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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in Uralac SE901 S2G3-55

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Copies of this full public report may also be requested, free of charge, by contacting the Administration Coordinator on the fax number below.

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FULL PUBLIC REPORT**Polymer in Uralac SE901 S2G3-55****1. APPLICANT**

PPG Industries Australia Pty Ltd of McNaughton Road, Clayton Victoria 3168 (ABN 82 055 500 939) has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) 'Polymer in Uralac SE901 S2G3-55'.

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.

Marketing Names:

- 709-Z8726 HOBA 8726 Overprint Varnish (product containing the notified polymer)
- Uralac SE901 S2G3-55

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

Property	Result	Comments
Appearance	Colourless to light yellow viscous liquid	

Boiling point	Not determined	
Density	1.04 kg/m ³	Attributed to solvents.
Water solubility	Not determined	Solubility expected to be in low ppm range, based on results from similar chemicals.
Particle size	Not determined	Polymer always in solvent.
Flammability	Not flammable	
Autoignition temperature	240°C	Derived from solvent.
Explosive properties	Not an explosive	
Stability/reactivity	Stable	Expected to be stable under normal conditions.
Hydrolysis as function of pH	Not determined	Contains ester linkages that could be expected to undergo hydrolysis under extreme pH; Significant hydrolysis is unlikely in the environmental pH range of 4 to 9.
Partition coefficient	Not determined	Low water solubility, and likely hydrophobic nature indicates partitioning into the octanol phase.
Adsorption/desorption	Not determined	Expected to be immobile in soil due to the high molecular weight and low water solubility.
Dissociation constant	Not determined	Does not contain functional groups able to undergo dissociation.

6. USE, VOLUME AND FORMULATION

Use:

The polymer will be imported as a 35% component in a coating known as 709-Z8726 HOBA 8726 Overprint Varnish for use in packaging coatings (aerosol cans).

Manufacture/Import volume:

Up to 10 tonnes of the notified polymer will be imported into Australia each year for the first five years.

Formulation details:

The polymer will be imported into Australia in 20L open head ring clamped tins. No further formulation will be done in Australia.

7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
<i>Importation and storage</i>		
<i>Waterside and transport workers (6 individuals, exposed 2 hours/day, 10 days/year)</i> <i>Warehouse workers (4 individuals, exposed 1 hour/day, 10 days/year)</i>		
Exposure unlikely	The imported steel cans will not be opened on importation or during transport to storage sites or at storage warehouses. Exposure to the notified polymer, at 35% in the finished product, will only occur in the event of accidental spillage.	
<i>End Users</i>		
<i>Coating applicators, maintenance staff (20 individuals, exposed 8 hours/day, 200 days/year)</i>		
Dermal and inhalation	Containers are opened, paint pumped into a tray; applied by roller on article; The whole process is remote controlled. The exposure to maintenance workers would be limited to small volumes of notified polymer. The coated article is baked in an oven to produce an inert and hard film and the notified polymer would be unavailable for exposure or absorption.	Organic vapour respirator when necessary, goggles, impermeable glove, protective overalls and safety shoes will normally be worn during coating application and maintenance work. Enclosed cabinet containing rollers and trays; local exhaust ventilation.

8. PUBLIC EXPOSURE

Imported coating products containing the notified polymer will not be sold to the general public, and will be used in industrial application only.

Public exposure may occur during a transportation accident. In the event of a spillage during transportation, storage and application of the polymer coatings, the spill should be handled as specified in the product MSDS.

After application, the new polymer becomes an integral part of a hard durable coating on the surface of packaging articles. The public exposure to the notified polymer through contact with the cured film is minimal.

9. ENVIRONMENTAL EXPOSURE

9.1. Release

The product is only expected to be stored and used at one customer site in NSW.

The coating is transported in closed containers to the roller coating machine where it is pumped to a tray and picked up by a roller for application to the article. The tray and rollers are located in a closed cabinet with local exhaust ventilation to capture solvent fumes. The application process is controlled from a panel external to the application area. As such, any splashes or spills are contained within this area.

The coated article is then baked in an oven to produce a hard and inert film. Solvent vapour is trapped and processed by the waste air treatment system.

