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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in Autosurfacers 920 and 940

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For enquiries please contact the Administration Coordinator at:

Street Address: 92 Parramatta Rd Camperdown, NSW 2050, AUSTRALIA

Postal Address: GPO Box 58, Sydney 2001, AUSTRALIA

Telephone: (61) (02) 9577-9466 **FAX** (61) (02) 9577-9465

Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT**Polymer in Autosurfacers 920 and 940****1. APPLICANT**

Wattyl Australia Pty Ltd of 1 - 19 Graingers Road WEST FOOTSCRAY VIC 3012 has submitted a limited notification statement in support of their application for an assessment certificate for Polymer in Autosurfacers 920 and 940 HS.

2. IDENTITY OF THE CHEMICAL

Polymer in Autosurfacers 920 and 940 HS is not considered to be hazardous based on the nature of the chemical and the data provided. Therefore the chemical name, CAS number, molecular and structural formulae, spectral data, details of the polymer composition and details of exact import volume have been exempted from publication in the Full Public Report and the Summary Report.

Trade Name: Autosurfacers 920 and Autosurfacers 940 HS
(formulations containing less than 30% polymer)

Method of Detection and Determination: infrared spectroscopy

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa: yellow, clear viscous liquid

Boiling Point: 108 - 145°C (products Autosurfacers 920 and 940 HS)

Comments on Physico-Chemical Properties

No quantitative physico-chemical data was submitted with this notification as the polymer is never isolated. The comments below are qualitative only, and deduced from the overall chemical constituents and structure of the material (see previous paragraph).

The polymer is not expected to have a well defined melting point, and when heated would probably decompose without melting. The polymer will have negligible vapour pressure due to its high molecular weight.

The polymer contains no polar functionalities which would confer solubility in water, and this together with the high hydrocarbon content indicates very low water solubility. Although the polymer molecules contain many ester groups which are susceptible to hydrolysis at very high or very low pH, these are unlikely to undergo significant degradation in the normal environmental pH range of pH 4 to 9. The low water solubility will preclude contact between water and the ester groups, which will further hinder hydrolysis.

The polymer would be expected to have reasonable solubility in oil, and consequently would be expected to partition into the oil phase. Similarly, the material could be expected to adsorb fairly strongly onto organic matter, and would consequently become associated with the organic component of soils and sediments.

The polymer molecules contain no inherently acidic or basic functional groups, and so will be uncharged over the full environmental pH range.

4. PURITY OF THE CHEMICAL

Degree of Purity:	> 98%
Toxic or Hazardous Impurities:	less than 1.5%
Non-hazardous Impurities (> 1% by weight):	none
Additives/Adjuvants:	none

5. USE, VOLUME AND FORMULATION

The notified chemical is for use in paints for resurfacing automobiles. It will be imported at a rate of less than 10 tonnes per year for the first 5 years.

6. OCCUPATIONAL EXPOSURE

The notified polymer is to be imported as a solvent solution in 200 L steel drums. Transport and storage workers should only be exposed in the event of an accident or leaking drums.

The polymer solution is transferred by pumping into a mixing vessel at the notifier's site. The mixing vessel is enclosed and local exhaust ventilation is used to remove solvent vapours. Potential exposure during these operations is likely to be limited to drips when disconnecting lines from the pump.

Following mixing, the products Autosurfacers 920 (Part A) and 940 HS (Part A) are automatically filled into 1 L and 4 L containers. The containers are stored at the

notifier's warehouse prior to distribution to distributors and finally panel shops.

Panel shops employ each of the two products as part A of a two-part system and they are mixed with hardener prior to spraying onto vehicles as a primer surfacer. Spraying is expected to be conducted in a spray booth with adequate ventilation thus minimising worker exposure. In the absence of adequate ventilation, the potential for inhalational exposure to the paint is expected to be high.

7. PUBLIC EXPOSURE

The formulated products Autosurfacers 920 and 940 HS will be available to automotive trade customers only. During their application to automobiles the public is not expected to be exposed to the notified polymer. Coatings applied on top of the primer bond to the surface. Minimal exposure may occur if the primer on the automobile is accidentally exposed due to damage to the overlaying paint.

