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28 February 2001

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**Plascize L-9948B**

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**FULL PUBLIC REPORT****Plascize L-9948B****1. APPLICANT**

Sumitomo Australia Ltd. of Level 41, Governor Phillip Tower, 1 Farrer Place, Sydney NSW 2000 (ACN 000 371 497) has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) Plascize L-9948B.

**2. IDENTITY OF THE CHEMICAL**

The chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data and details of the polymer composition have been exempted from publication in the Full Public Report.

**Trade names:** Plascize L-9948B

**Number-average Molecular Weight:** >1000

**3. POLYMER COMPOSITION AND PURITY**

Details of the polymer composition have been exempted from publication in the Full Public Report.

**4. PLC JUSTIFICATION**

The notified polymer meets the PLC criteria.

**5. PHYSICAL AND CHEMICAL PROPERTIES**

Unless stated otherwise, physicochemical data provided refers to a 40% solution of notified polymer in ethanol.

Property	Result	Comments
Appearance	Light yellowish translucent viscous liquid	

<b>Boiling point</b>	78°C	
<b>Specific Gravity</b>	0.89	
<b>Water solubility</b>	Soluble	Test reports not provided.
<b>Particle size</b>	Not applicable	Polymer imported in solution
<b>Flammability</b>	Combustible (polymer)	
<b>Autoignition temperature</b>	Not determined	
<b>Explosive properties</b>	Not explosive (polymer)	
<b>Stability/reactivity</b>	Stable	
<b>Hydrolysis as function of pH</b>	Not determined	The polymer is not expected to undergo hydrolysis in the environmental pH range of 4 - 9.

### 5.1 Comments on physical and chemical properties

Due to the presence of ethanol, the polymer solution is classified as a Class 3 Dangerous Good (flammable liquid).

## 6. USE, VOLUME AND FORMULATION

### Use:

The polymer will be used as a component of hairspray.

### Manufacture/Import volume:

The polymer will be imported at the rate of <20 tonnes/year for 5 years.

### Formulation details:

Plascize L-9948B polymer will be imported as a 40% ethanol solution in 160kg steel drums. The polymer will be reformulated into hairspray in 200g aerosol cans containing 3.3% notified polymer. All reformulated polymer is destined for export.

## 7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
<b>Formulation</b>		
Manual decanting of polymer solution (40% notified polymer) from import containers into mixing tank (20 workers, 8 hours/day, 12 days/year)		
Dermal and/or ocular	Possible skin/eye contamination from splashes or if containers overfilled.	Safety glasses, rubber boots, coveralls, gloves, organic respirator worn.

#### Mixing and transfer to dispensing tank (6% notified polymer)

Dermal and/or ocular	Possible skin/eye contamination from splashes.	Enclosed mixing tank. Transfer via closed transfer lines. Safety glasses, rubber boots, coveralls, gloves, organic respirator worn.
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#### Dispensing into aerosol cans (3.3% notified polymer) (10 workers, 8 hours/day, 12 days/year)

Dermal and/or ocular, inhalation	Possible skin/eye contamination from spills and splashes. Possible inhalation of fugitive aerosol.	Pressure-pack filling system semi-enclosed with exhaust ventilation. Safety glasses, rubber boots, coveralls, gloves, organic respirator worn.
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#### Quality analysis sampling from mixing tank and testing (exposure data not provided by notifier)

Dermal and/or ocular	Possible skin/eye contamination from splashes or if sampling containers overfilled.	Testing in fume hood. Safety glasses, rubber boots, coveralls, gloves worn.
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#### Maintenance (exposure data not provided by notifier).

Dermal	Possible skin contamination from residual polymer.	Safety glasses, rubber boots, coveralls, gloves worn.
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### ***Transport and storage***

#### Unloading and drum handling (2 workers, 4 hours/day, 6 days/year)

Dermal and/or ocular	Possible skin/eye contamination from accidental container breach and spillage.	Safety glasses, rubber boots, coveralls worn.
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#### Storage (2 workers, 4 hours/day, 365 days/year)

Dermal and/or ocular	Possible skin/eye contamination from accidental container breach and spillage.	Safety glasses, rubber boots, coveralls worn.
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#### Loading into Export Containers (exposure data not provided by notifier)

Dermal and/or ocular	Possible skin/eye contamination from accidental container breach and spillage.	Safety glasses, rubber boots, coveralls worn.
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## **8. PUBLIC EXPOSURE**

The hair spray product containing the notified polymer will be manufactured in Australia then shipped to Japan for retail sale. It will not be sold locally. Consequently, as the only means of public exposure to the notified polymer would occur as the result of an accidental spill during transport, public exposure to the notified polymer throughout all phases of its life cycle is considered to be low.

