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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

C9030 resin component of LEXAN EXL 1330

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Director
Chemicals Notification and Assessment

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
General Electrics Plastics of 175 Hammond Road, Dandenong, VIC 3175 (ABN: 92 005 837 454)

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication: Molecular formula, structural formula, means of identification, molecular weight details, charge density, polymer constituents, residual monomers and impurities, reactive functional groups, manufacture/import volume, site of manufacture or reformulation, purity

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)
No.

NOTIFICATION IN OTHER COUNTRIES
Canada 2002

2. IDENTITY OF CHEMICAL

OTHER NAME
C9030 resin component of LEXAN EXL 1330

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Molecular weight	The notified polymer meets the molecular weight criteria.
Functional groups	The notified polymer has only low concern groups.
Charge Density	The notified polymer has low charge density.
Elemental Criteria	The notified polymer contains only approved elements.
Degradability	The notified polymer is not biodegradable.
Water Absorbing	The notified polymer is not a water-absorbing polymer.
Residual Monomers	All residual monomers are below the relevant cut-off.
Hazard Category	The notified polymer is not classified as a hazardous substance.

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<300	<300	<300	<300	<300

USE
Component of polymer resin for manufacture of plastic articles.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	P/S: Pellet with slight odour T: Fine powder
Melting Point/Glass Transition Temp	No distinct melting point.
Density	1000 kg/m^3 at 25ºC
Water Solubility	Insoluble. The notified polymer is not expected to be water-soluble based on its hydrophobic monomer composition. The notified polymer's insolubility in water is further demonstrated by the mechanism of polymerisation, the washing of formed copolymer with water to remove residual catalyst and oligomers and the removal of powdered copolymer from the organic solution by steam precipitation.
Particle Size	Pellets: 0.5-1 mm (C9030P, C9030S) Powder (C9030T)

µm	%	µm	%
<4	0.1	20-40	9.5
4-7	4.2	40-60	31.1
7-10	10.7	60-100	22.7
10-14	3.9	100-200	12.0
14-20	9.5	>200	1.4

Hydrolysis and a Function of pH	The notified polymer contains carbonate linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.
Adsorption/desorption	Not determined. The notified polymer is expected to have a high affinity for soil and sediment and be immobile in the environment due to it low expected water solubility.
Partition Coefficient	The notified polymers low expected water solubility and likely hydrophobic nature are indicative of partitioning into the octanol phase.

7. HUMAN HEALTH IMPLICATIONS

7.1 Toxicology

Toxicological Investigations

No toxicological data were submitted.

Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard, however, processing fumes may cause irritation to the eyes, skin and respiratory tract. In cases of severe exposure, nausea and headache can also occur. Grease-like processing fume condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

The powder may cause mechanical irritation to the eyes, and to the respiratory tract if inhaled. Repeated or prolonged skin contact may result in mild irritation. Approximately 15% of C9030T particles are in the respirable range (< 10μm).

7.2 Occupational Health

Occupational Exposure

- Exposure to polymer dust may occur when process workers weigh and transfer the pellets/powder to the reaction vessel, and when the polymer is compounded following blending with other ingredients to form a compounded polymer for redistribution.
- Exposure to fumes may occur when the notified polymer is heated to 180-220ºC during the extrusion process.

Exposure Assessment

Dermal and inhalation exposure to dust and fumes may occur during the blending of the notified polymer into a compound polymer, and during the extrusion of the notified polymer into plastic products. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

7.3 Public Health

Exposure Assessment

The notified polymer will not be sold to the public except in the form of finished articles. There is potential for extensive public exposure to articles comprised wholly or partly of the notified polymer.

8. ENVIRONMENTAL IMPLICATIONS

8.1 Ecotoxicology

Ecotoxicological Investigations

No toxicological data were submitted.

Environmental Hazard Assessment

The notified polymer can be considered to be of low hazard based on its reported use pattern.

8.2 Environmental Contamination

Environmental Exposure

The majority of the notified polymer imported as pellets will be incorporated into moulded and extruded products such as automotive parts, electrical housings, transformer parts and leisure articles and, once set, poses little risk to the environment. The notified polymer in wastes (1% of import volume or up to 3000 kg per annum) from spills will be recycled with a small proportion disposed of to landfill. Empty containers will also be disposed of to landfill. At the end of their useful lives, moulded items containing the notified polymer will also be disposed of in landfill.

Exposure Assessment

The notified polymer is expected to be insoluble in water and as such should not be mobile in either aquatic or terrestrial compartments. As a consequence of its low expected water solubility, the notified polymer will associate with soil and sediment and slowly degraded through biological and abiotic processes to water and oxides of carbon, nitrogen and silicon.

The notified polymer has a very high molecular weight and limited release to the aquatic compartment suggesting that its potential for bioaccumulation is low.

9. RISK ASSESSMENT

9.1. Environment

The majority of the notified polymer will be incorporated into moulded objects which, once set, pose little risk to the environment. Most will end up in landfill where over time the notified polymer is expected to associate with soil and sediment and degraded through biological and abiotic processes to water and oxides of carbon and nitrogen and silicon.

9.2 Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low due to the low potential for exposure and the expected low toxicity of the polymer. 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/m^3 TWA (NOHSC, 1995).

9.3 Public health

The risk to public health will be negligible as the notified polymer is bound within a plastic matrix and unlikely to be bioavailable.

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

10.2. Environmental risk assessment

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

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There is No Concern to occupational health and safety under the conditions of the occupational settings described.

10.3.2. Public health

There is Negligible Concern to public health.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- When handling notified polymer in powder form:
  - Enclose process as much as possible when handling polymer in powder form.
  - Avoid generation of dust.

  - Wear dust mask if necessary
- Engineering controls, work practices and personal protective equipment 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 in landfill.

Emergency procedures

- Spills/release of the notified polymer should be swept up and placed into a container prior to disposal in landfill. Molten material should be allowed to solidify prior to disposal as described above.

12.1. 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.

13. BIBLIOGRAPHY

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1995) Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)] & [NOHSC:1003(1995)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.