Any splashes or spillage occurring during this process will be contained within the plant. The notifier estimates that in the order of 100 kg per annum will be released from spills and splashes with a further 200 kg per annum resulting from equipment cleaning. This will be removed by licensed waste contractors for landfill or incineration.

A further 100 kg per annum of residual polymer will remain in import containers which again are disposed of to landfill.

End use articles which contain the notified polymer following application (eg aerosol cans) will ultimately end up in landfill in a diffuse manner around the country.

9.2. Fate

The majority of the notified polymer from spills and equipment cleaning will go to landfill where it is expected to be immobile due to the low water solubility.

Release to water is expected to be minimal, and in the event of release to sewer, most of the polymer is likely to partition to, and share the fate of the sewerage sludge. In the event that the notified polymer does enter waterways, it would be expected to associate with the sediments. The polymer is not expected to cross biological membranes due to its high molecular weight and is therefore unlikely to bioaccumulate (Connell, 1990).

The majority of the notified polymer will be released into the environment through disposal of end products in landfill. The notified polymer in these products will slowly degrade through abiotic and biotic processes.

10. EVALUATION OF HEALTH EFFECTS DATA

No toxicology data has been submitted on the notified polymer. Its high molecular weight is likely to limit its absorption across biological membrane. The MSDS for 709-Z8726 HOBA 8726 Overprint Varnish (containing 35% notified polymer, solvent naphtha, heavy arom. and light arom., 2-butoxyethanol, isobutyl alcohol, formaldehyde and 2-butoxyethyl acetate) provides brief health hazard information. It may be an eye irritant. Repeated or prolonged skin contact may lead to irritant, allergic contact dermatitis, or skin sensitization. Swallowing can result in nausea, vomiting and central nervous system depression. Inhalation of vapor will be irritant to the mucous membranes and respiratory tract, and may result in nausea, headaches,

dizziness, and central nervous system depression. Most of these effects are attributed to solvents in the product.

Health Effects of the Constituents and Hazardous Impurities of the Notified Polymer and its Additives/Adjuvants & Regulatory Controls

Constituents:

Hazardous residual monomers are present in the polymer solution at concentrations below their respective concentration cut off levels as listed in the NOHSC List of Designated Hazardous Substances (NOHSC 1999a).

Hazardous Impurities:

None.

Additives/Adjuvants

The polymer occurs in a solvent formulation comprising:

Additive/Adjuvants	Risk Phrase/ Poisons Schedule	Regulatory controls: National Exposure Standard	Reference
Solvent naphtha, heavy aromatic	R65- harmful may cause lung damage if swallowed/Schedule S5		NOHSC, 1999a / AHMAC, 2001
2-butoxyethanol	R20/21/22- harmful by inhalation, in contact with skin and if swallowed, R-37- irritating to respiratory system/ Schedule S6	TWA: 25 ppm (121 mg/m ³)	NOHSC, 1999a / AHMAC, 2001/ NOHSC, 1995

11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA

No ecotoxicological data were provided.

12. ENVIRONMENTAL RISK ASSESSMENT

The majority of the notified polymer will be released into the environment through disposal of end products containing the polymer in the coating to landfill. The notified polymer in these products will slowly degrade through abiotic and biotic processes.

The notifier estimates that less than 500 kg per annum will be released to the environment from the importation, and use of the notified polymer. This will be from spills, equipment cleaning and residues in import containers where the majority will be disposed of to landfill.

Release to the sewer is expected to be insignificant. In landfill the polymer is expected to be immobile due to its low water solubility and will become part of the soil matrix.

In the event of the polymer entering waterways, it would be expected to associate with the sediments. The polymer is not expected to cross biological membranes due to its high molecular weight and is therefore not expected to bioaccumulate (Connell, 1990).

13. HEALTH AND SAFETY RISK ASSESSMENT

13.1. Hazard assessment

No toxicological data was provided and the notified polymer cannot be assessed against the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999b). Polymers of high molecular weight do not readily cross the skin or other biological membranes, and the overall toxicity is expected to be low.

MSDS for the imported end use product 709-Z8726 HOBA 8726 Overprint Varnish indicates that it is a possible skin, eye and a respiratory irritant. The MSDS lists a number of potential health effects due to inhalation, or repeated skin contact namely breathing problems, cardiac arrest and irritant contact dermatitis. These relate mainly to the solvents present in the product rather than the notified polymer. The imported product 709-Z8726 HOBA 8726 Overprint Varnish is classed as a Class 3 dangerous good (flammable liquid) and a Schedule Poison (S6) (AHMAC, 2001) because of the solvent content. Three of the solvents in the end use product have NOHSC exposure standards.

