers may be exposed to the notified polymer at concentrations of ≤ 30%. During repackaging exposure is expected to be limited by the largely automated and enclosed processes. Additionally the use of PPE including coveralls, impervious gloves and goggles by workers during repackaging or application of products containing the notified polymer will further decrease the potential for exposure. Due to the expected low volatility of the notified polymer and method of application, significant dermal inhalation exposure is not anticipated. Once the sealants containing the notified polymer have cured and dried, the notified polymer will be bound within an inert matrix and will not be available for exposure.

Therefore, provided that the stated PPE is used and engineering controls are in place to limit exposure, the risk to the health of workers from use of the notified polymer is not considered to be unreasonable.

6.3.2. Public Health
The notified polymer will be used in industrial settings only and will not be sold to the public. The public may come into contact with articles containing the notified polymer. However, once the notified polymer is cured, it will be bound within a polymer matrix and will not be bioavailable. Therefore, when used in the proposed manner, the risk to public health is not considered to be unreasonable.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE
The notified polymer will be formulated overseas and imported in end use industrial sealant products for construction industry. Some minor amounts of the sealant products will be imported in 200 L drums, and be repackaged in a fully enclosed and automated process. Accidental spills of the notified polymer during import, transport, repackaging or storage are expected to be adsorbed onto a suitable material and collected for disposal in accordance with local regulations.

RELEASE OF CHEMICAL FROM USE
The sealant products containing the notified polymer will be used by professional workers in the building/construction industry. The products may be applied to substrates using manual or compressed air-assisted guns. The sealants containing the notified polymer will bind to the substrates after application. Wastes from spills, leaks and cleaning of excess sealants are expected to account for 1% of the total annual import volume of the notified polymer. These wastes are expected to be collected and disposed of to landfill in accordance with local regulations.

RELEASE OF CHEMICAL FROM DISPOSAL
The notified polymer in cured sealants is expected to share the fate of the substrates to which it has been applied and is expected to be predominantly disposed of to landfill.

Residues of the notified polymer in empty import containers and end-use packages, which are expected to account for 1% of the total import volume, will cure in the empty containers/packages and will be disposed of to landfill along with the containers/packages.

7.1.2. Environmental Fate

No environmental fate data were submitted. The majority of the notified polymer is expected to share the fate of the substrates to which it has been applied, and be disposed of to landfill. In landfill, the notified polymer will be present as cured solids, which will be neither mobile nor bioavailable. Based on its high molecular weight, the notified polymer is not expected to cross biological membranes, and is therefore not expected to be bioaccumulative. However, the notified polymer contains low molecular weight species (< 15% of species are < 1,000 Da) that may cross the cell membranes and bioaccumulate.

The notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon, nitrogen and silicon.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) has not been calculated as release of the notified polymer to the aquatic environment will be limited based on its reported use pattern.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. The notified polymer is a potentially cationic polymer that may have toxic effects to aquatic organisms. However, based on its use pattern and limited exposure to the aquatic environment, the notified polymer is not expected to be readily bioavailable to cause any adverse effect to the aquatic organisms.

7.2.1. Predicted No-Effect Concentration

The Predicted No-Effect Concentration (PNEC) has not been calculated since no significant release of the notified polymer to the aquatic environment is expected.

7.3. Environmental Risk Assessment

The risk quotient (Q = PEC/PNEC) for the notified polymer has not been calculated as the PEC and PNEC was not calculated for the notified polymer. The release of the notified polymer to the aquatic environment is not expected to reach ecotoxicologically significant quantities. Therefore, on the basis of the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

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