

File No: LTD/1006

May 2002

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME  
(NICNAS)**

**FULL PUBLIC REPORT**

**Polymer in RW3194**

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**Director  
Chemicals Notification and Assessment**

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## FULL PUBLIC REPORT

### Polymer in RW3194

#### 1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

BASF Akzo Nobel Automotive OEC Coatings Pty Ltd (ACN 092 127 501) and  
Akzo Nobel Pty Ltd (ACN 000 119 424), both of 51 McIntyre Road Sunshine VIC 3020.

NOTIFICATION CATEGORY

Limited: Polymer with NAMW  $\geq 1000$  (greater than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Part B: Chemical Name, CAS Number, Molecular and Structural Formula, Molecular Weight, Spectral Data, Purity, Impurities (Hazardous/Non-hazardous), Additives/Adjuvants, Manufacture/Import Volume, Identity of Manufacturing/Import Sites, Process Description.

Part D: Identity and Composition of Polymer and Degradation Products.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

Not applicable

NOTIFICATION IN OTHER COUNTRIES

Japan and USA (Year not specified).

#### 2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

RW3194 – Flow Aid Emulsion (<60% notified polymer).

E/Coat Clear (<10% notified polymer)

#### 3. COMPOSITION

DEGREE OF PURITY

**Non-Confidential**

> 90%

#### 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	$\leq 10$	$\leq 10$	$\leq 10$	$\leq 10$	$\leq 10$

USE

A component of an automotive primer for application onto car bodies and parts at car manufacturing facilities.

## **5. PROCESS AND RELEASE INFORMATION**

### **5.1. Distribution, Transport and Storage**

PORT OF ENTRY  
Melbourne.

IDENTITY OF MANUFACTURER/RECIPIENTS      **Non-Confidential**  
Reformulation and end-use sites will be in Victoria.

TRANSPORTATION AND PACKAGING  
Transport of RW3194 will be in 200 L steel drums and E/Coat Clear emulsion in bulk by road tanker. The load may be up to 20 KL.

### **5.2. Operation Description**

This is claimed exempt from publication.

### **5.3. Release**

#### **RELEASE OF CHEMICAL AT SITE**

Release of the notified polymer to the environment during formulation of the finished emulsion is expected to be minimal owing to the automated nature of the manufacturing processes. The notifier estimates that up to 100 kg of polymer waste may be generated for disposal each year, mainly as a result of spills and equipment cleaning. The notified polymer in waste will be contained in a bunded area and collected for disposal while the wastewater passing through an interceptor pit will undergo treatment prior to discharge to the sewer as trade waste. Treatment involves adding a caustic agent to waste water, which flocculates the notified polymer into solid waste suitable for disposal. The resulting solid will be dried followed by disposal into landfill.

Under normal circumstances there will be no rejected product, however, in a rare event up to 2000 kg of rejected product may be present for disposal. This product is normally incinerated.

#### **RELEASE OF CHEMICAL FROM USE**

At the customer site, the application process is fully enclosed. Cars are coated in a dip tank, and excess paint is washed from the car after exiting the tank. These washings cascade back into the application tank, which is cleaned every year. Cleaning involves transferring the contents of the tank to storage, and then washing up to 1000 litres of bath paint to the trade waste pit. Spills and leaks occurring during normal operations are also washed into the trade waste pit. The notifier estimates that up to 10 kg per year of notified polymer may be released into the trade waste pit as a result of tank cleaning and operational spills and leaks. The waste is processed by flocculation and settling of the polymer. The polymer is not volatile and hence no release to the atmosphere is expected.

Bulk transport containers are cleaned with water at the site of manufacture. Wastewater streams from the cleaning pass through interceptor pits and are contained for treatment prior to discharge to sewer as trade waste.

No release of the polymer into the environment is expected once the primer is applied to coat motor vehicles. The notified polymer will be incorporated into the primer matrix, which upon curing, will become inert.

### **5.4. Disposal**

Solid wastes generated during formulation of the finished emulsion containing the notified polymer are removed from the interceptor pit and taken to an appropriate landfill site for disposal. The remaining wastewater is released to the sewer in accordance with the statutory license requirements for the site.

