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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

RX0866

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (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 the National Occupational Health and Safety Commission which also conducts the occupational health and safety assessment. The assessment of environmental hazard is conducted by the Department of the Environment and Heritage and the assessment of public health is conducted by the Department of Health and Ageing.

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Director
Chemicals Notification and Assessment

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FULL PUBLIC REPORT

RX0866

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Akzo Nobel Pty Limited (ABN 59 000 119 424) of 115 Hyde Road Yeronga QLD 4104.

NOTIFICATION CATEGORY

Limited-small volume: Polymer with NAMW ≥ 1000 (1 tonne or less per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:

Part B: Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Spectral Data, Hazardous and Non-hazardous Impurities/Residual Monomers, Additives/Adjuvants.

Part D: Identity and Composition of Polymer, Degradation Products and Loss of Monomers, Other Reactants, Additives, Impurities.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed as follows:

Part B: Melting/Freezing Point, Boiling point, Density, Vapour Pressure, Water Solubility, Hydrolysis as Function of pH, Partition Coefficient, Adsorption/Desorption, Dissociation Constant, Particle Size, Flash Point, Flammability Limits, Autoignition Temperature, Explosive Properties, Reactivity.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
RX0866 (>50% notified polymer in a volatile solvent)
Veridian Tie Coat (<60% notified polymer)

3. COMPOSITION

DEGREE OF PURITY
High

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
Import

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	≤0.958	≤0.958	≤0.958	≤0.958	≤0.958

USE
A component of a coating product for use as a substrate on outdrives and outboards prior to application of the topcoat. It is suitable for application onto both the stern leg and the aluminium propeller of auxiliary sailing yachts or powerboats.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY
Not reported.

IDENTITY OF MANUFACTURER/RECIPIENTS
Akzo Nobel Pty Limited, Yeronga QLD.

TRANSPORTATION AND PACKAGING
The notified polymer will be imported as a component of a ready-to-use Veridian tie coat in 250 mL metal cans, packed together with a topcoat base and a topcoat curing agent. The paint kit will be transported by road from dockside to the Akzo Nobel site prior to distribution to specialist marine retailers.

5.2. Operation Description

No manufacture or reformulation of the notified polymer will occur in Australia. The tie coat containing <60% notified polymer will be applied to outdrives and outboards of both pleasure and commercial crafts, by professional and Do It Yourself (DIY) painters. While the product can be applied with brushes, rollers, or spray equipment, the notifier recommends that spray equipment not be used to apply the paint because the polymer contains silicone, which can contaminate the spray paint system.

5.3. Occupational exposure

Number and Category of Workers

Category of Worker	*Number*	*Exposure Duration*	*Exposure Frequency*
Waterside and transport workers	6-8	Not provided	Not provided
Warehouse workers	4-6	--	--
Retailers	100	--	--
Professional and DIY painters	500	--	--

Exposure Details
Dockside, transport and warehouse workers will handle sealed containers and thus they would be exposed to the notified polymer only in the event of an accident. Storage of the paint products will be in covered bunded areas. Spills, if any, will be contained and disposed of as outlined in the MSDS. This category of workers will wear overalls and safety shoes.

Retailers will also handle sealed containers of individual paint products and thus they would be unlikely to be exposed to the notified polymer present at <60% in the tie coat paint.

Professional and DIY painters may experience dermal and inhalational exposure due to spills and splashes when applying the paint on outdrives and outboards with brushes or rollers. The Veridian Tie Coat paint (<60% notified polymer) will be applied without further preparation work. The topcoat consists of two components which will be mixed together immediately prior to application. During the application process, the boat vessel will be on hard stands and the painters will wear overalls and safety shoes. Spraying is not recommended, however, when spray equipment is used (approx. 20% of usage), respiratory protection is required.

In the case of industrial spray painters, they will wear appropriate respiratory protection, chemical goggles/face shields, impermeable gloves and overalls to prevent exposure in accordance with the MSDS. Appropriate engineering controls will also be in place.

