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

**PUBLIC REPORT**

**Polymer in AIC Advanced Industrial Coatings**

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (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 Department of Health, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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**Director  
NICNAS**

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## SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

| ASSESSMENT<br>REFERENCE | APPLICANT(S)               | CHEMICAL OR<br>TRADE NAME                         | HAZARDOUS<br>CHEMICAL | INTRODUCTION<br>VOLUME   | USE                |
|-------------------------|----------------------------|---|-----------------------|--------------------------|--------------------|
| LTD/1696                | Global Autocoat<br>Pty Ltd | Polymer in AIC<br>Advanced Industrial<br>Coatings | ND*                   | ≤ 10 tonnes per<br>annum | Colorant in paints |

\*ND = not determined

## CONCLUSIONS AND REGULATORY OBLIGATIONS

### **Hazard classification**

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### **Human health risk assessment**

Provided that the recommended controls are being adhered to, under the conditions of the occupational setting, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified chemical is not considered to pose an unreasonable risk to public health.

### **Environmental risk assessment**

Based on the use pattern and low potential for aquatic exposure, the notified polymer is not expected to pose an unreasonable risk to the environment when it is used as proposed.

### **Recommendations**

#### **CONTROL MEASURES**

#### **Occupational Health and Safety**

- A person conducting a business or undertaking at a workplace should implement the following isolation and engineering controls to minimise occupational exposure to the notified polymer:
  - Enclosed, automated processes during reformulation, where possible.
  - Adequate ventilation during reformulation processes and spray applications of products containing the notified polymer.
- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure to the notified polymer:
  - Avoid inhalation of aerosols.
  - Avoid prolonged spraying.
- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer as introduced and during reformulation of coatings (at < 50% concentration):
  - Respiratory protection, if ventilation is inadequate
  - Protective clothing
  - Eye protection
  - Impervious gloves

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (SWA, 2013) or relevant State or Territory Code of Practice.
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

#### Disposal

- The notified chemical/polymer should be disposed of to landfill.

#### Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

### Regulatory Obligations

#### *Secondary Notification*

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS 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 polymer has a number-average molecular weight of less than 1,000;
  - additional information becomes available on the sensitisation potential of the notified polymer;or
- (2) Under Section 64(2) of the Act; if
  - the function or use of the polymer has changed from colorant in paints, or is likely to change significantly;
  - the amount of polymer being introduced has increased, or is likely to increase, significantly;
  - the polymer has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the polymer on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

No additional secondary notification conditions are stipulated.

#### *(Material) Safety Data Sheet*

The (M)SDS of the products containing the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

## ASSESSMENT DETAILS

### 1. APPLICANT AND NOTIFICATION DETAILS

**APPLICANT(S)**

Global Autocoat Pty Ltd (ABN: 35 067 632 946)  
54-56 John Street  
BENTLEY WA 6102

**NOTIFICATION CATEGORY**

Limited: Synthetic polymer with  $M_n \geq 1,000$  Da.

**EXEMPT INFORMATION (SECTION 75 OF THE ACT)**

Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, analytical data, degree of purity, polymer constituents, residual monomers, impurities, additives/adjuvants, use details and import volume.

**VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)**

Variation to the schedule of data requirements is claimed as follows: all physico-chemical endpoints

**PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)**

None

**NOTIFICATION IN OTHER COUNTRIES**

None

### 2. IDENTITY OF CHEMICAL

**MARKETING NAME(S)**

Polymer in AIC Advanced Industrial Coatings

**MOLECULAR WEIGHT**

> 1,000 Da

**ANALYTICAL DATA**

Reference GPC and IR spectra were provided.

### 3. COMPOSITION

**DEGREE OF PURITY**

> 99%

### 4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Clear viscous liquid

| Property                     | Value                                | Data Source/Justification  |
|------------------------------|--------------------------------------|--|
| Melting Point/Freezing Point | -13.11 to -29.55 °C                  | Measured – Study reports could not be sighted.   |
| Boiling Point                | > 150 °C                             | Measured – Study reports could not be sighted.   |
| Density                      | 999–1,009 kg/m <sup>3</sup> at 25 °C | Measured – Study reports could not be sighted.   |
| Vapour Pressure              | $< 1.3 \times 10^{-9}$ kPa           | Estimated based on the NAMW > 1,000 Da (US EPA, 2013).   |
| Water Solubility             | Not determined                       | Expected to be low due to the predominantly hydrophobic structure and the high molecular weight of the notified polymer. |
| Hydrolysis as a Function of  | Not determined                       | The notified chemical contains   |

