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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Macromelt 6797

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Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Henkel Adhesives Australia Pty Ltd (ABN 82 001 302 996) of 55 Korong Rd West Heidelberg VIC 3081.

NOTIFICATION CATEGORY
Limited: Polymer with NAMW ≥ 1000 (greater than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Identity of Chemical
Composition
Import volume
Use details

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
The following variation to the schedule of data requirements is claimed:
Water solubility
Density
Vapour pressure
Hydrolysis as a function of pH
Partition coefficient (n-octanol-water)
Particle size
Flash point
Flammability limits

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
US, Canada

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Macromelt 6797

3. COMPOSITION

DEGREE OF PURITY
High

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS
None

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (>1% by weight)
None

DEGRADATION PRODUCTS
None

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES
None

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED POLYMER (100%) OVER NEXT 5 YEARS
The notified polymer will be imported into Australia. No manufacturing is proposed. The notifier will on-sell the notified polymer to adhesive tape manufacturers. No reformulation will be undertaken by the notifier.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 30	< 30	< 30	< 30	< 30

USE
The notified polymer is used as a hotmelt adhesive in industrial adhesive tape manufacture at a concentration of <15%.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, transport and storage

PORT OF ENTRY
Melbourne

IDENTITY OF MANUFACTURER/RECIPIENTS
Henkel Australia Pty Ltd Kilsyth Victoria

TRANSPORTATION AND PACKAGING
The notified polymer is imported in 20 kg polyethylene lined bags. The bags will transported by road to formulators sites.

5.2. Operation description

The notified polymer will be sold to industrial adhesive tape manufacturers in Australia. A solvent solution of the notified polymer (<15%) will be prepared by manually adding the solid polymer to mixers. The solvent is pumped automatically into the mixer. The solution containing the notified polymer will be applied to a plastic-based tape by means of an automated process. The coating process takes places at high temperatures. The resulting coated tape is wound into a coil and on-sold to manufacturers of plastic tape products.

5.3. Occupational exposure

Number and Category of Workers

Category of Worker	*Number*	*Exposure Duration*	*Exposure Frequency*
Transport and warehousing	8	4	220
Manufacture of tape			
Make-up	12	8	365
Sectioning/transfer to containers	2	8	365
Quality control testing	1	1	24
Manufacture of tape products	200	8	365

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

Tape Manufacture
The notified polymer is added manually to hoppers for preparation of a solvent solution. During this process dermal and ocular exposure can occur during adhesive tape manufacture. Mixing equipment is fitted with exhaust ventilation systems and there is a regular maintenance programme in place to control airflow levels at regular intervals.

The final tape product will be sampled for laboratory analysis and incidental skin contact may occur during sampling and analytical procedures.

Tape manufacturing process is automated and worker intervention is not required unless the filling line requires adjustment. All operations that involve transfer are carried out under exhaust ventilation. Cutting/sectioning of the notified polymer-treated tape is carried out by automated cutting machines in an enclosed system.

Manufacture of Tape products
The treated tape containing the notified polymer is on-sold to industrial customers for the production of a variety of plastic, glass and cardboard consumer products. The notified polymer is bound to the tape in small quantities and will not be bioavailable.

Workers are provided with appropriate PPE, i.e., safety glasses, impervious gloves, protective clothing, and respiratory protection, as needed. Workers have access to the Material Safety Data Sheet (MSDS).

5.4. Release

RELEASE OF CHEMICAL AT SITE
Environmental release of the notified polymer is unlikely during importation, storage and transportation. Accidental spills, leaks and catastrophic mechanical failure during a transport accident are the most likely reasons for environmental release. Engineering controls (eg. container specifications) and emergency clean-up procedures (ie. spill response instructions on Safety Data Sheet) and personnel safety training will limit the impact on the environment of such incidents. The hotmelt adhesive will be imported ready-to-use to manufacture adhesive tapes and consequently there will be no environmental release associated with reformulation/repackaging.

RELEASE OF CHEMICAL FROM USE
During tape manufacturing, and application, environmental release is expected to be limited due to the engineering controls and procedures established (eg. bunding, enclosed facilities). After application of heat and pressure to the film containing the notified polymer, the notified polymer is stable within the tape. Very limited release of the notified polymer to the environment is expected during tape manufacturing or tape application to products.

