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

**FULL PUBLIC REPORT**

**Polymer in IRGASURF SR 100**

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**Director  
NICNAS**

## TABLE OF CONTENTS

FULL PUBLIC REPORT.....	3
1. APPLICANT AND NOTIFICATION DETAILS .....	3
2. IDENTITY OF CHEMICAL .....	3
3. PLC CRITERIA JUSTIFICATION .....	3
4. PHYSICAL AND CHEMICAL PROPERTIES .....	4
5. INTRODUCTION AND USE INFORMATION.....	4
6. HUMAN HEALTH IMPLICATIONS.....	5
6.1. Exposure Assessment .....	5
6.2. Toxicological Hazard Characterisation .....	5
6.3. Human Health Risk Assessment.....	5
7. ENVIRONMENTAL IMPLICATIONS .....	6
7.1. Exposure Assessment .....	6
7.2. Environmental Hazard Characterisation .....	6
7.3. Environmental Risk Assessment .....	6
8. CONCLUSIONS.....	6
8.1. Level of Concern for Occupational Health and Safety .....	6
8.2. Level of Concern for Public Health.....	6
8.3. Level of Concern for the Environment.....	6
9. MATERIAL SAFETY DATA SHEET.....	7
9.1. Material Safety Data Sheet .....	7
10. RECOMMENDATIONS .....	7
10.1. Secondary Notification .....	7

**FULL PUBLIC REPORT****Polymer in IRGASURF SR 100****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Ciba Specialty Chemicals Pty Ltd (ABN 97 005 061 469)  
235 Settlement Road  
Thomastown, Victoria 3074

## NOTIFICATION CATEGORY

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 and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, and Manufacture/Import Volume.

## 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

US (2003)  
Canada (2006)

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

IRGASURF SR 100 (containing < 30% notified polymer)

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10000

## REACTIVE FUNCTIONAL GROUPS

The polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</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

<b>Appearance at 20°C and 101.3 kPa</b>	White solid pellets
<b>Melting Point/Glass Transition Temp</b>	100°C
<b>Density</b>	950 kg/m <sup>3</sup> at 20°C
<b>Water Solubility</b>	No test, but expected to be practically insoluble. The notified polymer contains a small number of functional groups which may slightly increase solubility but in practicality the polymer is insoluble.
<b>Particle Size</b>	Average size of pellets: 2-4 mm. Small number of pellets in the range 1-2 mm. (Notified polymer and imported product)
<b>Reactivity</b>	Contains hydrolysable groups but unlikely to hydrolyse except under extreme pH conditions. Stable under normal environmental conditions.
<b>Degradation Products</b>	None under normal conditions of use.

#### 5. INTRODUCTION AND USE INFORMATION

##### MAXIMUM INTRODUCTION VOLUME OF NOTIFIED POLYMER (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>	<3-15	<3-15	<3-15	<3-15	<3-15

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### Mode of Introduction

The notified polymer is introduced as a component (<30%) of the formulated product IRGASURF SR 100 in 20 kg polyethylene-lined paper bags. The product is imported by sea and is then transported by road, first to a warehouse in Thomastown, Victoria, and then to three customer sites in Thomastown, Keysborough and Noble Park, Victoria.

###### Reformulation/manufacture processes

The notified polymer will not be manufactured in Australia.

The notified polymer is reformulated into masterbatch (up to 9% notified polymer) or plastic compound (up to 0.9% notified polymer) for use in injection moulding applications. The pellets of the imported product (<30% notified polymer) are weighed manually before being added to a blending vessel for mixing with base polymer and other additives. The powdered blend is then transferred to the feed hopper of an extruder from which molten strands are chopped into pellets and allowed to cool, before being discharged via a closed transfer system for packaging. Local exhaust ventilation ensures capture of fugitive dusts/vapours released during processing. During the reformulation process the notified polymer becomes encapsulated in the matrix of the thermoplastic.

###### Use

The notified polymer is used as an additive in plastics manufacture to improve the scratch resistance of thermoplastics. The range of consumer articles containing the notified polymer is expected to include automotive bumper bars and interior trim, refrigerator linings, washing machine lids, and other products where scratch resistance is important.