|   |                |  |
|---|----------------|--|
| pH                                      |                | hydrolysable functionality. However, significant hydrolysis is not expected at environmental pH (4–9).                           |
| Partition Coefficient (n-octanol/water) | Not determined | The notified polymer is expected to partition from water to n-octanol on the basis of its low water solubility.                  |
| Adsorption/Desorption                   | Not determined | Based on its expected low solubility in water, the notified polymer is expected to adsorb strongly to soil, sediment and sludge. |
| Dissociation Constant                   | Not determined | No dissociable functionality.  |
| Flash Point                             | Not determined | Expected to be high based on the high NAMW and hence the predicted low vapour pressure   |
| Autoignition Temperature                | Not determined | Not expected to autoignite under normal conditions of use.   |
| Explosive Properties                    | Not determined | Does not contain any functional groups that imply explosive properties   |
| Oxidising Properties                    | Not determined | Does not contain any functional groups that imply oxidising properties   |

*Reactivity*

The notified polymer is expected to be stable under normal conditions of use.

**Physical hazard classification**

Based on the submitted physico-chemical data depicted in the above table, the notified polymer is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

**5. INTRODUCTION AND USE INFORMATION****MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS**

The notified polymer will not be manufactured in Australia. The notified polymer will be imported as a component (3–20%) of a polyurethane coating.

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

| <i>Year</i>   | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|---------------|----------|----------|----------|----------|----------|
| <i>Tonnes</i> | 2–10     | 2–10     | 2–10     | 2–10     | 2–10     |

**PORT OF ENTRY**

Melbourne

**IDENTITY OF RECIPIENTS**

Global Autocoat Pty Ltd

**TRANSPORTATION AND PACKAGING**

Products containing the notified polymer at up to 20% concentration will be imported in shipping containers by sea. Formulated products containing the notified polymer will be packed into 0.473–18.92 L round steel cans fitted with friction lids. The cans are sealed in corrugated shipping cartons stacked on pallets which are then strapped and shrink wrapped. The pallets containing the formulated products will be distributed by road to stores.

**USE**

The notified polymer is a component of a polymer mixture that is used as a colorant in a urethane paint system and is present at 3–20% concentration. The colorants are mixed to provide the desired colour and the resulting product is applied by spray to vehicles (typically heavy trucks, trailers, heavy fleet equipment).

## OPERATION DESCRIPTION

The products containing the notified polymer (at 3–20% concentration) are supplied to end users in steel cans. The final paint will be prepared on-site in purpose built mixing rooms. The spray application (usually by high-volume low-pressure spray) will occur in an enclosed booth which is supplied with exhaust ventilation and filters. Spray equipment will be cleaned in solvents and washings and excess spray will be collected into hazardous waste containers.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### 6.1.1. Occupational Exposure

## CATEGORY OF WORKERS

| <i>Category of Worker</i> | <i>Exposure Duration<br/>(hours/day)</i> | <i>Exposure Frequency<br/>(days/year)</i> |
|---------------------------|--|---|
| Transport and storage     | 1–2                                      | 20  |
| Spray painting            | 8  | 300                                       |

## EXPOSURE DETAILS

*Transport and storage*

Transport and storage workers are expected to only be exposed to the notified polymer in the unlikely event of an accident. In this case, dermal exposure may occur; however, standard clean-up procedures would be in place to minimise worker exposure to the notified polymer.

*End-use*

Process workers and spray painters may come into contact with the notified polymer at up to 20% concentration through drips, spills and during transfer to spray application equipment. Dermal, ocular and inhalation exposure will be possible. Dermal and ocular exposure may be minimised if workers are using PPE such as gloves and goggles. The notifier states that during spray applications inhalation exposure to aerosols is expected to be minimised through engineering controls and the use of appropriate PPE including respirators, eye protection, impervious gloves and protective clothing.

#### 6.1.2. Public Exposure

The public are only expected to come into contact with the notified polymer once paints have been dried and cured onto automobiles. No exposure is expected as the notified polymer will be bound in the cured paint matrix and will not be available for exposure.

## 6.2. Human Health Effects Assessment

No toxicity data were submitted. The notified polymer has a high molecular weight (> 1,000 Da) and is expected to have low water solubility. Hence, it is not expected to be absorbed following oral, dermal or inhalation exposure.

