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Date: 16th April 1996

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**UNIFLEX 390**

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act 1989* (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 Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Commonwealth Environment Protection Agency and the assessment of public health is conducted by the Department of Health and Family Services.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the hours of 10.00 a.m. and 12.00 noon and 2.00 p.m. and 4.00 p.m. each week day except on public holidays.

Under subsection 34(2) of the Act the Director of Chemicals Notification and Assessment is to publish this Report in the Chemical Gazette on .

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Director  
Chemicals Notification and Assessment

**FULL PUBLIC REPORT****UNIFLEX 390****1. APPLICANT**

W.R. Grace Australia Ltd of 1126 Sydney Road, FAWKNER VIC 3060 has submitted a notification statement in support of the assessment of a synthetic polymer of low concern, UNIFLEX 390.

**2. IDENTITY OF THE POLYMER**

Based on the nature of the chemical and the data provided, UNIFLEX 390, is not considered to be hazardous. Therefore, the exact chemical identity has been exempted from publication in the Full Public Report.

**Trade Name:** Uniflex 390

**Means of Identification :** separated and identified by gel permeation chromatography, no spectral data provided

**3. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance at 20°C and 101.3 kPa:** light amber semi-solid

**Melting Point:** not applicable

**Density:** 962 kg/m<sup>3</sup>

**Water Solubility:** not determined (estimated to be slightly > 1 ppm)

**Hydrolysis as a Function of pH:** not determined

**Flammability Limits:** not determined

**Autoignition Temperature:** > 260°C

**Explosive Properties:** none known

**Reactivity:** stable, will not react with water

**Particle Size Distribution:** not applicable

## Comments on Physico-Chemical Properties

The notifier states that the polymer is chemically stable and will not react with water.

The polymer does not contain any functional groups that are intended to or can reasonably be anticipated to undergo further reaction.

Water solubility was estimated to be slightly greater than 1 ppm, but with no supporting data provided. The EPA expects this is likely due to the significant component (26.5%) of soluble polyethylene glycol units in the polymer.

While the polymer contains a variety of ester linkages these are not expected to hydrolyse under environmental conditions due to the relatively low solubility of the polymer.

The data provided are acceptable.

### 4. PURITY OF THE CHEMICAL

Table 2: Maximum weight-percentage of residual monomers

<i>CAS No.</i>	<i>Constituent</i>	<i>% Weight</i>
27924-99-8	octadecanoic acid, 12-hydroxy-, homopolymer	7

### 5. INDUSTRIAL USE

The polymer is imported at a rate of > 1 tonne per annum for the next five years.

The notified polymer will be incorporated into a finished product. The finished product will be used in the manufacture of containers.

### 6. OCCUPATIONAL EXPOSURE

The notified polymer will be manufactured overseas and imported at a concentration of 100%. From the wharf, the notified polymer in 200 litre sealed containers will be distributed by road and rail to six container manufacturing plants Australia wide. Exposure during transportation will occur only in the event of accidental spills or mishandling.

Occupational exposure can occur during manufacture of the finished product (under local exhaust ventilation) and during washings of the manufacturing vessel, which occurs once a week. Between 6 to 9 personnel can potentially be exposed during these procedures. Occupational exposure may also occur during

manufacture of containers. The containers manufacturing equipment is designed to comply with standards based on the use of hazardous chemicals. This will also minimise exposure to the notified polymer to the 20 - 30 personnel involved in the metal manufacturing operations in each facility. These personnel will be exposed, in the worst case scenario, to the notified polymer for periods of up to 7 hours/day for approximately 200 days/year.

## **7. PUBLIC EXPOSURE**

There is negligible potential for public exposure to the notified polymer.

## **8. ENVIRONMENTAL EXPOSURE**

### **Release**

During transport significant spills of the polymer are not expected to occur. The Material Safety Data Sheet (MSDS) and material handling instructions provide directions for the proper containment, collection and disposal of wastes in accordance with local regulations.

Some waste will be generated by the manufacturing of the finished product. The waste results from the washing of the manufacturing vessel, which occurs once a week. It will be passed through the on-site waste water treatment plant. A maximum concentration of the notified polymer of 114 ppm will be released to the waste water treatment plant on this day, based on a maximum of 2 kg of finished product being released into the on-site waste water stream. Treatment of the water by the plant will remove small quantities of oil and grease using rotary drum filter. Thus the concentration entering the Melbourne Water Sewerage System will be much less than 114 ppm. The solid residue from the rotary drum filter will be collected in a bin and disposed of in registered landfill. This residue will contain < 40 kg per year of the notified polymer, assuming that 0.8 kg of the polymer is collected by the filter each week for 50 weeks per year.

The waste treatment plants of container manufacturing plants are designed to handle large quantities of waste similar to the notified polymer. As a result of container manufacture the notifier has estimated that a maximum of 100 ppm of the notified polymer in the waste water stream entering the plants treatment system. The waste is skimmed onto a mat in a large vat and the associated water percolates out through holes on the support structure. It is estimated that most of the finished product would be removed during this process as polyethylene glycols of this kind should adsorb to organic material (1). The solid waste is disposed of by a registered trade waste company. The total quantity of waste entering the sewerage system from the container plants water treatment facility is 30 ppm maximum. The notifier claims that an independent testing laboratory's results show an average level of 16 ppm of waste in these discharges. The concentration of the notified polymer should be substantially lower.