5.4. Release

RELEASE OF CHEMICAL AT SITE

No release is expected to occur during transport and storage of the coating products containing the notified polymer except in the event of an accident. The small size of the containers would limit the amount of chemical released if an accident occurs.

RELEASE OF CHEMICAL FROM USE

Release of the notified polymer to the environment could occur during application of the paint. The notifier expects that about 20% of users will apply the paint using spray equipment, while the remaining 80% will apply the paint with brushes or rollers. Therefore, release during application would likely occur through cleaning of the painting equipment and by over-spray.

The notifier estimates about 5% of the notified polymer, equating to about 48 kg, could be released into the sewer each year when DIY users apply the paint and wash the equipment. Washing would require the use of a solvent because the polymer is not water soluble.

The notifier estimates about 15% of the notified polymer, equating to 29 kg, could be lost each year through spraying. The fate of the over-spray will depend on whether the paint is applied indoors or outdoors, and whether protective sheets are used to collect the over-spray. Application may take place outdoors but it is not expected to occur under windy conditions. It is anticipated that in most cases over-spray will be collected by protective sheeting on surrounding surfaces, which can be easily disposed of by incineration or through domestic or commercial garbage.

Another potential source of release of the notified polymer is from preparation of old surfaces for painting with abrasive blasting, which would produce flakes and chips of paint. Washing down of slipways in dry dock could, therefore, be a localised source of contamination to the aquatic environment. Given the small import volume and widespread use, this source of release is not expected to be significant.

The notifier estimates that approximately 10% of the product, equating to about 96 kg notified polymer, may remain as residues in containers. The residues will dry out in about 1 hour when exposed at room temperature. No release is anticipated once the coating is cured as the polymer will be trapped in the paint matrix and will be inert.

5.5. Disposal

The most likely route of disposal of empty containers, residues, and collected over-sprayed paint is through domestic and commercial garbage. The latter could also be incinerated in cases where paper (eg. old newspaper) is used to collect overspray. The MSDS recommends that solid wastes be land filled.

5.6. Public exposure

The Veridian Tie Coat for priming outdrives and outboards will be available to professional painters and also to the public (ie DIY painters). It is recommended that the paint be applied to the outdrives and outboards by brush and roller, but application by spray is also possible. Therefore, during application of the paint, there could be significant exposure (of the painter) to the notified polymer by the dermal and inhalation routes. Once the primer has dried, the notified polymer will be cured within the paint film and become inert, and will therefore be unavailable for absorption.

6. PHYSICAL AND CHEMICAL PROPERTIES

Presented was the physicochemical properties of RX0866 which comprises not less than 50% notified polymer in a volatile solvent.

Appearance at 20°C and 101.3 kPa Clear amber liquid

Boiling Point/Range 160°C to 175°C for solvent

Remarks No data were available for the polymer.

Density 4.4 (air=1) for solvent

Remarks No data were available for the polymer.

Vapour Pressure 3.73 kPa at 20°C for solvent

Remarks No data were available for the polymer.

Water Solubility Not determined

Remarks The polymer is not soluble in water, but soluble in organic solvents. It consists of esters of acrylate moieties, which make it more hydrophobic than the free acids.

Hydrolysis as a Function of pH Not determined

Remarks Despite containing esters, the polymer is not expected to hydrolyse under normal environmental conditions due to the low water solubility.

Partition Coefficient (n-octanol/water) Not applicable

Remarks The polymer is soluble in aromatic hydrocarbons. It has surface active properties, therefore the partition coefficient could not be measured, but is expected to be relatively high.

Adsorption/Desorption Not determined

Remarks The notified polymer has an affinity to lipids and is therefore expected to adsorb onto organic matter and be immobile in soils.

Dissociation Constant Not determined

Remarks The polymer does not contain any groups able to dissociate.

Particle Size Not applicable

Remarks The polymer is imported as a component of a finished emulsion product.