*Sensitisation*

The notified polymer has a functional group (at <10 %w/w) which has been identified as a possible sensitiser by skin contact (Barrett et al., 1994; Hulzebos et al., 2005).

*Health hazard classification*

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### 6.3. Human Health Risk Characterisation

#### 6.3.1. Occupational Health and Safety

Dermal, ocular and inhalation exposure to the notified polymer at up to 20% concentration may occur in process workers and spray painters. Dermal and ocular exposure is expected to be reduced through the use of PPE such as impervious gloves, protective clothing and eye protection. Inhalation exposure to aerosols is expected to be minimised by using automated, enclosed and ventilated spray booths and approved respirators as required.

Under the proposed occupational settings to minimise worker exposure, the risk to the health of workers from use of the notified polymer is not considered to be unreasonable.

#### 6.3.2. Public Health

Products containing the notified polymer will not be made available to the public. Therefore, when used in the proposed manner, the risk to public health from the notified polymer is not considered to be unreasonable.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Environmental Exposure & Fate Assessment

#### 7.1.1. Environmental Exposure

##### RELEASE OF CHEMICAL AT SITE

The release of the notified polymer to the environment during importation, storage, and transport is unlikely. The most likely source of a release to the environment during these activities will be a transport accident. Releases that do occur as a result of accidents are expected to be physically contained, absorbed into inert material and sent for safe disposal to landfill.

##### RELEASE OF CHEMICAL FROM USE

During application by spray, it is expected that up to 20% of the notified polymer will be released as overspray, which is expected to be cured, collected and disposed of to landfill. It is estimated that up to 1% of the notified polymer, waste generated during coating is expected to be treated prior to be released to the sewer. Equipment used to apply the coating formulations may be rinsed with solvent. It is expected that the solvent will be recovered and collected solid will be disposed of to landfill.

##### RELEASE OF CHEMICAL FROM DISPOSAL

The majority of the notified polymer will be cured into an inert matrix with other chemical substances as part of the coating process and hence will be immobilised within a polymeric film on coated articles. The polymer incorporated in the coating will be disposed of along with the coated articles, at the end of their useful life, and will either go to metal recyclers or be disposed of to landfill. Less than 1% of the notified polymer may remain as residues in the product containers, which are expected to be disposed of to landfill.

#### 7.1.2. Environmental Fate

No environmental fate data were submitted. The notified polymer will be applied to units such as heavy trucks, trailers and other heavy equipment. The notified polymer will be reacted into the coating matrix as part of its normal use pattern and is therefore not expected to be mobile, bioavailable nor biodegradable. The majority of the notified polymer is expected to be ultimately disposed of to landfill or thermally decomposed during recycling of metal structures to which it is applied. In the case of release of the notified polymer to sewer, it is expected to be efficiently removed from the water column by sorption to sludge. The sludge will be disposed of to landfill or used for remediation of soil. Bioaccumulation of the uncured polymer is unlikely due to its high molecular weight and limited potential for aquatic exposure. Notified polymer, both in the uncured and cured forms, that is disposed of to landfill is not expected to be mobile and will slowly degrade by abiotic and biotic processes to produce water and oxides of carbon.

#### 7.1.3. Predicted Environmental Concentration (PEC)

The notified polymer is not expected to be present at significant concentrations in the aquatic environment because of the very low potential for direct release to surface waters when used in surface coatings. A predicted environmental concentration (PEC) has therefore not been calculated.



**7.2. Environmental Effects Assessment**

The calculated ECOSAR data predicts that the notified polymer has no toxicological effects at the limit of its water solubility (US EPA, 2011). Therefore, the notified chemical is not expected to be harmful at the limit of its water solubility, and is not be formally classified under the Globally Harmonised System of Classification of Chemicals (GHS; United Nations, 2009).

**7.2.1. Predicted No-Effect Concentration**

No toxicity effects are to be expected at the limit of water solubility for the notified polymer, and therefore the predicted no-effect concentration (PNEC) cannot be calculated.

**7.3. Environmental Risk Assessment**

As no toxicity effects are to be expected at the limit of water solubility for the notified polymer, the predicted no-effect concentration (PNEC) cannot be calculated. Therefore, based on the use pattern and low potential for aquatic exposure, the notified polymer is not expected to pose an unreasonable risk to the environment when it is used as proposed.

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