File No PLC/1071

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Nylon 612/6T

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

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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, 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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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/1071	DuPont (Australia) Ltd	Nylon 612/6T	No	≤ 500 tonnes per annum	Polymer for the manufacture of plastic articles

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

- Exhaust ventilation should be used if fumes are generated during moulding.
- 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 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 *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

- 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 polymer for the manufacture of plastic articles, 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 MSDSs of the products containing the notified polymer were provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
DuPont (Australia) Ltd (ABN:59000716469)
7 Eden Park Drive, Macquarie Park NSW 2113

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, and polymer constituents.

2. IDENTITY OF POLYMER

Marketing Name(s)
Nylon 612/6T
Zytel LC7601 NC010 (containing > 60% notified polymer)

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

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
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	Solid pellets
Melting Point/Glass Transition Temp	202°C (solidification point is 156 °C determined by DSC)
Density	1134 kg/m^3 at 20°C (analogue)
Water Solubility	< 1.5× 10^{-3} g/L at 20 °C (Analogue). Modification of OECD TG 120 – Gravimetric determination. Samples of test substance (50 mg) in water (1 L) were shaken at 30°C. After 72 h, undissolved polymer was filtered from the cooled solution, dried and weighed. Difficulty was reported in recovering all polymer particles from the test vessel walls during filtration.
Dissociation Constant	Residual end groups with a pK_a ~ 4 and/or pK_a ~ 9 are not expected to be ionised in the environment due to the water insolubility of the notified polymer.
Particle Size	Approximately 3 × 2.5 mm
Reactivity	Stable under normal environmental conditions. The notified chemical contains hydrolysable functionality, however, due to its water insolubility, it is expected to be hydrolytically stable in the environmental pH range (4-9) at ambient temperature.
Degradation Products	Oxides of carbon and nitrogen

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	100 - 500	100 - 500	100 - 500	100 - 500	100 - 500

Use
The notified polymer will be imported into Australia as pellets at a concentration of > 60%. The pellets containing the notified polymer will not undergo further reformulation but will be loaded directly into thermoplastic extrusion equipment for manufacture of moulded articles.

The notified polymer will be used in the production of plastic articles by injection moulding, extrusion or blow moulding. Applications include automotive parts, electrical/electronic products, domestic appliances, furniture and construction materials.

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.

When the notified polymer is moulded under high temperatures, vapour of oxides of nitrogen and carbon may be released. However the potential for inhalation exposure would be minimised by use of ventilation during moulding.

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

No ecotoxicological data were submitted. Insoluble polymers are not expected to pose a concern to the aquatic environment unless the polymer is in the form of finely divided particles. In these cases toxicity to aquatic organisms occurs only at high concentrations, whereby acute and chronic toxicity values are generally > 100 mg/L and > 10 mg/L, respectively. As the notified polymer is expected to be water insoluble and will only be imported and used in the solid phase, it is therefore not expected to pose a concern to the aquatic environment when used as proposed.

The imported composite containing the notified polymer will undergo thermoplastic extrusion moulding to manufacture parts for automobiles, electrical/electronic products, domestic appliances, furniture and construction materials. As the notified polymer is expected to be completely incorporated into the inert polymer matrix of moulded articles, there is expected to be very little release of the notified polymer during the manufacture, use or disposal of the end-use products. Notified polymer residues in empty import containers, accidental spills and wastes generated during the moulding process are expected to be collected and recycled or disposed of to landfill. In landfill, notified polymer contained in waste or articles at the end of their useful life is not expected to be bioavailable, due to its high molecular weight, or mobile, due to its expected water insolubility. Eventually, the notified polymer is expected to degrade biotically or abiotically to form water and oxides of carbon and nitrogen. The notified polymer is not expected to bioaccumulate due to its high molecular weight and low potential for aquatic exposure based on its reported use pattern. Therefore, 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.