5.5. Disposal

Spills of granules containing the notified polymer will likely be reused in the process or sent to landfill by licensed contractor for disposal. Spills of polymer solution will be reused or allowed to cure and sent to landfill for disposal. Residue in emptied imported containers (eg. <1% of the notified polymer) is likely to be sent to landfill for disposal. Solvent waste generated after cleaning of manufacturing equipment will be reused or potentially sent to solvent recycler for disposal. The notifier estimates that <1.2 kg of notified polymer waste may potentially be generated per annum as a result of minor spills, container residues and cleaning of manufacturing equipment.

After use, the tape containing the notified polymer is likely to be sent to landfill for disposal associated with materials to which it is adhered (eg. glass, cardboard, plastic) or enter recycling waste streams, with landfill disposal or incineration the likely method of disposal.

5.6. Public exposure

The notified polymer will be used as an ingredient of adhesive tape products that are sold to the public. Members of the public may make dermal contact with the notified polymer when using the tape products. After application of the notified polymer to the adhesive tape and once dried, the notified polymer is cured into an inert matrix and hence unavailable for exposure.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa Amber powder

Melting Point/Freezing Point 120± 5°C

METHOD
Remarks No reports submitted. MSDS has 110-125°C.

Boiling Point Not determined

METHOD
Remarks

Density 980 kg/m^3

METHOD
Remarks No reports submitted. MSDS has 970 kg/m^3.

Vapour Pressure <0.1 kPa

METHOD
Remarks No reports submitted

Water Solubility Not determined

Remarks Insoluble in water based on its largely hydrophobic structure, though the presence of several potentially cationic functionalities could increase solubility at low pH.

Hydrolysis as a Function of pH Not determined

Remarks No expected to hydrolyse at low pH despite the presence of several hydrolysable groups.

Partition Coefficient (n-octanol/water) Not determined

Remarks The expected low water solubility indicates a moderate-high log Kow.

Adsorption/Desorption Not determined

Remarks Expected to adsorb to organic matter and readily bind to soil based on potential cationic sites.

Dissociation Constant Not determined

Remarks The polymer contains several potentially cationic sites which will be ionised at low pH.

Particle Size 1mm (average diameter)

METHOD
Remarks No reports submitted.
TEST FACILITY

Flash Point > 200°C

METHOD

Remarks No reports submitted. MSDS has 300°C.
TEST FACILITY

Flammability Limits Non flammable, combustible.

METHOD
Remarks No reports submitted.
TEST FACILITY

Autoignition Temperature Not determined

METHOD
Remarks
TEST FACILITY

Explosive Properties Not determined

METHOD
Remarks Not expected to have explosive properties.
TEST FACILITY

Reactivity Not reactive

Remarks The polymer contains amino groups but is expected to be stable.

Oxidizing Properties Not oxidising

METHOD
Remarks No reports submitted.
TEST FACILITY

7. TOXICOLOGICAL INVESTIGATIONS

No toxicity data were submitted.

8. ENVIRONMENT

8.1. Environmental fate

No environmental fate data were submitted.

8.1.2. Bioaccumulation

Remarks There is limited potential for bioaccumulation of the notified polymer based on its high molecular weight, and therefore limited potential for crossing biological membranes, limited potential for occurrence in the water column based on its low water solubility and limited aquatic release arising from its proposed use and disposal pattern.

8.2. Ecotoxicological investigations

No ecotoxicity data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Limited environmental release of the notified polymer is expected during its use with disposal primarily to landfill the main avenue. As a consequence of the limited potential for aquatic release, no predicted environmental concentration (PEC) has been estimated. In an aquatic environment, the notified polymer is expected to partition to organic matter and sediment. A limited potential for bioaccumulation is expected due to its high molecular weight.

9.1.2. Environment – effects assessment

While no ecotoxicity data were available, the high molecular weight of the notified chemical indicates that transfer across biological membranes resulting in adverse effects would be limited. In addition, there is very limited potential for aquatic release of the notified polymer based on its proposed use and disposal pattern. The potentially cationic sites may result in binding to negative charged surfaces of aquatic organisms, such as gills, potentially resulting in adverse effects.