## **9. ENVIRONMENTAL EXPOSURE**

### 9.1. Release

As the product will not be used in Australia, the only release will be during formulation of the hairspray aerosol.

Plascize L-9948B will be manually dispensed approximately once every month, into a fully enclosed mixing vessel. Any spill at this stage would be contained to the plant through bunding. Any spillage at filling will be reclaimed and disposed of to land-fill by a licensed waste management operator. The notifier estimates the maximum spillage during formulation of the hairspray products containing the notified polymer, to be approximately 1.0% (corresponding to <100 kg per annum of the notified polymer).

In addition, approximately 1.0% (corresponding to <100 kg per annum) of waste polymer will generated as a result of cleaning reformulation equipment and washing import drums. The cleaning process will involve washing the equipment and drums twice with water. The first wash will be collected, stored and removed by a licensed liquid waste contractor. The second wash will be flushed to the trade waste sewer where it will be pH adjusted, flocculated and coagulated. The solids will be removed to land-fill and the liquid will be pH checked before removal by a licensed liquid waste contractor.

### 9.2. Fate

Waste polymer generated from spillage (estimated to be <100 kg per annum) will be disposed of to land-fill by a licensed waste management operator. The non-volatile, viscous polymer in the manufactured hair spray products dries rapidly to a hard film when applied to hair. In land-fill it could be expected to adhere to the soil and degrade slowly via biotic and abiotic processes.

Waste polymer generated from washing reformulation equipment and import drums (estimated to be 96 kg per annum) will be disposed of in the following manner. A licensed waste contractor will remove the first wash, however the fate of this waste was not specified. The second wash will be released after treatment at the formulation plant, to the trade waste sewer. If the notified polymer in the liquid waste is released to the sewer and ultimately receiving waters, it is expected that despite treatment prior to release, a portion will remain in solution due to its high solubility in water.

The polymer is not expected to cross biological membranes due to its high molecular weight and as such should not bioaccumulate (Connell, 1990).

## 10. EVALUATION OF HEALTH EFFECTS DATA

No toxicological data were submitted.

The health hazards of the additives and adjuvants are tabulated below.

Chemical	Health hazards			Regulatory controls
Ethanol	Central nervous system depressant			Exposure standard 1000ppm (NOHSC, 1995)
Propane	Asphyxiant	and explosion		Atmospheric oxygen must be

hazard

maintained at a partial pressure of at least 18.2 kPa (NOHSC, 1995).

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## **11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA**

No ecotoxicological data were submitted.

## **12. ENVIRONMENTAL RISK ASSESSMENT**

The notifier predicts that formulation of the hairspray will take place approximately once every month, therefore generating 16 kg of waste polymer on one day every month, half of which will be disposed of to land-fill. As a worst case scenario it will be assumed the remaining half is released to sewer.

The maximum concentration of the polymer in receiving waters is estimated to be approximately 3 ppb if the following is assumed: on one day 8 kg of waste is released to the sewer; the daily output from an average urban sewage treatment plant is 250 ML; on release to receiving waters (after treatment at the sewage treatment plant) the effluent is further diluted by a factor of 10. The polymer is of high molecular weight and unlikely to bioaccumulate. The counter ion which contains an amine group, appears to be only slightly toxic based on its structural similarity to a close analogue. The polymer contains carboxylate functionality and therefore may show some aquatic toxicity. However, toxicity is at a maximum around 8.6 ppm when the carboxylic acid is on every other carbon on the chain (Boethling and Nabholz, 1997). Consequently, release of the polymer to the water compartment at the estimated level is well below toxic levels and unlikely to present a long term environmental hazard.

The 96 kg per annum of solid waste generated and disposed of to landfill would be expected to degrade slowly to gases, for example carbon dioxide, through abiotic and biotic processes. Although water soluble, the polymer is expected to be contained to landfill sites through reaction with di-valent metal ions such as calcium and magnesium. Consequently, the environmental hazard of the notified polymer in landfill is expected to be low.

## **13. HEALTH AND SAFETY RISK ASSESSMENT**

### **13.1. Hazard assessment**

No toxicological data were submitted. However, the polymer meets the criteria for consideration as a Polymer of Low Concern and so on this basis no significant health hazards are expected and is unlikely to be a hazardous substance according to the NOHSC Approved Criteria for Classifying Hazardous Substances (NOHSC, 1999b).

The polymer is imported in ethanol and, because of the flammability of ethanol, the imported solution is classified as a Class 3 Dangerous Good. In addition, the Material Safety Data Sheet (MSDS) for this solution warns that exposure may produce central nervous system

depression and irritation to eyes, skin, mucous membranes, respiratory and gastrointestinal tracts. The NOHSC exposure standard for ethanol is 1000ppm TWA (NOHSC, 1995).