Minor public exposure may result from disposal of unused primer, or accidental spillage of the notified polymer during transport and storage, and during formulation.

8. ENVIRONMENTAL EXPOSURE

Release

The notified polymer will be blended with other polymers and solvents and some material is likely to be lost during this process. The notifier indicates that up to 10% of the notified material will be lost during production of the products Autosurfacers 920 (Part A) and 940 HS (Part A), and it is expected that this would be treated with other solvent wastes and become assimilated in waste sludge from the solvent recovery/treatment facility. Used drums will be sent for refurbishing and recycling, and residual material left in drums (around 1-2%) will be washed out and treated with other solvent wastes. Again, the polymer residuals will become associated with the sludge from the treatment facility, and this is expected to be deposited into landfill.

During application of the products containing the notified material, it is expected that there is a high potential for significant release, since the products are applied using spray techniques and large quantities can be lost through overspray. In cases where spray application is performed in open workshop areas (as is the case in most panel repair shops) up to 50% of the paint can be lost in this manner. However, this material will be contained within a paint formulation which could be expected to cure into a semi-solid mass which would then be collected and disposed of through deposition into landfill, or possibly by incineration.

Fate

Although it is likely that over half the polymer will be released as a consequence of product formulation (10%) and use (up to 50%), all of this will be incorporated into a semi-solid polymer mass, and is expected to be placed into landfill or be incinerated.

In a landfill the polymer will be immobile, and is expected to eventually be degraded to water, methane and carbon dioxide through the action of very slow biological and abiotic processes operative in these environments. Incineration would completely destroy the polymer with formation of water vapour and oxides of carbon.

The remaining polymer will be associated with primer coatings on the panels of automobiles, and its fate will be that of the panels themselves at the end of their serviceable lives. These will either be recycled for metal recovery in which case the polymer will be destroyed in the furnaces, or deposition into landfill, where the polymer's fate will be as described above.

9. EVALUATION OF TOXICOLOGICAL DATA

Toxicological data are not required for polymers of NAMW greater than 1 000 according to the Act and no data were submitted for the notified polymer.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

Ectotoxicological data are not required for polymers of NAMW greater than 1 000 according to the Act and no data were submitted for the notified polymer.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The environmental hazard from the notified polymer is considered to be low when the material is used in the manner indicated by the notifier. It is likely that most of the polymer released during product formulation and application will be placed into landfill, where it will be immobile and could be expected to be slowly degraded to water and harmless gases. If incinerated the polymer will be completely destroyed with release of water vapour and carbon oxides.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

The notified polymer has a NAMW greater than 1 000 which should limit potential systemic effects by minimising absorption across biological membranes. The levels of residual monomers would not result in the polymer being classified as hazardous according to the National Commission's *Approved Criteria for Classifying Hazardous Substances* (2). There is a significant level of low molecular weight species with a NAMW between 500 and 1 000. However, in this range absorption across biological membranes is inhibited. The most hazardous of the component monomers has a concentration cutoff of 5% according to the National Commission's *List of Designated Hazardous Substances* (3) (The NOHSC List) and should not render the polymer hazardous due to its presence in the low molecular weight fraction. Similar conclusions can be drawn for the other monomers. A further mitigating factor is likely to be containment of the low molecular weight fraction within the polymer matrix which will limit the potential for absorption across biological membranes and local irritant effects.

Transport and storage workers are unlikely to be exposed to the notified polymer except in the event of an accident or leaking packaging.

The notifier will reformulate the imported polymer solution into part A of a 2-part primer/resurfacer for automobiles at their own site. The polymer solution is pumped into an enclosed mixing vessel fitted with vapour extraction. Following mixing with various additives, the paint components are drummed off into 1 L and 4 L containers in an automated fashion which limits exposure to the hazardous solvents and, therefore, limits exposure to the notified polymer.

The imported polymer solution contains ethyl benzene at 6.2% which is below the concentration cutoff of 25% according to the NOHSC List. It also contains xylene at 18.8% which is above the concentration cutoff of 12.5% so that the formulation should be considered harmful by inhalation, ingestion and through skin contact.

