

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

POLYMER OF LOW CONCERN PUBLIC REPORT

Fatty acids, C₁₈-unsatd., dimers, polymers with ethylenediamine, piperazine, polypropylene glycol diamine and sebacic acid

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also 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**

July 2015

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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 SUBSTANCE | INTRODUCTION VOLUME | USE |
|----------------------|--------------------------|---|---------------------|----------------------|------------------|
| PLC/1267 | Henkel Australia Pty Ltd | Fatty acids, C ₁₈ -unsatd., dimers, polymers with ethylenediamine, piperazine, polypropylene glycol diamine and sebacic acid | No | ≤ 5 tonnes per annum | Hotmelt adhesive |

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- 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 (M)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.
- Industrial users should be aware that, when using the notified polymer as a hotmelt adhesive, higher than recommended application temperature (180 – 230 °C based on the Technical Data Sheet provided by the notifier) may potentially cause thermal decomposition of the polymer resulting in the release of hazardous thermolysis fumes.

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

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 polymer 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 polymer, 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 notified polymer is introduced in a chemical form that does not meet the PLC criteria.or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the notified polymer has changed from a hotmelt adhesive, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
 - the notified polymer has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the notified 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.

(Material) Safety Data Sheet

The (M)SDS of the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Henkel Australia Pty Ltd (ABN: 82 001 302 996)
135 – 141 Canterbury Road
KILSYTH VIC 3137

Exempt Information (Section 75 of the Act)

No details are claimed exempt from publication.

2. IDENTITY OF POLYMER

Marketing Name(s)

Technomelt PA 652 (~98% notified polymer)
Macromelt OM 652 (~98% notified polymer)

Chemical Name

Fatty acids, C₁₈–unsatd., dimers, polymers with ethylenediamine, piperazine, polypropylene glycol diamine and sebacic acid

CAS Number

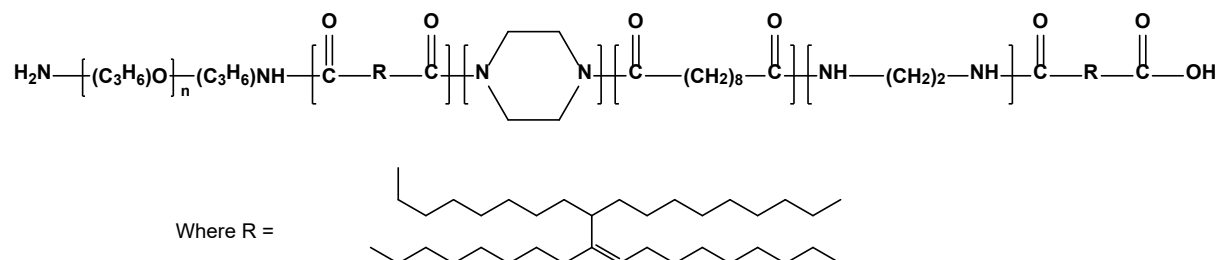
247243-43-2

Molecular Formula

Unspecified

Structural Formula

The notified polymer may be represented by the following:



Molecular Weight (MW)

| | |
|--------------------------------------|---------------|
| Number Average Molecular Weight (Mn) | 25,153 Da |
| Weight Average Molecular Weight (Mw) | 53,837 Da |
| Polydispersity Index (Mw/Mn) | 2.1 |
| % of Low MW Species < 1000 Da | 3.5 (approx.) |
| % of Low MW Species < 500 Da | 1.8 (approx.) |

Polymer Constituents

| <i>Chemical Name</i> | <i>CAS No.</i> | <i>Weight % starting</i> | <i>Weight % residual</i> |
|---|----------------|--------------------------|--------------------------|
| Fatty acids, dimer acids, C ₁₈ | 61788-89-4 | 50.10 | 0 |
| Decanedioic acid | 111-20-6 | 10.71 | 0 |
| 1,2-Ethanediamine | 107-15-3 | 3.35 | 0 |

| | | | |
|--|------------|--------|----------|
| Piperazine | 110-85-0 | 6.04 | 0 |
| Poly[oxy(methyl-1,2-ethanediyl)], α -(2-aminomethylethyl)- ω -(2-aminomethylethoxy)- | 9046-10-0 | 27.90 | 0 |
| Polysiloxanes, di-Me* | 63148-62-9 | 0.0002 | < 0.0001 |

*Not depicted in the chemical name or structural formula

Additives

| <i>Chemical Name</i> | <i>CAS No.</i> | <i>Weight %</i> |
|---|----------------|-----------------|
| Benzenamine, <i>N</i> -phenyl-, reaction products with 2,4,4-trimethylpentene | 68411-46-1 | 1.90 |

3. PLC CRITERIA JUSTIFICATION

| <i>Criterion</i> | <i>Criterion met</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 Hazard Substance or Dangerous Good | Yes |

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|-----------------------------------|--|
| Appearance at 20 °C and 101.3 kPa | Amber solid |
| Softening point | 150 – 165 °C |
| Density | 980 kg/m ³ at 20 °C |
| Water Solubility | Expected to be very low as the notified polymer has very high molecular weight |
| Dissociation Constant | Contains ionisable functionalities. Therefore, the notified polymer will be ionised under normal environmental conditions of pH 4 – 9. |
| Particle Size | Not determined. The notified polymer is introduced in the form of solid blocks/pillows. |
| Reactivity | Stable under normal environmental conditions |
| Degradation Products | None under normal conditions of use |

5. INTRODUCTION AND USE INFORMATION

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> |
|-------------|----------|----------|----------|----------|----------|
| Tonnes | 5 | 5 | 5 | 5 | 5 |

Use

The notified polymer will not be manufactured or reformulated in Australia. The notified polymer will be introduced at ~98% concentration in 20 kg polyethylene plastic bags. The notified polymer will be used as a polyamide based hotmelt adhesive for electronic components. The notified polymer will be used by industrial users only and will not be available to the public.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard.

The notified polymer will be used as hotmelt adhesive. The application temperature was recommended to be between 180 and 230 °C based on the Technical Data Sheet provided by the notifier. High temperature that causes thermal decomposition should be avoided as thermolysis of the polymer may release hazardous fumes.

Given the assumed low hazard and the assessed use pattern, the risk of the notified polymer to occupational and public health is not considered to be unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Polymers with a low cationic charge density are generally of low concern to the environment. The notified polymer will not be manufactured or reformulated in Australia. The notified polymer will be used, as a polyamide based hotmelt adhesive for electronic components, by industrial users only and will not be available to the public. No significant release of the notified polymer to sewer is expected from the above use pattern. Potential release of the notified polymer is expected to be from spillage. The spills are expected to be collected and disposed of in accordance with relevant State and Federal regulations. Most of the notified polymer will be physically incorporated within an inert polymer matrix of adhesive. The notified polymer is expected to share the fate of articles to which it has been applied to and be disposed of to landfill. The notified polymer is not expected to be readily biodegradable. However, due to its high molecular weight it is not expected to cross biological membranes and therefore not expected to bioaccumulate. In landfill the polymer will bind to soil and will decompose under slow biotic or abiotic degradation processes, forming water and oxides of carbon and nitrogen. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.