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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in SETAL 216 WX-65/216 SH-60

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Director
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FULL PUBLIC REPORT**Polymer in SETAL 216 WX-65/216 SH-60****1. APPLICANT**

Akzo Nobel Pty Ltd of 115 Hyde Road, Yeronga, Queensland 4104 (ABN 59 000 119 424) has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) 'Polymer in SETAL 216 WX-65/216 SH-60'.

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 name: Sikkens Yacht Paints

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

The properties are for the polymer solution (in $\geq 35\%$ solvent) rather than the notified polymer.

Property	Result	Comments
Appearance	Colourless solution	
Boiling point	185 °C	
Density	0.94 kg/m ³	
Water solubility	Insoluble	Expected to be low based on its high molecular weight and monomer

		composition.
Particle size	Not determined	Imported as an emulsion.
Flammability	58 °C	Derived from solvent
Autoignition temperature	> 210 °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, the monomer composition and low water solubility.
Dissociation constant	Not determined	Does not contain functional groups able to undergo dissociation.

6. USE, VOLUME AND FORMULATION

Use:

The notified polymer will be used in the manufacture of varnishes used in topcoats for leisure and commercial boats. It will be applied above the water line.

Manufacture/Import volume:

The notified polymer will not be manufactured in Australia. It will be imported in 500 mL, 750 mL and 5 L steel cans at 3000 kg per annum for the first 5 years.

Formulation details:

The notified polymer will be imported as a component in finished varnishes. The percentage concentration of notified polymer in the final products varies and is less than 50%. The exact details have been exempted from publication in the Full Public Report. It will not be reformulated in Australia.

7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
<i>Importation</i>		

Waterside and transport workers (6-8 individuals, exposed 2 hours/day, 10 days/year)

Exposure unlikely	The imported steel cans will not be opened on importation or during transport to storage sites. Exposure to the notified polymer, at less than 50% in the finished product, will only occur in the event of accidental spillage.	Coveralls and safety shoes will be worn.
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Storage

Warehouse workers (4-6 individuals, exposed 2 hours/day, 50 days/year)

Exposure unlikely	The imported steel cans will not be opened during storage in banded areas. Exposure to the notified polymer, at less than 50% in the finished product, will only occur in the event of accidental spillage.	Coveralls and safety shoes will be worn.
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Retailers (100 individuals, exposed 1 hour/day, 100 days/year)

Exposure unlikely	The imported steel cans will not be opened during retail. Exposure to the notified polymer, at less than 50% in the finished product, will only occur in the event of accidental spillage.	No controls required.
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End Users

Paint applicators (1000 individuals (professionals and the public), exposed 8 hours/day, 50 days/year)

Dermal and inhalation	Painting operations are conducted on land using either brushes, rollers or by spraying. Approximately 10% will be applied via spraying. Up to 4 coats may be needed. Once the varnish hardens, the notified polymer will be trapped and unavailable for exposure or absorption.	Protective overalls and safety shoes will normally be worn during brush application. Masks, chemical goggles or face shields, impermeable gloves and protective overalls will be worn during spray application. Qualified industrial spray painters would follow the National Guidance Material for Spray Painting.
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8. PUBLIC EXPOSURE

Varnish products will be available to the public. The varnish will be applied without thinning to timber boats (on land) by brush or rollers. During varnish application there will be significant exposure (of the painter) to the notified polymer by the dermal and inhalation routes. Once the varnish dries, the notified polymer will be trapped within the film and unavailable for release. Exposure may occur to other members of the public in the event of an accidental spill during transportation. The MSDS for Sikkens Clear Varnish UV specifies appropriate clean-up procedures.

9. ENVIRONMENTAL EXPOSURE

9.1. Release

The notifier estimates that up to 180 kg per annum of notified polymer waste will be generated during varnish application assuming a use rate of 3 tonnes per annum. Waste will be derived from:

Residues in the import containers:	≤ 75 kg/annum
Equipment cleaning:	≤ 60 kg/annum
Overspray:	≤ 45 kg/annum

Less than 10% of the varnish is estimated to be applied by spraying (the label indicates the varnish should be applied by brush); therefore wastes generated are expected to be lower.