At the moulding site the masterbatch or plastic compound containing the notified polymer is added to the hopper of an injection moulding machine. In the case of the masterbatch additional polymer and possibly other additives are also added to the hopper. The thermoplastic is then melted and extruded under pressure through dies or into moulds of the appropriate shape to produce the final plastic articles (up to 0.9% notified polymer). The notifier indicates that initially up to 10 moulding sites will use products containing the notified polymer, and this number may increase in the future.

## **6. HUMAN HEALTH IMPLICATIONS**

### **6.1. Exposure Assessment**

#### OCCUPATIONAL EXPOSURE

Transport workers are not expected to have any contact with the notified polymer, except in the case of an accident.

Dermal, ocular and possible inhalation exposure to the notified polymer may occur when the polymer pellets are loaded into the blending vessel for polymer masterbatch or compound production, or when charging the extruder with polymer masterbatch or compound. The exposure will be limited due to the low dusting formulation (no pellets less than 1 mm in size), the use of dust extraction and closed blending and extrusion vessels, as well as by the PPE worn (coveralls, dust mask, gloves, and eye protection). The manual handling of finished plastic articles will not result in exposure to the notified polymer, as it will be encapsulated in the matrix of the plastic.

#### 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 such as automotive bumper bars and interior trim, refrigerator linings, and washing machine lids comprised partly of the notified polymer. Blooming/leeching of the notified polymer from the articles is not expected and hence exposure will be low.

### **6.2. Toxicological Hazard Characterisation**

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. High molecular weight water insoluble polymers have the potential to cause lung overloading effects if inhaled in a respirable form.

### **6.3. Human Health Risk Assessment**

#### OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by the notified polymer is expected to be low, based on the limited exposure to workers and the low intrinsic hazard of the polymer. As no significant inhalation exposure is expected due to the low dust form of the imported product, the risk of lung overloading effects is considered to be low.

#### 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 is of low hazard, and is present at low concentrations and bound within a matrix.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Exposure Assessment**

#### ENVIRONMENTAL RELEASE

The polymer is imported into Australia as a component of IRGASURF ® SR 100 in pellet form. The notified polymer will then be used in masterbatch or compound production formulations with subsequent injection moulding into the final articles. During the batching process a small amount of the notified polymer may be spilled or lost. The pellets will be shaken out of the packaging.

Further small losses may also occur during the extrusion process from cleaning and servicing of equipment and from scrap plastic produced during moulding.

A minimal amount of fine material is expected to be released from the reformulation or injection moulding sites. It is expected that most of this will be captured on filtration devices fitted to the local ventilation system.

Approximately 2% is expected to be lost during the masterbatch or compounding process with further losses from scrap and waste from injection moulding amounting to approximately 3%. Empty packaging is likely to contain less than 0.1% and the fine amount in filters is expected to be minimal. Accordingly approximately 5% (< 750 kg) of the imported amount will be collected from the above sources and disposed of to landfill.

#### ENVIRONMENTAL FATE

The notified polymer will share the same fate as the products into which it is moulded. The products which include whitegoods, automotive trim etc will be placed into landfill at the end of the products' useful life. The polymer is water insoluble and is likely to undergo eventual in-situ degradation by biotic and abiotic processes to form landfill gases, including methane, oxides of carbon, and water vapour.

### **7.2. Environmental Hazard Characterisation**

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment. The notified polymer is practically inert and has a high molecular weight and is thus unlikely to cross biological membranes

### **7.3. Environmental Risk Assessment**

The notified polymer is unlikely to be hazardous as it has no ionic functionalities, is practically inert and has a high molecular weight. The notified polymer is unlikely to be released to the aquatic environment in any significant quantities and is water insoluble. The notified polymer is unlikely to pose an unacceptable risk to the environment.

## **8. CONCLUSIONS**

### **8.1. Level of Concern for Occupational Health and Safety**

There is low concern to occupational health and safety under the conditions of the occupational settings described.

### **8.2. Level of Concern for Public Health**

There is negligible concern to public health when used in the proposed manner.

### **8.3. Level of Concern for the Environment**

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

## 9. MATERIAL SAFETY DATA SHEET

### 9.1. 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.

## 10. 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 by authorised landfill.

#### Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical collection, while preventing dust build up and placed in suitable containers for disposal. Do not flush to sewers or waterways

### 10.1. 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.