File No: LTD/2052

September 2018

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

PU Methacrylate Copolymer

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

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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/2052	Tremco Pty Ltd	PU Methacrylate Copolymer	ND*	≤ 20 tonnes per annum	Component of industrial coatings

*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
Provided that the recommended controls are being adhered to, 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 assumed low hazard and reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Recommendations

REGULATORY CONTROLS

Health Surveillance

- As the notified polymer has the potential to be a skin sensitiser, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of asthma or other allergic reactions.

CONTROL MEASURES

Occupational Health and Safety

- 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 and eyes

- 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:
  - Protective clothing
  - Impervious gloves
  - Eye protection

  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 g/mol;

or

(2) Under Section 64(2) of the Act; if
  – the function or use of the polymer has changed from a component of industrial coatings, 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
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 g/mol

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

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed for all physiochemical properties.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT
None

NOTIFICATION IN OTHER COUNTRIES
Korea, USA

2. IDENTITY OF CHEMICAL

MARKETING NAME
PU Methacrylate Copolymer

OTHER NAMES
PU Methacrylate Polymer
Polyurethane Methacrylate Polymer

MOLECULAR WEIGHT
Number Average Molecular Weight (Mn) is > 1,000 g/mol.

ANALYTICAL DATA
Reference IR and UV spectra were provided.

3. COMPOSITION

DEGREE OF PURITY
> 90%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Clear, viscous liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Introduced in organic solvent
Boiling Point	Not determined	Expected to decompose prior to boiling
Density	1,015 kg/m^3 at 25 °C	SDS
Vapour Pressure	Not determined	Expected to be low based on high molecular weight
Water Solubility	Not determined	Water immiscible (phase separation occurs)
Hydrolysis as a Function of pH	Not determined	Water immiscible (phase separation occurs)

Partition Coefficient (n-octanol/water)	Not determined	Immiscible in either phase (n-octanol/water)
Adsorption/Desorption	Not determined	Water immiscible (phase separation occurs)
Dissociation Constant	Not determined	Water immiscible (phase separation occurs)
Flash Point	Not determined	Expected to be > 93.3 °C
Flammability	Not determined	Not expected to be highly flammable
Autoignition Temperature	Not determined	Not expected to under autoignition
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

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

Physical hazard classification
As no data were submitted the notified polymer cannot be 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 not be manufactured in Australia. The notified polymer will be imported into Australia as a component of industrial coatings at < 40% concentration.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	7	10	13	17	20

PORT OF ENTRY
Sydney

TRANSPORTATION AND PACKAGING
The notified polymer will be imported as a component of coatings in 22.7 L metal drums. Within Australia it will be transported by road or rail to the warehouse for storage and later distributed to retailers by road.

USE
The notified polymer will be used as a component of industrial coatings at < 40% concentration to use on pedestrian and traffic decks.

OPERATION DESCRIPTION
No reformulation or repackaging of the products containing the notified polymer will be carried out in Australia. Coatings containing the notified polymer will be warehoused before delivery to the end-user in the original packaging.

The coatings containing the notified polymer at < 40% concentration will be used by professionals only. The method of application is expected to be mainly using brush, squeegee or roller. Based on the expected use pattern, the application of coatings is likely to be conducted in outdoor areas. Under normal circumstances, workers will open the containers, decant and mix manually before application of the coatings. The applicators will be cleaned with suitable solvent for re-use, or disposed of to landfill.

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 storage	1 – 2	100 – 150
Trade sales	1	200
Construction	8	100 - 200

EXPOSURE DETAILS

Transport and storage

Transport, storage and trade sale workers may come into contact with the notified polymer as a component of the imported coatings at < 40% concentration only in the unlikely event of accidental rupture of the packaging.

End-users

Professional end-users may experience dermal and perhaps ocular exposure to the notified polymer at < 40% concentration during application of coatings containing the notified polymer. The expected low vapour pressure of the notified polymer is expected to reduce the likelihood of inhalation exposure, and aerosols are not expected to be generated during the coating process. According to the notifier, workers are expected to wear personal protective equipment (PPE) such as coveralls, impervious gloves and safety glasses. Respiratory protection is expected to be used in places with poor ventilation.

Once the coating is cured and dried, the notified polymer will be bound within a polymer matrix and will not be available for exposure.