13.2. Occupational health and safety

There is little potential for significant occupational exposure to the notified polymer during transport and storage of the imported end use product.

Coating applicators may be exposed to the notified polymer during application of the varnish. There is some opportunity for exposure during adhesive stirring and thinning with solvent. Personal protective equipment will be employed to reduce exposure. The coating process is a closed system, therefore is not expected to result in worker exposure.

Exposure to the polymer during and following coating may occur due to spillage during maintenance work. As these operations involve small volumes, exposure is expected to be limited. The notifier states that personal protective equipment such as protective clothing, gloves, goggles and respirators is used. Maintenance workers also rely on personal protective equipment to limit exposure. The use of engineering controls and protective equipment is necessary to prevent exposure to solvent components via dermal, inhalation and ocular routes. The coating room should be equipped with adequate air extraction. The employer must ensure that a respirator is used if any aerosols are likely to be formed during mixing, thinning or application of the varnish and impervious gloves, goggles and protective clothing worn.

A number of ingredients in the varnish containing the notified polymer (solvent naphtha heavy aromatic, 2-butoxyethanol, formaldehyde, 2-butoxyethyl acetate) may present health hazards to workers. They are listed as appropriate in the relevant MSDS, together with the

NOHSC exposure standards (NOHSC, 1995). For the use of varnish, employers are responsible for ensuring that the relevant NOHSC exposure standards are not exceeded in the workplace.

The solutions containing the notified polymer are flammable due to their solvent content. Precautions must be taken to avoid sources of ignition, e.g. use of earthing leads. Operators should wear antistatic overalls and footwear.

Once the applied coating has hardened, the polymer will not be separately available for exposure or absorption. The wastes containing the notified polymer may be hazardous substances on the basis of the solvent content and the precautions used for the additional materials should be adequate for protection from the notified polymer. In addition, much of the polymer will be crosslinked and hardened, and therefore immobile, by the time of disposal.

The polymer size, mode of use, use of personal protective gear and *in situ* engineering controls indicate that significant risks to human health through occupational exposure to the notified polymer are unlikely. No specific control measures are required to reduce the risk of skin, eye and respiratory irritation due to the notified polymer.

Overall, the polymer is of low concern to human health although controls indicated by the notifier should be adhered to reduce risk of adverse health effects due to other ingredients in the final varnish products.

13.3. Public health

The public will only come into contact with the coating, after the notified polymer has become an integral part of a hard durable coating on the surface of packaging articles. Therefore, the potential risk for public exposure to the notified polymer is considered to be low.

14. MSDS AND LABEL ASSESSMENT

14.1. MSDS

The MSDS of the product containing the 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 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 the product containing the 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.

15. RECOMMENDATIONS

Control Measures

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer as introduced in the product 709-Z8726 HOBA 8726 Overprint Varnish:
 - NOHSC exposure standards for all components of the polymer solution are not exceeded in the workplace.
 - Local exhaust ventilation and enclosed cabinet for coating operations.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced in the product 709-Z8726 HOBA 8726 Overprint Varnish:
 - Workers should receive regular instruction on good occupational hygiene practices in order to minimise personal contact, contamination of the work environment with products, including those containing the notified polymer.
 - Avoid contact with sources of ignition.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer as introduced in the product 709-Z8726 HOBA 8726 Overprint Varnish:
 - Respiratory protection, protective eyewear, impermeable clothing and gloves, and occupational footwear are required for coating applicators.

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.

15.1 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 Section 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 Section 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.

16. REFERENCES

Australian Health Ministers Advisory Council (AHMAC) (2001) Standard for the Uniform Scheduling of Drugs and Poisons, Australian Government Publishing Service, Canberra 2001.

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.

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

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

National Occupational Health and Safety Commission (1999a) List of Designated Hazardous Substances [NOHSC:10005(1999)]. Australian Government Publishing Service, Canberra.

National Occupational Health and Safety Commission (1999b) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)]. Australian Government Publishing Service, Canberra.