Waste generated at customer sites during paint application will be disposed of by a licensed waste management company. It is expected that the company will separate the solids and liquids for disposal into landfill and by incineration respectively. Drum residues are also disposed of through a waste disposal contractor who normally incinerates the residues.

## 6. PHYSICAL AND CHEMICAL PROPERTIES

No test reports were provided. The following summary information was presented in relation to the physico-chemical properties of the notified polymer.

APPEARANCE AT 20°C AND 101.3 kPa      Soft solid

### MELTING POINT

Remarks      Not determined. As with most polymers, the notified polymer is expected to soften and flow over a wide temperature range.

### BOILING POINT

Remarks      Not applicable. The notified polymer decomposes before boiling.

### DENSITY

Remarks      Not determined. The notified polymer is not isolated from its solution. The aqueous emulsion RW3194 has a density of 1060 kg/m<sup>3</sup>.

### VAPOUR PRESSURE

Remarks      Not determined. Based on its MW and structure, the notified polymer is not expected to be volatile.

### WATER SOLUBILITY

Remarks      Not determined. The notified polymer is designed to be infinitely dispersible, but not soluble in water.

### HYDROLYSIS AS A FUNCTION OF PH

Remarks      Not determined. The notified polymer contains ester and carbamate groups but appears to be stable in water.

### PARTITION COEFFICIENT (n-octanol/water)

Remarks      Not determined. Given the high MW, the partition coefficient is difficult to predict.

### ADSORPTION/DESORPTION

Remarks      Not determined. The notified polymer may be adsorbed onto soil particles but is not expected to be mobile given its high MW.

### DISSOCIATION CONSTANT

Remarks      Not determined. The notified polymer has a distribution of molecular species with multiple repeating moieties. Compounds with multiple repeating moieties are not characterised with a dissociation constant. Its dissociation in water is expected to be negligible.

### PARTICLE SIZE

Remarks      Not determined. The notified polymer is not isolated from the aqueous emulsion

RW3194.

FLASH POINT >100°C

Remarks Test report not provided.

#### FLAMMABILITY LIMITS

Remarks Test not conducted. It is expected the notified polymer does not form flammable vapours.

#### AUTOIGNITION TEMPERATURE

Remarks No data available.

#### EXPLOSIVE PROPERTIES

Remarks No explosive properties are predicted based on the structure and other chemico-physical properties such as flash point and boiling point.

REACTIVITY No decomposition up to 150°C

Remarks The notified polymer will thermally degrade at a temperature above this but the specific temperature is undetermined. It contains functional groups which are known to react with strong acids, strong alkalis and strong oxidising agents.

## 7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

## 8. ENVIRONMENT

### 8.1. Environmental fate

No environmental fate data were provided in the notification dossier.

### 8.2. Environmental Effects

No ecotoxicological data were provided in the notification dossier. Under normal usage, the polymer is not expected to enter the aquatic environment.

## 9. RISK ASSESSMENT

### 9.1. Environment

#### 9.1.1. Environment – exposure assessment

No environmental exposure of the notified polymer is expected. When the polymer is incorporated into the primer product and used to coat motor vehicles the polymer will be cured to form a hard surface coating, which will be inert. The primer will also be covered by subsequent layers of surface coating. At the end of their useful life, the metal panels coated with the primer are likely to be either recycled for steel reclamation or placed into landfill.

Less than 200 kg of the notified polymer is expected to be generated as waste each year during formulation or application of the end coating product. Waste generated at both the production and application sites are passed through interceptor pits and contained for treatment prior to discharge to the sewer as trade waste.

The notified polymer is water dispersible but not water soluble. In the interceptor pits, which are treated with caustic agents, the polymer is not expected to remain in the water compartment, but rather is expected to flocculate and form solids. These can be removed for

disposal in landfill, where the polymer will occur in a dried out and polymerised form and hence is not expected to be mobile and leach from the soil. While the substance is not expected to be readily degradable, it will undergo slow degradation through both biotic and abiotic processes.

Some of the notified polymer may be destroyed by incineration. For example, on rare occasions, up to 2000 kg of rejected product may be present for disposal, normally by incineration. Wastes disposed of through a licensed waste disposal contractor, are also expected to be incinerated. Recycled car panels containing the polymer are likely to be destroyed in blast furnaces thereby incinerating the polymer in the primer. Incineration of the polymer is expected to destroy the polymer, producing water vapour and oxides of carbon and nitrogen.