9.1.3. Environment – risk characterisation

On the basis of the reported use pattern, the notified polymer is unlikely to pose an unacceptable risk to the environment. There is very limited potential for aquatic release of the notified polymer based on its proposed use and disposal pattern. Within a landfill environment, the notified polymer is expected to degrade slowly over time due to abiotic and biotic processes to form water and oxides of carbon and nitrogen.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

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

During formulating of the notified polymer solution, skin contamination, and intermittent eye and inhalation exposure can occur when opening containers, weighing and manually adding into a mixing vessel and when blending the adhesive. Exhaust ventilation is in place during mixing. As the application of the polymer solution to the tape/film is carried out in automated equipment, exposure will be insignificant. Once the notifed polymer is applied to the tape/film and temperature cured, no exposure will occur.

Containers are sealed and exposure during transport and storage is not expected. Transport workers and storemen are unlikely to be exposed to the notified polymer except in the event of an accident. PPE, like impervious gloves, coveralls and safety glasses, will be used when required to clean spills.

9.2.2. Public health – exposure assessment

The finished adhesive tape is on-sold to customers who manufacture a variety of finished goods for the public. However, exposure will be negligible because the notified polymer will be bound within a cured plastic film.

9.2.3. Human health – effects assessment

No toxicological data have been provided for the notified polymer. The notified polymer has a high molecular weight, and is not expected to be absorbed across the skin or other biological membranes, and therefore systemic toxicity would be limited.

Based on the available data, the notified chemical is not classified as a hazardous substance in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC 2002).

9.2.4. Occupational health and safety – risk characterisation

The notified polymer solution involves manual addition of the notified polymer into a mixing vessel. The solvent is pumped automatically. Subsequent processes are generally automated and enclosed, limiting any exposure to the notified polymer present in the adhesive tape.

Limited occupational exposure is expected during quality control testing, tinting, and when cleaning equipment since the notified polymer is temperature cured and not available for exposure.

Worker exposure during transport and storage is not expected except in the event of accident.

The notified polymer is considered to be non-hazardous. The largely enclosed and automated operations involved, and the use of PPE specified in the MSDS when handling the notified polymer, would ensure that the occupational risk posed by the notified polymer is low when used as specified in the notification.

9.2.5. Public health – risk characterisation

The notified polymer will be used as an ingredient of adhesive tape products available to the public. Members of the public may make dermal contact with the notified polymer when using the tape products. However, the risk to public health from the notified polymer is low because the polymer is present bound within a cured film, from which it is unlikely to be bioavialable.

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

10.1. Hazard classification

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

and

Classification of the notified polymer using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations 2003) is not possible as no ecotoxicity data are available. This system is not mandated in Australia and carries no legal status but is presented for information purposes.

10.2. Environmental risk assessment

The chemical 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 Negligible Concern to public health when used as component of adhesive tape products.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC 2003). 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 notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC 1994). The

accuracy of the information on the label remains the responsibility of the applicant.

12. RECOMMENDATIONS

CONTROL MEASURES
Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer:
  - Exhaust ventilation during adhesive solution formulation

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
  - During transfer operations and cleaning of equipment, avoid spills and splashing

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
  - Chemical resistant gloves
  - Protective clothing which protects the body, arms and legs
  - Goggles or face shield
  - Appropriately selected respirator during spray paint application

  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

Emergency procedures

- Spills/release of the notified chemical (granules) should be handled by sweeping up and reusing in the manufacturing process or placed into a container for disposal. Avoid contaminating waterways.

Disposal

- The notified chemical (granules and dried/cured polymer mix) should be disposed of to landfill by licensed waste contractor in accordance with local jurisdiction waste management 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.

For secondary notification, aquatic toxicity data may be required if a use pattern is proposed resulting in a more significant contamination of the aquatic environment.

13. BIBLIOGRAPHY

NOHSC (1994) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

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United Nations (2003) Globally Harmonised System of Classification and Labelling of Chemicals (GHS). United Nations Economic Commission for Europe (UN/ECE), New York and Geneva.