Brushes and spray equipment used to apply the varnish containing the notified polymer will be washed in paint thinners and the wastes disposed of according to local government regulations, either in landfill, by incineration or poured onto the ground.

Where possible, overspray will be collected by protective sheeting and disposed of to general household waste. It is expected that import drums containing residual polymer solution will be disposed of to landfill.

9.2. Fate

The waste generated from cleaning brushes and spray equipment will be disposed of to landfill or poured onto the ground, where the notified polymer is expected to associate with the soil matrix and not leach into the aquatic environment due to its low water solubility.

The empty import drums with any remaining residual solid material will be disposed of to landfill, where any escaping notified polymer would associate with the soil matrix and not leach into the aquatic compartment due to its low water solubility.

Incineration of wastes containing the notifier polymer will produce water vapour and oxides of carbon.

Given that a proportion of this product will be used by 'Do-it-Yourself' (DIY) enthusiasts, some equipment cleaning wastes may be discarded into the sewer. However, the notified polymer is expected to be insoluble and associate with sediments and be immobile.

The majority of the polymer will be applied to wooden surfaces of either pleasure craft and small commercial boats. Once dry, it is trapped within the film and is unlikely to be released.

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

10. EVALUATION OF HEALTH EFFECTS DATA

No toxicological data were submitted.

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	National Standard	Exposure	Reference
White spirit	R65- harmful may cause lung damage if swallowed/Schedule S5	TWA: - mg/m ³)	ppm (790	NOHSC, 1999a /AHMAC, 1999/NOHSC, 1995
Xylene	Present at below concentration cut off for classification	TWA: 80 mg/m ³) STEL: 150 ppm (655 mg/m ³)	ppm (350	NOHSC, 1995
Ethyl benzene	Present at below concentration cut off for classification	TWA: 100 mg/m ³) STEL: 125 ppm (543 mg/m ³)	ppm (434	NOHSC, 1995

11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA

No ecotoxicological data were submitted.

12. ENVIRONMENTAL RISK ASSESSMENT

The majority of the notified polymer will be incorporated into a stable varnish formulation applied to the wooden surfaces of boats predominantly by brush and, once dry will pose little risk to the environment. The notified polymer in wastes from spills and empty import drums will be disposed of in landfill. Wastes generated from the cleaning of equipment used in the application of the varnish formulation will be disposed of according to local government regulations, either in landfill, by incineration or poured onto the ground. In landfill and when poured onto the ground, the notified polymer is expected to become part of the soil matrix and will not leach from the soil because of its low water solubility. Incineration of wastes containing the notifier polymer will produce water vapour and oxides of carbon.

The polymer is not expected to cross biological membranes, due to its high molecular weight and predicted low water solubility, and should not bioaccumulate.

The low environmental exposure of the notified polymer as a result of the proposed use indicates the overall environmental hazard should be low.

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 Sikkens Yachtpaints 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 headaches, dizziness to loss of consciousness, irritant contact dermatitis and the risk of lung damage if swallowed. These relate mainly to the solvents present in the product rather than the notified polymer. The imported product Sikkens Yachtpaints is classed as a Class 3 dangerous good (flammable liquid) and a Schedule Poison (S5) (AHMAC, 1999) because of the solvent content. Three of the solvents in the current 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.

End users may be exposed to the notified polymer during application of the varnish using brush, roller or sprays. The label states that the product should not be sprayed but the notifier indicates that professionals may use the varnish in spray equipment.

The varnish containing the notified polymer contains a variety of additional ingredients. The spraying procedure also produces a dense aerosol which could adversely affect human health in the absence of additional hazardous components. Use of brush or roller for paint application is expected to result in lower exposure as aerosols will not be produced.

