

File No PLC/423

27 August 1994

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

FULL PUBLIC REPORT

Resin components of LEXAN SLX grades

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.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

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Street Address: 334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
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Website: www.nicnas.gov.au

**Director
Chemicals Notification and Assessment**

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

General Electric Plastics Pty Ltd of 175 Hammond Road, Dandenong, Victoria 3175.

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Identity Information

Molecular Weight Information

Import volume

Details of use

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

Yes, USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Resin component of Lexan SLX grades

3. COMPOSITION

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>	< 30	< 30	< 300	< 300	< 300

USE

The notified polymer will be blended, moulded and compounded with other polymer resins to make plastic components for use in appliance parts.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The polymer or commercial forms containing the notified polymer will be imported in ready to sell packages in 25 kg polythene bags or 500 kg bulk sacs. The same type of packaging would be used for compounded resin made in Australia. The port of entry will be Melbourne, Sydney or Adelaide.

For compounding, the polymer granules/pellets will be weighed and transferred to a blending vessel. It will be done manually or with a variety of transfer aids. The container will be fully emptied by shaking or vacuuming into the vessel. After all components have been added to the blending vessel and mixed, melting and extrusion of the compound will occur. This produces long, thin, continuous strands of product and these are chopped automatically into small (3-5 mm diameter) pellets. The pellets are then automatically filled into bags for shipping.

Pellets will be associated with polymer dust so that local exhaust ventilation is used at points where exposure to dust from blended ingredients of final product or fumes generated from heating of the blend is possible.

Moulding of the plastic pellets containing the notified polymer is accomplished by transfer to a moulding machine. Typically transfer to the hopper of the moulding machine can be manual or via some form of vacuum device and local exhaust ventilation is used to control exposure to dust or fumes from heating the plastic to 260 – 340°C. The heated polymer will be moulded into automotive parts, electrical housings, transformer parts and leisure articles. The concentration of notified polymer in the final articles is 20-99%.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

The imported notified polymer or its commercial forms will be used to produce moulded or extruded plastic articles. There will be no environmental exposure associated with the manufacture of the notified polymer in Australia.

The manufacture of plastic articles involves a highly automated process and moulding machines that are enclosed. The majority of spilled material will be recovered and reused. Up to 2 tonnes of the notified polymer is expected to be disposed of to landfill as residue in import containers, cleaning up of transport accidents or spills during formulation or manufacture of articles.

The majority of the notified polymer will be incorporated into moulded or extruded plastic articles, which will be disposed of to landfill at the end of their useful lives.

6.2. Summary of Occupational Exposure

Incidental dermal, eye contact and inhalational exposure to dust and fumes containing the notified polymer may occur during weighing, mixing and blending of the notified polymer into a compounded polymer, and during the extrusion and moulding of the notified polymer into plastic articles. However, exposure to significant amounts of the notified polymer is limited as the process is largely enclosed and once the polymer is compounded, exposure is negligible.

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

6.3. Summary of Public Exposure

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. However, the notified polymer will be bound within the polymer matrix and public exposure to the notified polymer itself is negligible.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Initially, imports of solid coloured or colourless pellets; subsequently, the powder may be imported and the coloured or uncoloured pellets/granules prepared in Australia
Melting Point	No distinct melting point
Flammability Limits:	Can be heated to high temperature in course of normal use without combusting
Density	1.2 g/cc at 25°C
Water Solubility	$\leq 2 \times 10^{-3}$ g/L Samples of finely ground test substance (at 200 mg/L and 2000 mg/L) were stirred for 2 hours at 40°C followed by 24 hours at 25°C. The solubility was measured gravimetrically and using measured levels of dissolved organic carbon in the water filtrate. The results of both techniques were as above. The summary report provided indicated that the gravimetric method tends to overestimate the solubility due to losses during transferring the test material.
Explosive Properties	Pellets not sensitive to friction shock or heat
Reactivity	Not reactive and not an oxidising agent.

The notified polymer contains ester linkages that could undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur. Its poor solubility and likely hydrophobic nature are indicative of partitioning into the octanol phase and immobility in soil. There are no groups likely to dissociate.

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.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Almost all of the notified polymer will be used to manufacture various injection moulded and extruded articles. Once moulded, the notified polymer is expected to be inert and is unlikely to pose a risk to the environment. It is anticipated that majority of wastes generated during the formulation and manufacture of articles will be collected and reused.

Almost all of the notified polymer imported (up to 200 tonnes per annum including from spills, residue in import containers and transport accidents as well as the plastic articles at the end of their useful lives) will eventually be disposed of to landfill as inert solid waste. In landfill, the polymer contained in waste or the plastic articles is expected to be immobile due to its inert state and its poor water solubility. Although not expected to be ready biodegradable, it is anticipated that prolonged residence in an active landfill environment would eventually degrade the notified polymer due to abiotic or slow biotic processes to give water vapour and oxides of carbon.

It is not possible to determine a meaningful predicted environmental concentration (PEC) value in order to assess the risk to aquatic organisms, as the use pattern of the notified polymer will result in limited if any exposure to the aquatic environment. While no ecotoxicity data are available, it is unlikely that the polymer would exist at levels which could pose a threat to aquatic organisms or to bioaccumulate due to the limited release to water. The high molecular weight indicates a low potential for bioaccumulation. Based on the proposed use pattern, the release of the notified polymer to the environment is expected to be very low.

10. RISK ASSESSMENT

10.1. Environment

Based on its reported exposure levels and use pattern, the polymer is not considered to pose a risk to the environment.

10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low due to its expected low hazard and limited potential for exposure.

10.3. Public health

Members of the public may make dermal contact with articles containing the notified polymer. However, the risk to public health will be negligible as the polymer is of low hazard and, as it is bound within the polymer matrix, the notified polymer is not 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 No Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2 Public health

There is Negligible Concern to public health when used in the proposed manner.

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.

Environment

Disposal

- The notified polymer should be disposed of in landfill or by incineration in accordance with federal, state and local regulations. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.
- Empty import bags should be disposed of to landfill with any residual polymer.
- Recycling is encouraged.

Emergency procedures

- Spills/release of the notified polymer should be handled by gathering and storing in closed containers pending waste disposal evaluation.
- Allow molten material to solidify before disposal.

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.