Part A of the primer/resurfacer (containing the notified polymer) is mixed with hardener in panel shops immediately prior to spraying. The potential for inhalational exposure to spray is high unless ventilated spray booths are employed. Some exposure may also occur during clean-up and maintenance.

The risk of adverse health effects to workers and members of the public from transport, storage, use or disposal of the notified polymer is expected to be minimal given its likely low hazard and limited opportunity for exposure. However, the xylene contained in both Autosurfacer 920 Part A and 940 HS Part A are hazardous and render these formulations harmful by all routes and irritant to eyes and skin.

13. RECOMMENDATIONS

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

- 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;
- Good personal hygiene should be practised to minimise the potential for ingestion;
- A copy of the relevant Material Safety Data Sheets (MSDS) should be easily accessible to employees.

When decanting and transferring the imported polymer solution prior to mixing the primer components good general and local exhaust ventilation should be employed to minimise solvent exposure. The National Commission's exposure standard for xylene (TWA 350 mg.m⁻³, STEL 655 mg.m⁻³) (4) should be adhered to and the following personal protective equipment should be employed:

- Safety goggles should be selected and fitted in accordance with Australian Standard (AS) 1336 (5) to comply with Australian/New Zealand Standard (AS/NZS) 1337 (6);
- Industrial clothing should conform to the specifications detailed in AS 2919 (7);
- Impermeable gloves or mittens should conform to AS 2161 (8);
- All occupational footwear should conform to AS/NZS 2210 (9);

In addition, under conditions where exposure to xylene is likely to exceed the exposure standard, respiratory protection conforming to AS/NZS 1715 (10) and AS/NZS 1716 (11) should be employed.

End users of the primer components should employ good general ventilation during transfer and mixing operations and should apply the finished primer in down draft spray booths. Again the National Commission's exposure standard for xylene (TWA 350 mg.m⁻³, STEL 655 mg.m⁻³) (4) should be adhered to and personal protective equipment as described above should be employed.

14. MATERIAL SAFETY DATA SHEET

The MSDS for Autosurfacers 920 Part A and 940 HS Part A were provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (12).

These MSDS were provided by the applicant as part of the notification statement. They are reproduced here as a matter of public record. The accuracy of this information remains the responsibility of the applicant.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

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

16. REFERENCES

1. Sax, N.I. & Lewis, R.J. 1996, *Dangerous Properties of Industrial Materials*, 9th edn, Van Nostrand Reinhold, New York.
2. National Occupational Health and Safety Commission 1994, *Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)]*, Australian Government Publishing Service, Canberra.

3. National Occupational Health and Safety Commission 1994, *List of Designated Hazardous Substances [NOHSC:10005(1994)]*, Australian Government Publishing Service, Canberra.
4. 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.
5. Standards Australia 1994, *Australian Standard 1336-1994, Eye protection in the Industrial Environment*, Standards Association of Australia, Sydney.
6. 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, Sydney/Wellington.
7. Standards Australia 1987, *Australian Standard 2919-1987, Industrial Clothing*, Standards Association of Australia, Sydney.
8. Standards Australia 1978, *Australian Standard 2161-1978, Industrial Safety Gloves and Mittens (excluding electrical and medical gloves)*, Standards Association of Australia, Sydney.
9. Standards Australia/Standards New Zealand 1994, *Australian/New Zealand Standard 2210-1994, Occupational Protective Footwear*, Standards Association of Australia/Standards Association of New Zealand, Sydney/Wellington.
10. Standards Australia/Standards New Zealand 1994, *Australian/New Zealand Standard 1715-1994, Selection, Use and Maintenance of Respiratory Protective Devices*, Standards Association of Australia/Standards Association of New Zealand, Sydney/Wellington.
11. Standards Australia/Standards New Zealand 1994, *Australian/New Zealand Standard 1716-1994, Respiratory Protective Devices*, Standards Association of Australia/Standards Association of New Zealand, Sydney/Wellington.
12. 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.