

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

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in PUMA 155

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and the Department of the Environment and Energy, has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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 SUBSTANCE	INTRODUCTION VOLUME	USE
SAPLC/216	Akzo Nobel Pty Ltd	Polymer in PUMA 155	No	< 1,000 tonnes per annum	Component of industrial coatings

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

- Water insoluble high molecular weight polymers used in the respirable size range (< 10 µm) have the potential to cause lung overloading. Respiratory protection and local exhaust ventilation during spray applications should be used to prevent inhalation exposure.

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.
- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (Safe Work Australia, 2015) or relevant State or Territory Code of Practice.
- 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 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;
 - the notified polymer is introduced in powder form.

or

- (2) Under Section 64(2) of the Act; if
 - the function or use of the notified polymer has changed from component of industrial coatings, 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.

Safety Data Sheet

The SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Azko Nobel Pty Ltd (ABN: 59 000 119 424)
51 McIntyre Road
SUNSHINE NORTH VIC 3020

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, use details and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

PUMA 155 (product containing the notified polymer at < 40%)

Molecular Weight

Number Average Molecular Weight (Mn) is > 10,000 g/mol.

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	Semi-opaque liquid
Glass Transition Temp	69 °C
Density	1,020 kg/m ³ at 20 °C
Water Solubility	< 0.1 g/L at 20 °C
Dissociation Constant	pKa = 4.41
Particle Size	Mean: 70 nm Cumulative 99%: 22.4 nm Cumulative 95%: 26.9 nm Cumulative 90%: 34.7 nm Cumulative 75%: 46.4 nm Cumulative 50%: 53.7 nm Cumulative 25%: 61.7 nm Cumulative 10%: 71.9 nm Cumulative 5%: 79.2 nm Cumulative 1%: 106.8 nm
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

Year	1	2	3	4	5
Tonnes	< 100	< 100	< 100	< 100	< 1,000

Use

The notified polymer will not be manufactured in Australia. It will be imported as a polymer dispersion for reformulation into coatings used for buildings and furniture. Finished coating products containing the notified polymer at < 30% will be applied by professional workers primarily by spraying, and will not be available to the general public. Once the paint is applied and cured, the notified polymer will be contained within an inert matrix and hence will not be available for exposure.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were available. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Although not considered in this risk assessment, the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia. These are not present in the notified polymer as introduced above the cut off concentrations for classification.

The notified polymer contains particles in the nano-size range, with approximately 99% < 100 nm. However, the notifier declared that the notified polymer is not an industrial nanomaterial under the NICNAS definition. With the proposed form of introduction (dispersion), inhalation to nano-size particles is not expected during the handling and reformulation. As recommendations will be included to minimise worker exposure to the polymer during spray application of the finished coatings, inhalation of nano-size particles is not expected during this process. After application of coatings to the substrate and curing, the notified polymer will be trapped in the polymer matrix and will not be available for exposure.

It is noted that the notified polymer is water-insoluble with molecule weight > 10,000 g/mol. Inhalation of polymers with molecular weights > 70,000 g/mol has been linked with irreversible lung damage due to lung overloading and impaired clearance of particles from the lung, particularly following repeated exposure (US EPA, <https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/high-molecular-weight-polymers-new>, accessed on April 2019). There is a data gap for polymers with MW between 10,000 and 70,000 g/mol, and uncertainty may exist. If the notified polymer is inhaled at low levels and/or infrequently, it is assumed that it will be cleared from the lungs.

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

7. ENVIRONMENTAL RISK ASSESSMENT

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Accidental spills of the notified polymer during import, transport, reformulation or storage are expected to be adsorbed onto suitable materials and collected for disposal of in accordance with local government regulations. Solvent waste containing the notified polymer from washing of reformulation equipment and empty import containers will be recycled into subsequent batches when possible or be

disposed of by an approved waste management facility in accordance with local government regulations.

The coatings containing the notified polymer will be mainly applied by spray to wood substrates in industrial settings. Application by brush or roller may also occur. Approximately 20% of the import volume of the notified polymer could be released as overspray during use. The overspray is expected to be collected and cured on spray booth filters before disposal to landfill in accordance with local government regulations. Solvent waste containing the notified polymer from washing of application equipment will be disposed of by an approved waste management facility in accordance with local government regulations.

Up to 2% of the import volume of the notified polymer could remain as residues in empty end use containers. These wastes are expected to be collected for disposal to landfill in accordance with local government regulations.

ENVIRONMENTAL FATE

The notified polymer is expected to share the fate of the articles to which it has been applied and will be disposed of to landfill. In landfill, the notified polymer will be present as cured solids and will be neither bioavailable nor mobile. Thus, release of the notified polymer is not expected to lead to ecotoxicologically significant concentrations in the aquatic environment. The notified polymer is not expected to bioaccumulate due to its high molecular weight and low water solubility. The notified polymer in landfill is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon, nitrogen and silicon.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

7.3. Environmental Risk Assessment

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

BIBLIOGRAPHY

Safe Work Australia (2015) Code of Practice: Spray Painting and Powder Coating, Safe Work Australia, <https://www.safeworkaustralia.gov.au/doc/model-code-practice-spray-painting-and-powder-coating>.