

File No PLC/434

30 January 2004

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

FULL PUBLIC REPORT

Ecocite “E”

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the 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 Department of the Environment and Heritage.

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

DuPont (Australia) Pty Ltd (ABN: 59 000 716 469)
168 Walker Street
NORTH SYDNEY NSW 2060

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name

Other names

CAS number

Molecular formula

Structural formula

Number Average Molecular Weight

Weight Average Molecular Weight

Weight Percentage of polymer species with MW<1000 and MW<500

Charge density

Polymer constituents

Residual monomers and impurities

Reactive functional groups

Import volume

Sites of manufacture or reformulation

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

USA (2002) and Canada (2003)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Ecocite "E"

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Not Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Not a Hazardous Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. 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>
<i>Tonnes</i>	300-1000	300-1000	1000-3000	1000-3000	1000-3000

USE

The notified polymer is an imported modifier that will be blended with polyamides, polyolefins, and polyvinyl chloride, to enhance the physical properties (impact toughness, adhesion, flexibility, chemical resistance, heat resistance, and weather ability) of these primary resins in extrusion moulding.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will be manufactured in the USA and imported for compounding and use in the plastic moulding industry. It is expected that while the specific operational details may vary from site to site the general process, extrusion machine designs and routes of exposure will remain the same.

The raw imported modifier pellets and the resins are allowed to dry for 24 hours prior to use. The modifier is then blended with pellets of the resins to be modified. The charging of the blending tank can occur by the direct dosing equipment, which is part of the resin production line, or by weighing into mixing bin.

Once modifiers and resins mix may then be put through either:

- 1) Physical mixer of pellets which will be inline in a extrusion/moulding plant
- 2) Melt compound extruder that has a mixing screw and blades which apply high shear to the molten mixture for highly effective mixing. Both single and twin-screw extruder can be used. Resin blending further increases upon entering the extruder or injection moulding barrel that is heated to between 150 and 250°C to melt the primary resins and evenly distribute the Ecocite E throughout the melt. Such extruders will be inline to the extrusion/moulding in the same plant.
- 3) Compounding firms use the same equipment described in 2) but sell the compounded resins then to other extruders and moulding companies rather than retain resins for internal moulding and extrusion as described in 2).

The blended resins may then be extruded in the form of pipe, filmsheet or shape.

When an extruder is down (has a malfunction that stops processing) it is left until cool and the equipment is cleaned and malfunction identified.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

6.1.1. Environmental Release

The majority of the notified polymer will be incorporated into moulded and extruded products and, once set, will pose little risk to the environment. Minimal release is anticipated during importation, transport or storage with spilt material being collected and retained for use in the extrusion process, thus only trace amounts will be disposed of to landfill or be incinerated. Since the imported notified polymer will be in pellet form, only trace amounts of dust will remain in the empty containers when they are disposed of to landfill. Only minimal release is anticipated during resin formulation and mould injection or extrusion. Any spilt material, off-cuts or out-of-specification material will be collected, ground and mixed with raw process fed material. At times of machine breakdown, the resin material will be collected and reused in the process. Small amounts of material may be disposed of to landfill or by incineration. At the end of their useful lives, moulded items containing the notified polymer will be disposed of in landfill or by incineration.

Most of the notified polymer will be incorporated into the end products, thus its fate will be the same as the end products in which it is incorporated. At the end of their useful life, it is expected that these products will be sent to landfill or some may be recycled. The recycled products may be reused while others may be reformulated into new materials. Incineration is a possible disposal pathway, with the production of water and oxides of carbon and nitrogen.

6.1.2. Environmental Fate

The notified polymer is expected to have a high affinity for soil and sediment and be immobile in the environment due to its low expected water solubility and expected adsorption/desorption coefficient. The notified polymer is therefore expected to become associated with soil and sediment and slowly degrade through biological and abiotic processes to water and oxides of carbon and nitrogen. In landfill it will not leach out.

6.2. Summary of Occupational Exposure

Dermal and ocular exposure can occur during certain formulation processes. Dermal exposure to the pellets may occur. While ocular and dermal exposure to dust generated from the compounding of the resin. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

6.3. Summary of Public Exposure

The notified polymer is intended only for use in industry. The majority of the articles manufactured using the product containing the notified polymer, at this time are expected to be industrial mouldings. It is foreseeable that in the future the manufactured moulding may be for consumer use. Members of the public may come into contact with products containing the notified polymer.

The product information for the notified polymer states that contact with food should be avoided.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa
Melting Point/Glass Transition Temp

Colourless, solid below 50°C.
Melting point not determined. Vicat softening point is 50-55°C.

Density
Water Solubility

1050-1060 kg/m³
Insoluble. The notified polymer is not expected to be water-soluble based on its hydrophobic composition and large molecular weight.

Dissociation Constant

The notified polymer does not contain functional groups that would dissociate under normal pH conditions.

Particle Size

The notified polymer will be imported as a pellet.

Reactivity

Stable under normal environmental conditions

Degradation Products

At temperatures above 250°C, decomposition and the evolution of fumes containing carbon monoxide, acrolein, carbon dioxide, butyraldehyde, butyric acid, acetic acid, methanol, or formic acid is possible.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were submitted.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

The fine dust produced by the pellets may cause mechanical irritation to the eyes. Repeated or prolonged skin contact may result in mild irritation including redness, itching and in extreme cases blisters. The molten polymer contacting the skin will cause thermal burns. During processing fumes may be produced which may be irritating to the eyes, nose and throat.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Once the moulded or extruded resin is set the notified polymer will pose little risk to the environment. Most will end up in landfill, where the polymer is expected to be immobile and inert, and to undergo slow degradation along with the article into which it is incorporated.

The polymer is not expected to enter the aquatic environment under normal use. In the event that the polymer enters the aquatic environment, it is expected to sink and remain in the sediment.

Given the high molecular weight, the new polymer is not expected to cross biological membrane or to bioaccumulate.

10. RISK ASSESSMENT

10.1. Environment

It is unlikely that the new polymer will present a hazard to the environment when handled and used as indicated. Hence, environmental hazard from the proposed use is expected to be low.

10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

The level of atmospheric nuisance dust should be maintained as low as possible. The NOHSC exposure standard for atmospheric dust is 10 mg/m³.

10.3. Public health

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer bound within a matrix and unlikely to be bioavailable.

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

11.1. Environmental risk assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human health risk assessment

11.2.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2 Public health

There is Low Concern to public health when used as described in the notification.

12. MATERIAL SAFETY DATA SHEET

Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- 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 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.

Disposal

- The notified polymer should be disposed of to polymer recycling, landfill or by incineration.

Emergency procedures

- Spills/release of the notified polymer should be handled by containment and manual or vacuum collection with the collected pellets being recycled, if possible.

13.1. 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 subsection 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 subsection 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.

No additional secondary notification conditions are stipulated.