Given its very high molecular weight, the polymer is not expected to cross biological membranes and bioaccumulate (Connell, 1990).

#### 9.1.2. Environment – effects assessment

No ecotoxicological data were provided in the notification dossier. However, under normal usage, the polymer is not expected to enter the aquatic compartment and pose a threat to aquatic organisms.

#### 9.1.3. Environment – risk characterisation

The notified polymer is not expected to pose a significant hazard to the environment. The usage patterns indicate that the levels of release of the polymer to the environment will be low. Under normal usage there will be no release into the aquatic environment. In conclusion, the polymer is not considered to pose a risk to the environment based on the reported use pattern.

### 9.2. Human health

#### 9.2.1. Occupational health and safety

##### 9.2.1.1 OCCUPATIONAL EXPOSURE ASSESSMENT

##### *Number and Category of Workers*

<i>Category of Worker and Nature of Work done</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Transport and Deliver	10	1-2 hours/day	40-50 days/year
At the formulation site:			
• Reactor operators - Processing and collection of QC samples	25	12 hours/day	80-100 days/year
• Maintenance personnel - Repairing reactor vessel, transfer lines, pumps, mixers, etc	2	1-2 hours/day	80-100 days/year
• Laboratory personnel - QC testing and troubleshooting.	5	12 hours/day	80-100 days/year
• Storage and internal transport personnel - Storage of finished product and loading in tankers	4	2-4 hours/day	100-130 days/year
At the application/user site:			
• Tank operators - Filling and emptying tanks	10	1-2 hours/day	20 days/year
• Application/curing operators - Operation of primer application and curing process	10	1-2 hours/day	20 days/year
• Maintenance personnel - Repairing and cleaning operating tanks, transfer lines, pumps, mixers, etc	2	1-2 hours/day	15 days/year
• Laboratory personnel - QC testing and troubleshooting	5	1-2 hours/day	50 days/year

Transport of the polymer emulsions will be in steel drums or by road tanker. During loading, unloading and accidental spills transport and delivery workers will wear chemical resistant gloves, coveralls and goggles. Organic vapour respirators may also be used if required. Therefore, exposure would be insignificant.

Although formulation of the E/Coat Clear emulsion will take place in closed vessels, several groups of workers at the formulation site may receive transient dermal and/or ocular exposure to the notified polymer during routine operations. Exposure may occur from inadvertent leaks and spills during the transfer from 200 L drums to the reactor vessel and loading of transport tankers. Quality control sampling and maintenance of transfer lines/pumps will be conducted under exhaust ventilation so inhalation exposure is unlikely. The plant personnel will wear chemical resistant gloves, coveralls and goggles and organic vapour respirators (where appropriate) to minimise exposure to the notified polymer and other components of the primer emulsion. In addition, the automated addition of ingredients, enclosed vessels, filling via transfer lines and local exposure ventilation will help control exposure during the process. Overall, the potential exposure of formulation workers is limited.

At the car manufacturing facility, the coating emulsion will be unloaded by up to ten tank operators working 1-2 hours/day for 20 days/year. They will transfer the emulsion through enclosed transfer lines to a tank where it is mixed with other paint components prior to application to automotive bodies. Ten application/curing operators will also be potentially exposed to the notified polymer during application of the primer coating to automotive bodies and parts by dipping. Subsequent curing of the paint by oven baking will occur under exhaust ventilation. Although this is a totally enclosed automated process, dermal and ocular exposure of these workers may occur as a result of accidental splashes. However, at this point, the polymer is present at <10%. Maintenance and QC personnel may also experience exposure during routine operations. Tank operators, application/curing operators and maintenance personnel will wear chemical resistant gloves, coveralls, and goggles. Organic vapour respirators may also be used. QC personnel will wear laboratory coats, gloves and safety glasses. Considering the PPE worn, the engineering controls and good work practices, exposure of these workers is determined to be minimal.

After curing, the notified polymer will be locked in a paint matrix and not bioavailable.