Flash Point 42°C (Abel CC) for solvent

Remarks Test was not conducted for the polymer.

Flammability Limits No data available

Autoignition Temperature 455°C for solvent

Remarks Test was not conducted for the polymer.

Explosive Properties Lower 1.0 Upper 6.0 for solvent

Remarks No data were available for the polymer.

Reactivity Stable under normal conditions

Remarks	The MSDS advises exposure of RX0866 to high temperature/flames and strong oxidising agents should be avoided.

7. TOXICOLOGICAL INVESTIGATIONS

No toxicity data were submitted.

8. ENVIRONMENT

8.1. Environmental fate

No environmental fate data were submitted.

8.2. Ecotoxicological investigations

No ecotoxicity data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Over 80% of the notified polymer will be trapped in the paint matrix, and therefore release into the aquatic environment is not anticipated once the coating is dried and a topcoat is applied. Some of the paint containing the notified polymer could conceivably be released to the freshwater and marine environment in the form of chips or flakes of cured paint, once the coating ages. However, this would most likely occur in an extremely diffuse manner and very slowly. The slow rate of release, coupled with the large volume of sea or fresh water, will result in a very low environmental concentration. The solid flakes are expected to be inert.

The notifier estimates about 48 kg could be released into the sewer each year during application through equipment cleaning. The daily PEC of notified polymer in the Municipal sewer is 4.6 x 10^{-5} mg/L. This value assumes the substance is used throughout Australia in a diffuse manner, and that water usage is 150 L per person by a population of 19 million. Owing to its low water solubility, and expected affinity to organic solvents, the polymer is likely to partition into solid phases in the sewer, where it will be removed for disposal.

A further 29 kg of polymer could be released each year due to over-spray. This assumes a 15% loss through over-spray and 20% of users applying the paint by this way. Another 96 kg of the polymer may remain as residues in containers. The bulk of the wastes collected from over-spray and residues in paint cans, would be in a dried and cured form. The fate of the waste polymer will most likely be in landfill, where the polymer is expected to be immobile and very insoluble in water as a consequence of its solid, high molecular weight polymeric form.

9.1.2. Environment – effects assessment

No ecotoxicity data were submitted. The high molecular weight of the polymer would preclude its movement across biological membranes, hence the polymer should not bioaccumulate.

9.1.3. Environment – risk characterisation

The notified polymer is a component in a coating product designed for use as a primer on boat outdrives and outboard motors. At end use, the polymer is not expected to pose a significant risk to the aquatic environment. The notified polymer may have some benefit to the environment if it is used in place of anti-fouling paints that generally contain biocides that are toxic to aquatic organisms.

Most of the polymer will be contained in the dried coating on outboards and outdrives. Once dried, the polymer will be trapped in the paint matrix under a topcoat, and thus will not be available for release. Some of the cured paint could conceivably be released to the aquatic environment in the form of insoluble chips or flakes, once the coating ages. This would most likely occur in an extremely slow and diffuse manner. The slow rate of release, coupled with the

large volume of sea or fresh water, would result in a very low environmental concentration.

During application, some release into the sewer may occur through improper disposal of solvents used in the cleaning of painting equipment. The daily PEC of notified polymer in the Municipal sewer is expected to be very low, at around 4.6×10^{-5} mg/L. Owing to its low water solubility, the polymer is expected to partition into solid phases in the sewer. A further 135 kg of polymer wastes could ultimately end up in landfill in a cured, inert form. In soil environments, the polymer is expected to be immobile.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Transport and storage of the polymer paint product (Veridian Tie Coat) will be in sealed metal cans. The storage areas will be bunded and spills, if any, will be contained and disposed of in accordance with the MSDS and local regulations. During loading, unloading and cleaning up accidental spills, dockside, transport and warehouse workers will wear overalls and safety shoes. Therefore, exposure would be insignificant.

Exposure of retailers would also be negligible as they will handle individual sealed containers.