6.1.2. Public Exposure

The coatings containing the notified polymer (at < 40% concentration) are intended for industrial use and will not be available to the public. The public may have dermal contact with coatings containing the notified polymer after they have been applied and cured. However, once the coating is cured and 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 toxicological information was submitted.

Based on the high molecular weight (> 1,000 g/mol), expected low water solubility and low percentage (< 6%) of low molecular weight species < 1,000 g/mol, the notified polymer is not expected to be absorbed across biological membranes to a significant extent.

The notified polymer contains methacrylate functional groups that are a potential concern for irritation and sensitisation. However, given the limited potential for dermal absorption, the potential for sensitisation effects is expected to be low.

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

Toxicological data were not provided for the notified polymer. The notified polymer may have the potential to cause irritation and sensitisation based on the presence of reactive functional groups. However, given the limited potential for dermal absorption, the potential for sensitisation effects is expected to be low.

Workers may be at risk of irritation or sensitisation effects during application of coatings containing the notified polymer at < 40% concentration. This risk should be reduced through the expected use of PPE such as coveralls,

impervious gloves and safety glasses which should minimise exposure. Due to the expected low volatility of the notified polymer and method of application, inhalation exposure is not expected.

Therefore, provided that PPE is used to limit exposure, the risk to the health of workers from use of the notified polymer as a component of industrial coatings is not considered to be unreasonable.

6.3.2. Public Health

Coatings containing the notified polymer will only be used by workers and during application these areas will not be accessible by the general public.

The public may have dermal contact with coatings containing the notified polymer after they have been applied and cured. Once the coating is cured and dried, the notified polymer will be bound within a polymer matrix and will not be available for exposure.

Therefore, the notified polymer when used as proposed as a component of industrial coatings is not considered to pose an unreasonable risk to public health.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer will be imported to Australia as part of finished industrial coatings for pedestrian and traffic decks. The most likely source of release during importation, storage, and transport to the environment will be from an accident during transport. Any release that does occur as a result of an accident is expected to be physically contained, absorbed on inert material, and sent to a licensed waste management company for disposal.

RELEASE OF CHEMICAL FROM USE

Application will be via brush, squeegee or roller. The notified polymer will be used in industrial coatings and as such will only be applied by professional users. Residues containing the notified polymer on brushes, squeegees and rollers are expected to be rinsed into containers and then allowed to cure before disposal as solid wastes to landfill.

RELEASE OF CHEMICAL FROM DISPOSAL

After application of the coatings, the notified polymer is expected to be cured within an inert polymer matrix. During the lifetime of the cured polymer matrix, some of it may be worn away over time and may eventually be brushed, ground or sandblasted before resurfacing. However, as the notified polymer has been cured within the inert polymer matrix, no significant aquatic release of the notified polymer is expected. If the lifetime of the coated substrate is less than the notified polymer, then it will share the fate of the substrate to which it has been applied and is likely to be disposed of to landfill. Appropriate disposal of material from spills by a licensed waste management company will mean that release to sewage and waterways should not occur. Empty drums will likewise be sent to a licensed waste management company for disposal.

7.1.2. Environmental Fate

No environmental fate data were submitted. The majority of the notified polymer is expected to be cured within an inert polymer matrix adhering to substrates following its use in coatings. The notified polymer that is disposed of to landfill is expected to remain associated with the substrate to which it has been applied in its cured form.

7.1.3. Predicted Environmental Concentration (PEC)

A predicted environmental concentration (PEC) has not been calculated for the notified polymer as, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. Polymers without significant ionic functionality are generally considered not to be harmful to aquatic organisms.

7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) for the aquatic compartment has not been calculated as the notified polymer is not likely to be harmful to aquatic organisms.

7.3. Environmental Risk Assessment

The Risk Quotient (PEC/PNEC) has not been calculated as the notified polymer is not expected to be harmful to aquatic organisms and ecotoxicologically significant quantities of the notified polymer are not expected to be released to the aquatic environment. Due to its relatively high molecular weight it is not expected to bioaccumulate. Therefore, based on its assumed low hazard and reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

United Nations (2009) Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 3rd revised edition. United Nations Economic Commission for Europe (UN/ECE), <http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html >