## **Fate**

The notified polymer is to be incorporated into a product for the manufacturing of containers. The finished product will be manufactured at one site in Victoria.

The majority of the waste generated in the manufacture and use of the finished product will be collected onsite and will be disposed of to approved landfill or incinerated by licensed waste disposal contractors. Any incineration of the notified polymer is expected to produce water and oxides of carbon. The low water solubility of the polymer indicates leaching from landfill sites is not expected. Any of the notified polymer that remains in the water phase of the waste mixture is treated in municipal waste water treatment facilities.

## **9. ASSESSMENT OF ENVIRONMENTAL EFFECTS**

Ecotoxicological data were not provided, which is acceptable for polymers of low concern according to the Act.

Bioaccumulation of the polymer is not expected due to its large molecular mass (2, 3). Additionally, polymers of this kind have been shown not to be toxic to aquatic organisms (4).

## **10. ASSESSMENT OF ENVIRONMENTAL HAZARD**

It is anticipated that the amount of the notified polymer released to the natural environment will be low. Wastes generated in the manufacture and use of the finished product will be collected by the respective plants waste treatment facilities and landfilled or incinerated.

The hazard to the environment is restricted by the expected limited release to the aquatic compartment, the relatively low solubility in water of the polymer and its high molecular weight.

The environmental hazard posed by the polymer is rated as low when manufactured into the finished product for use in the manufacture of containers.

## **11. ASSESSMENT OF OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY EFFECTS**

The notified chemical has been notified as a synthetic polymer of low concern under section 23 for the purposes of section 24A of the Act. The polymer meets the criteria for a synthetic polymer of low concern specified in regulation 4A of the Act and can, therefore, be considered to be of low hazard to human health.

Exposure during transport and handling is only expected to occur in the event of an accident.

Exposure of workers to the notified polymer during manufacture and use is expected to be minimal through use of local exhaust ventilation and equipment designed to comply with standards based on the use of hazardous chemicals.

The occupational and public health risk arising from transport, storage, use and disposal of the notified polymer is likely to be minimal.

## **12. RECOMMENDATIONS**

To minimise occupational exposure to the notified chemical the following guidelines and precautions should be observed:

- Spillage of the notified chemical should be avoided, spillages should be cleaned up promptly which should then be put into containers for disposal or recycling;
- local exhaust ventilation or good natural ventilation should be available during manufacture of the finished product;
- If engineering controls and work practices are insufficient to reduce exposure to the notified polymer to a safe level, then:
  - Eye protection should be selected and fitted in accordance with Australian Standards (AS) AS 1336 (5) and meet the requirements of Australian Standard/New Zealand Standards (AS/NZS) 1337 (6),
  - Industrial gloves should conform to the standards detailed in AS 2161 (7),
  - Industrial clothing should conform to the standards detailed in AS 2919 (8)
- Good personal hygiene should be practised to minimise the potential for ingestion; and

A copy of the MSDS should be easily accessible to employees

## **13. MATERIAL SAFETY DATA SHEET**

The attached MSDS for Uniflex 390 was provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (9).

This MSDS was provided by the applicant as part of the notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of the applicant.

#### 14. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the Act, secondary notification of Uniflex 390 shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

#### 15. REFERENCES

1. Anliker R., Moser P and Poppinger D. 1988, *Bioaccumulation of dyestuffs and organic pigments in fish. Relationships to hydrophobicity and steric factors*. Chemosphere 17(8): 1631-1644.
2. Gobas F. A. P. C., Opperhuizen A. and Hutzinger O. 1986, *Bioconcentration of hydrophobic chemicals in fish: relationship with membrane permeation*. Environmental toxicology and Chemistry 5: 637-646.
3. Kiewiet A. T., de Beer, K. G. M., Parsons J. R. and Govers H. A. J. 1996 *Sorption of linear alcohol ethoxylates on suspended sediment*. Chemosphere 32(4): 675-680.
4. Nabholz, J. V. Miller P. and Zeeman M. 1993, "Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act TSCA Section Five", in *Environmental Toxicology and Risk Assessment*, W. G. Landis, J. S. Hughes and M. A. Lewis (Eds), pp 40 - 55.
5. Standards Australia 1994, *Australian Standard 1336-1994, Eye protection in the Industrial Environment*, Standards Association of Australia Publ., Sydney.
6. Standards Australia/Standards New Zealand 1992, *Australian/New Zealand Standard 1337-1992, Eye Protectors for Industrial Applications*, Standards Association of Australia Publ., Sydney, Standards Association of New Zealand Publ, Wellington.
7. Standards Australia 1978, *Australian Standard 2161-1978, Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)*, Standards Association of Australia Publ., Sydney.
8. Standards Australia 1987, *Australian Standard 2919-1987, Industrial Clothing*, Standards Association of Australian Publ., Sydney.
9. National Occupational Health and Safety Commission 1994, *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)], Australian Government Publishing Service, Canberra.