Significant exposure of professional and DIY painters to the notified polymer could be expected, predominantly via skin contact and inhalation. Some ocular exposure may also occur due to splashes and spillages. During painting, the boat vessel will be on hard stands and the painters will wear overalls and safety shoes. Spraying is not recommended, but the notifier estimates about 20% of users will apply the paint by this method (appropriate respiratory protection is required) and the rest will use either brushes or rollers. Considering the PPE worn, together with the application of small volumes (250 mL cans), exposure of the end users would be of low concern.

In the case of industrial spray painters, given they will wear appropriate respiratory protection, chemical goggles/face shields, impermeable gloves and overalls and the use of adequate ventilation, worker exposure to the polymer will be minimal.

9.2.2. Public health – exposure assessment

The notified polymer is intended for use as a component of a primer paint to be applied to outriders and outboards and will be available to the general public (boat owners). Significant dermal and inhalation contact with the notified polymer will occur during painting. However, the notified polymer is unlikely to present a toxicological hazard, the potential for harm to the public through this exposure is considered low.

9.2.3. Human health - effects assessment

There is no toxicology data available on the notified polymer. Given the high molecular weight, very little of the polymer is expected to be able to penetrate biological membranes. Residual monomers are at low levels, therefore the notified polymer is unlikely to present a toxicological hazard. The MSDS for Veridian Tie Coat indicates that the product may be moderately toxic if swallowed, may cause moderate to severe irritation to the eyes, skin irritation and upon inhalation of the vapour may cause dizziness, nausea, headache and sleepiness. These effects relate to the solvents in the formulation and not the notified polymer per se.

9.2.4. Occupational health and safety – risk characterisation

The potential for exposure to the notified polymer during transport and storage would be low and would only be envisaged following an accident. Therefore the health risk for this category of workers would be low.

For the same reason, retailers would be not expected to experience any adverse health effects while handling the paint product in sealed containers.

Potential exposure of the painters would be predominantly via dermal contact and inhalation. However, on the basis of the expected low toxicity of the notified polymer, the PPE worn and low volume of use, it is anticipated that the occupational health risk posed to the end users would be low.

9.2.5. Public health – risk characterisation

Significant public exposure can be expected through dermal contact and inhalation during DIY painting. However, on the basis of its low toxicological hazard and low volume of use, the notified polymer is not considered to pose a significant risk to public health when used in the proposed manner.

10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

10.1. Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

10.2. Environmental risk assessment

The notified polymer contained in the paint product is not considered to pose a risk to the environment based on its reported use pattern, low import volumes, and diffuse manner of use.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

10.3.2. Public health

There is No Significant Concern to public health when used in the proposed manner.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the Veridian Tie Coat (containing <60% 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 a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the Veridian Tie Coat 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.

12. RECOMMENDATIONS

CONTROL MEASURES
Occupational Health and Safety

No specific precautions are required for the notified polymer per se. However, due to the presence of potentially hazardous components in the Veridian Tie Coat product:

In the case of industrial uses, especially via spraying application:

- Employers should implement the following engineering controls to minimise occupational exposure to the product:
  - Adequate ventilation at the application sites.

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the product:
  - Adequate training for staff in handling paint products, including enforcing the adherence of industrial spray painters to the National Guidance Material for Spray Painting (NOHSC, 1999).

- The following personal protective equipment should be used by painters to minimise occupational exposure to the product:
  - Impermeable gloves;
  - Overalls;
  - Chemical goggles/face shields for industrial spray painters;
  - Vapour respirators if required.

  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.

Disposal

- The notified polymer should be disposed of by incineration or in landfill.

Emergency procedures

- Spills/release of the notified chemical should be contained and disposed of as advised in the MSDS.

12.1. 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(2) of the Act:
  - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

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

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

NOHSC (1999) National Guidance Material for Spray Painting. National Occupational Health and Safety Commission, Canberra, AusInfo.