#### **9.2.2. Public health**

The notified polymer does not exist in a pure form and is imported as an aqueous emulsion. It is not isolated at any point in its life cycle. Members of the public may be exposed to the finished emulsion containing the notified polymer prepared by the importer and transported to user facilities, following transport accidents en route. Such accidents are unlikely. The preparation and application of the material containing the notified polymer is conducted only in enclosed and controlled environments. These well engineered processes and the regulated disposal of any waste containing the notified polymer mean that public contact with substances in the environment containing the notified polymer is also unlikely. The products containing the notified polymer are not available to the public. In its end use, the notified polymer becomes an integral part of a hard durable coating on motor vehicles and is not accessible to human contact. The potential for public exposure to the notified polymer is assessed as negligible.

#### **9.2.3. Human health - effects assessment**

No toxicological data were provided for the notified polymer. Given its high molecular weight and consequent low bioavailability, the systemic toxicity of the notified polymer is likely to be low. In addition, since introduced in Japan for approximately 2 years, there have been no adverse health effects reported. Overall, the notified polymer is unlikely to be classified as hazardous in accordance with the *NOHSC Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

Two MSDS are supplied, one for "RW3194 - Flow Aid Emulsion" and one for "E/Coat Clear". Neither product is considered hazardous according to the criteria of NOHSC (1999). Irritant properties of these products are attributable to other ingredients in the formulation.



#### **9.2.4. Human health – risk characterisation**

##### **9.2.4.1 OCCUPATIONAL HEALTH AND SAFETY**

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 transport and delivery workers would be low.

The notified polymer is never isolated and thus exposure of workers to the polymer during the entire life cycle including maintenance and QC personnel would occur only from contact with the polymer emulsions RW 3194 and E/Coat Clear (containing <60% and <10% notified polymer respectively). Contact may result in slight skin and eye irritation. However, given the expected low toxicity of the notified polymer and the low likelihood of exposure due to the use of fully enclosed and automated systems, and PPE together with the regular review of safe work practices at the industrial sites, it is suggested that the notified polymer will not pose a significant occupational health risk to the workers.

Following curing of the paint, the polymer will be cross-linked with other paint components to form a high molecular weight stable film. In this form, the polymer is essentially unavailable for absorption and thus the health risk to workers after paint curing would be negligible.

##### **9.2.4.2 PUBLIC HEALTH**

On the basis of the low exposure and low toxicity expected for the notified polymer, it is considered that the Polymer in RW3194 will not 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. Environment**

On the basis of the available information, the notified polymer is not considered to pose a risk to the environment when used in the reported pattern.

##### **10.2. Health hazard**

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

##### **10.3. Human health**

###### **10.3.1. Human health – occupational health and safety**

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

###### **10.3.2. Human health – public**

There is no Significant Concern to public health when used as a component of automotive primers.

#### **11. 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 polymer solution and primer formulation:

- Employers should implement the following engineering controls to minimise occupational exposure to the product RW3194 and E/Coat Clear:
  - Fully enclosed and automated processes at the formulation and application sites, including enclosed and automatic transfer lines/pumps for loading and emptying

- of the reactor vessels, transport tanks and operating tanks.
  - Fume cupboard or local exhaust ventilation for maintenance and quality control personnel.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the product RW3194 and E/Coat Clear:
  - Documented standard operating instructions and procedures;
  - Adequate training for staff in handling surface coating reagents;
  - Implementation of general health surveillance and monitoring programs as required.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the product RW3194 and E/Coat Clear:
  - Chemical resistant gloves;
  - Coveralls/laboratory coats;
  - Goggles or safety glasses;
  - Organic 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 chemical should be disposed of in landfill (solid waste) or by incineration (waste water).

#### Emergency procedures

- Spills/release of the notified chemical should be collected and sealed in appropriately labelled drums for disposal.
- Personnel involved in the clean up procedure should wear protective clothing and impermeable gloves to avoid skin contact.

### 11.1. 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.

## 12. MATERIAL SAFETY DATA SHEET

The MSDS for the import product RW3194 (<60% notified polymer) and the formulated primer E/Coat Clear (<10% notified polymer) provided were in accordance with the *NOHSC National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994).

Only the MSDS of RW3194 is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### **13. BIBLIOGRAPHY**

Connell DW (1990) General characteristics of organic compounds which exhibit bioaccumulation. In: Connell DW ed. Bioaccumulation of xenobiotic compounds. Boca Raton, USA, CRC Press, pp 47-57.

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