

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Tinuvin® 400-DW

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 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 SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1375	BASF Australia Ltd	Polymer in Tinuvin® 400-DW	No	≤ 60 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

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

(Material) Safety Data Sheet

The (M)SDS of a product containing 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

BASF Australia Ltd (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
SOUTHBANK VIC 3006

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 and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

Tinuvin® 400-DW (contains < 20% notified polymer)

Molecular Weight

Number Average Molecular Weight (Mn) is > 10,000 Da

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	White to light beige liquid*
Melting Point/Glass Transition Temp	Approximately 0 °C*
Density	1,000-1,050 kg/m ³ at 20 °C*
Water Solubility	Expected to have low water solubility based on the high molecular weight and hydrophobic chemical structure
Dissociation Constant	Contains no dissociable functionalities
Particle Size	Not determined. The polymer is introduced as a solution.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
*For Tinuvin® 400-DW (contains < 20% notified polymer)	

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	1-10	10-30	10-30	30-60	30-60

Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia in Tinuvin® 400-DW at < 20% concentration for reformulation into industrial coatings. The finished products containing the notified polymer at < 3% concentration will be applied to paper/paper board (5%), timber (30%), metal (35%) and masonry (30%) by brush, roller or spray application.

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.

Occupational Health and Safety Risk Assessment

The notified polymer has a high molecular weight (> 70,000 Da) and is expected to have low water solubility and therefore lung overloading effects may occur if large amounts are inhaled. However, lung overloading effects are not expected during reformulation and application by roller and brush as the notified polymer is introduced and used as a solution.

Workers at risk of lung overloading effects will be those handling coatings containing the notified polymer during spray applications. Spray applications are expected to be carried out robotically in a booth with local exhaust ventilation, and appropriate PPE (safety glasses, impervious gloves, protective clothing and respiratory protection) is expected to be used to limit worker exposure.

Therefore, under the occupational settings described, the risk to the health of workers from use of the notified polymer is not considered to be unreasonable.

Public Health Risk Assessment

Coatings containing the notified polymer will be used in industrial settings only. Members of the public may come into contact with substrates coated with coatings containing the notified polymer. However, once the coatings have dried and cured following application, the notified polymer will be bound within the solid matrix and will not be available for exposure. Therefore, the risk to public health is not considered unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

The notified polymer will be imported into Australia as a component of a product for reformulation into finished industrial coatings. During reformulation, the product containing the notified polymer will be blended with other ingredients at industrial sites. Release of the notified polymer to the environment during import, reformulation, storage, and transport is expected to be limited to accidental spills or leaks and residue in import packaging. Spills or accidental release of the product containing the notified polymer are expected to be collected with adsorbents and disposed of to landfill in accordance with local government regulations.

Coatings containing the notified polymer will be applied in industrial settings only to a variety of substrates, including paper and paper board, timber, metal, and masonry. During use, the coatings containing the notified polymer will be applied by brush, roller and spray techniques within automated industrial systems with ventilation systems to collect particulate overspray. It is expected some of the industrial coatings will be in the form of overspray during spraying operations, and will typically entail disposal to landfill after being collected by ventilation filters or with adsorbents. Residues containing the notified polymer in application equipment are expected to be rinsed with solvents, and waste waters collected for disposal by licensed waste management services. Solid wastes from spills and container residue are expected to be collected and disposed of to landfill in accordance with local government regulations.

Based on its use in industrial coatings, it is expected that the majority of the notified polymer will be cured during use. The notified polymer cured onto substrates will share the fate of the coated articles. Therefore, the notified polymer is not expected to be mobile or bioavailable in this form. At the end of their useful life, coated articles containing the notified polymer are expected to be disposed of to landfill, undergo thermal decomposition during metal recycling processes, or undergo paper recycling processes. Based on its high molecular weight and low expected water solubility, the notified polymer is not expected to cross biological membranes, and is therefore unlikely to be bioaccumulative.

It is assumed that 50% of the printed paper containing the notified polymer will end up in landfill, and the rest will undergo paper recycling processes. During recycling processes, waste paper is repulped using a variety of chemical agents which, amongst other things, enhance detachment of coatings from the fibres. Waste water containing the notified polymer will be released to sewer. However, based on its high molecular weight, expected low water solubility and non-ionic properties, up to 90% of the notified polymer is expected to adsorb to sludge and sediment during sewage treatment plant (STP) processes (Boethling and Nabholz, 1997), with sludge eventually disposed of to landfill or re-used for soil remediation. Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations. In landfill and during substrate recycling processes, the notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon.

Therefore, based on its assumed low hazard and assessed use pattern in industrial coatings, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

Boethling, RS, Nabholz, JV (1997). "Environmental Assessment of Polymers under the US Toxic Substances Control Act", in: Hamilton, JD, Sutcliffe, R (ed). Ecological Assessment of Polymers: Strategies for product stewardship and regulatory programs. Van Nostrand Reinhold, New York.

Safe Work Australia (2015) Code of Practice: Spray Painting and Powder Coating, Safe Work Australia, <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/spray-painting-and-powder-coating>.