For these reasons, the notified polymer must be assessed for the contribution it makes to the hazards associated with spray application of the paint. The presence of many potential and actual hazardous substances in the formulations requires the use of stringent engineering controls, such as a correctly constructed and maintained spray booth, and of a high level of personal protective equipment, such as impermeable overalls and gloves and a full face shield and respirator. The use of the paint containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999c). The level of protection from exposure afforded by the standard protective measures will provide adequate protection from the notified polymer.

Once the applied final paint mix has hardened, the polymer will not be separately available for exposure or absorption.

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.

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 notified polymer is intended for use as a component of a varnish to be applied as a topcoat to boats and will be available to the public. Significant dermal and inhalation contact with the notified polymer will occur during painting. Since the notified polymer is unlikely to present a toxicological hazard, the potential for harm to the public through this exposure is considered low.

Once dried, the notified polymer will be trapped within the film and unavailable for release, and so the potential for exposure following dermal contact with the painted surfaces of boats is negligible. The potential for exposure following accidental spills is also expected to be low since the product will be transported in cans of up to 5 L in capacity, of which only a small quantity would be expected to be released following an accidental spillage. Therefore, potential risk to the public from the notified polymer is considered to be low.

14. MSDS AND LABEL ASSESSMENT

14.1. MSDS

The MSDS for an end use product containing the notified 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 labels for end use products containing the polymer provided by the notifier were 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

To minimise occupational exposure to Setal 216 WX-65/216 SH-60, the following guidelines and precautions should be observed:

- Use of the paint containing the notified polymer by spray application should be in accordance with the National Guidance Material for Spray Painting (NOHSC 1999c).
- Workers should receive regular instruction on good occupational hygiene practices in order to minimise personal contact, and contamination of the work environment with spray paint products, including those containing the notified polymer.
- Employers should ensure that NOHSC exposure standards for all of the components of the polymer solution are not exceeded in the workplace.
- Personal protective equipment should be used where exposure to the notified polymer solution and the products that contain it occurs. Respiratory protection is required for spray painting. Workers should be trained in the proper fit, correct use and maintenance of their protective gear. Guidance in the selection, personal fit and maintenance of personal protective equipment can be obtained from:

Respiratory Protection:	AS /NZS 1715; AS /NZS 1716 (SA/SNZ, 1994 b, c)
Protective eyewear:	AS 1336 (SA 1994); AS/NZS 1337 (SA/SNZ 1992).
Impermeable clothing:	AS 3765.2 (SA 1990).
Impermeable gloves:	AS 2161.2 (SA/SANZ 1998).
Occupational footwear:	AS/NZS 2210 (SA/SANZ 1994).

- Workplace practices and control procedures consistent with provisions of State, Territory and Commonwealth legislation based on the National Model Regulations for the Control of Workplace Hazardous Substances (NOHSC 1994c) must be in operation if products containing the notified polymer are determined to be hazardous.

- A copy of the MSDS for the notified polymer and the products that contain it should be easily accessible to employees.

16. REQUIREMENTS FOR SECONDARY NOTIFICATION

Secondary notification may be required if:

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

17. REFERENCES

Australian Health Ministers Advisory Council (AHMAC) (1999) Standard for the Uniform Scheduling of Drugs and Poisons, Australian Government Publishing Service, Canberra 1999.

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.

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

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

NOHSC (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.

NOHSC (1999a) List of Designated Hazardous Substances [NOHSC:10005(1999)]. Australian Government Publishing Service, Canberra.

NOHSC (1999b) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)]. Australian Government Publishing Service, Canberra.

NOHSC (1999c) National Guidance Material for Spray Painting. Australian Government Publishing Service, Canberra.

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.

Standards Australia/Standards New Zealand (1994a) Australian/New Zealand Standard 2210-1994, Occupational Protective Footwear. Standards Association of Australia/Standards Association of New Zealand.

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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