### **13.2. Occupational health and safety**

Exposure to the notified polymer is not expected during import and storage of the polymer solution nor export of end product hairspray. Import drums of polymer and export pressure-packs of hairspray are not opened prior to formulation and before end-use respectively and so occupational exposure of import/storage/export workers to the polymer would only be envisaged in the case of accidental puncture of drums/pressure-pack containers.

For workers involved in manufacture of the end product, the main exposure routes will be dermal and ocular from splashes and spills. This is most likely to occur during the initial manual decanting of polymer from import drums into the mixing vessel and during quality analysis sampling from the mixing vessel. Additional inhalation exposure to the polymer may occur via aerosols generated during filling of pressure packs. Exposure to ethanol solvent may also occur. Maintenance workers may also experience dermal exposure to the polymer.

A combination of personal protective equipment worn by workers and engineering controls will control exposure to the polymer and ethanol solvent. The low possibility of exposure and the low health hazard associated with the notified polymer renders the health risk for these workers low.

### **13.3. Public health**

Based on its low potential for public exposure and expected low toxicity, the notified polymer is unlikely to pose a significant risk to public health when used in the proposed manner.

## **14. MSDS AND LABEL ASSESSMENT**

### **14.1. MSDS**

The MSDS for Plascize L-9948B 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 part of the assessment report. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### **14.2. Label**

The label for Plascize L-9948B 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.

## **15. RECOMMENDATIONS**



No specific precautions are required to control exposure to the notified polymer. However, to minimise occupational exposure to Plascize L-9948B which contains ethanol, the following guidelines and precautions should be observed:

- Protective eyewear, chemical resistant industrial clothing and footwear and impermeable gloves should be used during use. Where engineering controls and work practices do not reduce vapour exposure to safe levels, an organic vapour respirator should also be used;
- Spillage of the notified chemical should be avoided. Spillages should be cleaned up promptly with absorbents which should then be put into containers for disposal;

A copy of the MSDS should be easily accessible to employees.

If products containing the notified polymer are hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999b), workplace practices and control procedures consistent with State and territory hazardous substances regulations must be in operation.

Guidance in selection of protective eyewear may be obtained from Australian Standard (AS) 1336 (Standards Australia, 1994) and Australian/New Zealand Standard (AS/NZS) 1337 (Standards Australia/Standards New Zealand, 1992); for industrial clothing, guidance may be found in AS 3765.2 (Standards Australia, 1990); for impermeable gloves or mittens, in AS 2161.2 (Standards Australia/Standards New Zealand, 1998); for occupational footwear, in AS/NZS 2210 (Standards Australia/Standards New Zealand, 1994a); for respirators, in AS/NZS 1715 (Standards Australia/Standards New Zealand, 1994b) and AS/NZS 1716 (Standards Australia/Standards New Zealand, 1994c).

## 16. REQUIREMENTS FOR SECONDARY NOTIFICATION

Secondary notification may be required if:

- (i) any of the circumstances stipulated under subsection 64(2) of the Act arise. If any importer or manufacturer of (the notified chemical) becomes aware of any of these circumstances, they must notify the Director within 28 days; or
- (ii) the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

## 17. REFERENCES

Boethling R.S. and Nabholz J.V. (1997) Environmental Assessment of Polymers under the US Toxic Substances Control Act. In: Ecological Assessment of Polymers, Hamilton J.D. and Sutcliffe R. (Eds), Van Nostrand Reinhold, New York.

Connell D. W. (1990) General characteristics of organic compounds which exhibit bioaccumulation. In Connell D. W., (Ed) Bioaccumulation of Xenobiotic Compounds. CRC Press, Boca Raton, USA.

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

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Standards Australia (1990) Australian Standard 3765.2-1990, Clothing for Protection against Hazardous Chemicals Part 2 Limited protection against specific chemicals. Standards Association of Australia.

Standards Australia (1994) Australian Standard 1336-1994, Eye protection in the Industrial Environment. Standards Association of Australia.

Standards Australia/Standards New Zealand (1992) Australian/New Zealand Standard 1337-1992, Eye Protectors for Industrial Applications. Standards Association of Australia/Standards Association of New Zealand.

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Standards Australia/Standards New Zealand (1994b) Australian/New Zealand Standard 1715-1994, Use and Maintenance of Respiratory Protective Devices. Standards Association of Australia/Standards Association of New Zealand.

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Standards Australia/Standards New Zealand (1998) Australian/New Zealand Standard 2161.2-1998, Occupational protective gloves, Part 2: General requirements. Standards Association of Australia/Standards Association of New Zealand.