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

FULL PUBLIC REPORT

Polymer A in Palene 710A

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| | |
|-----------------|--|
| Street Address: | 334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA. |
| Postal Address: | GPO Box 58, SYDNEY NSW 2001, AUSTRALIA. |
| TEL: | + 61 2 8577 8800 |
| FAX | + 61 2 8577 8888 |
| Website: | www.nicnas.gov.au |

**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT**Polymer A in Palene 710A****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Henkel Australia Pty Ltd (ABN 82 001 302 996) of 135-141 Canterbury Road Kilsyth VIC 3137.

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern – Self Assessment

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, Polymer Constituents, Residual Monomers/Impurities, Use Details, Import Volume, and Site of Reformulation.

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)

None.

NOTIFICATION IN OTHER COUNTRIES

Japan and US.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Palene 710A

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10000

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

| <i>Criterion</i> | <i>Criterion met (yes/no/not applicable)</i> |
|--|--|
| Molecular Weight Requirements | Yes |
| Functional Group Equivalent Weight (FGEW) Requirements | Yes |
| Low Charge Density | Yes |
| Approved Elements Only | Yes |
| No Substantial Degradability | Yes |
| Not Water Absorbing | Yes |
| Low Concentrations of Residual Monomers | Yes |
| Not a Hazard Substance or Dangerous Good | Yes |

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

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

Imported as a <10% (w/w) aqueous polymer solution.

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> | 1 | 1 | 1 | 1 | 1 |

USE

As a surface coating agent.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will be imported into Australia as an aqueous product at <10% (w/w) concentration in closed head 200 L polypropylene drums by ship. It will be transported from the wharf to Henkel Australia Pty Ltd for warehousing by truck where it will be stored before it is distributed to a customer in Victoria. It will be stored at the customer site prior to use.

At the customer site, the notified polymer will be transferred to a dip tank from the 200 L drums through the use of pumping equipment. The notified polymer is then further diluted in the tank with deionised water so that the final solution contains <1% of the notified polymer. During the process, samples are taken to the laboratory for batch adjustment and quality control testing. The finished coating is then filtered and pumped into the coating bath ready for coating of aluminium parts. If repairs to vessels or machinery are required, the affected areas are isolated and cleaned before and after maintenance.

Aluminium parts are suspended in baskets (16 items per basket) on an overhead conveyor, and are then immersed in a sequence of baths and after each bath the aluminium parts are rinsed with water followed by air blow-off of excess solution into the bath. The final bath in this sequence contains the notified polymer where the aluminium parts are immersed in the tank for coating with Palene 710A followed by air blow-off of excess solution back into bath solution. The coated parts are then passed through a dry oven to effect curing. The entire coating process occurs in a closed system with recovery of rinse effluents.

The metal parts are individually sealed in plastic packaging and placed into cardboard boxes for distribution to OEM car manufacturers.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

| <i>Category of Worker</i> | <i>Number</i> | <i>Exposure Duration</i> | <i>Exposure Frequency</i> |
|---|---------------|--------------------------|---------------------------|
| Waterside, transport and warehouse | 4 | 1 h | 210 days/year |
| Formulation and application of coating: | | | |
| • Tank operators | 10 | 2 h | 210 days/year |
| • Application/drying operators | 10 | 1-2 h | 210 days/year |
| • Maintenance operators | 2 | 1-2 h | 210 days/year |
| • Laboratory technicians | 5 | 2 h | 210 days/year |

Exposure details:

Transport and storage

Workers are not expected to be exposed to the imported notified polymer, as they will be handling

closed containers. The notified polymer will be supplied in 200 L drums and transported in secure pallets. Exposure is possible only in the event of an accidental spill where the packaging is breached.

Formulation of notified polymer and application

At the customer site, the polymer solution is transferred to a coating tank via a sealed pipe. Skin contact may occur during the opening of the drums and connection of the transfer pipes. Incidental skin contact with the notified polymer solution may also occur during the dilution stage of the notified polymer with deionised water and QC sampling and testing. Tank operators will wear overalls or a PVC apron, gloves and safety glasses with side shields. Laboratory technicians will wear laboratory coats, gloves and eye protection during sampling and testing.

The coating process is a closed and automated system and therefore there is negligible exposure to workers.

Drying of the coated aluminium parts is carried out by oven baking under exhaust ventilation. Exposure to the notified polymer at this stage is expected to be minimal. After coating the notified polymer is locked into the coating matrix and is unavailable for exposure.

Maintenance workers responsible for repairs and maintenance on transfer lines and pumps may be exposed to the notified polymer solution in the event of repairs being required while a batch is in process. To minimise exposure workers will wear overalls or a PVC apron, gloves and eye protection.

6.2. Summary of Public Exposure

The public is unlikely to be exposed to the notified polymer during transport, storage, and application except in the event of accidental spillage.

The notified polymer is not available to the public and will be used in industrial scenarios only. The public is likely, however, to make contact with the cured polymer as coating on finished motor vehicle components. However, this is unlikely as the coated components are in an inaccessible section of the motor vehicle.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

Henkel Warehouse

The notified polymer will not be manufactured in Australia. Local operations will include transport, storage, formulation and application by a single end-user (in the metal finishing industry).

Palene 710A containing <10% (w/w) notified polymer will be imported and stored in 200 L polypropylene drums. It will be transported from dockside by road to Henkel Australia Pty Limited for storage. It will then be sold to a single user in the metal finishing industry for formulation and coating of aluminium parts.

Release to the environment at Henkel's site is only likely if there is an accidental spill. It is estimated that a maximum of 1% of the import volume (10 kg/year of notified polymer) would be lost during spillage. Spills are contained and soaked up with absorbent materials (e.g. sand, earth, vermiculite) and placed in a sealable, labelled container and disposed of to landfill. The spilled area is flushed with water. The waste material from flushing will go to a drain in the floor where it is collected in a pit. The pit is cleaned out periodically and the waste is sent off site for disposal to landfill by a licensed waste contractor.

End-use in Metal Finishing Industry

During coating of aluminium parts via dipping in large application tanks, environmental controls such as fully contained facilities, fully automated processes, bunding and safety procedures will limit releases. After each of the dipping processes, excess is blown off with into dipping tanks for reuse. The final dipping stage involves coating with Palene 710A containing the notified polymer. After dipping, excess coating is blown off from aluminium parts with air and collected back in the coating tank. Oven baking results in the polymer being locked within a cross-linked network. Volatile products generated during baking are extracted to an afterburner and incinerated (forming oxides of

nitrogen). This application system provides for reuse of the notified polymer and therefore results in minimal waste.

On an annual basis, the contents of the coating application tank are transferred to storage tanks to allow cleaning of the application tanks. An estimated 1000 L of wash waters containing an estimated 30 kg of the notified polymer is collected by a licensed waste management contractor for treatment and disposal to landfill or by incineration. Waste from leaks and spills of up to 20 kg per year of the notified polymer are also collected and sent off site for treatment and disposal by a licensed waste contractor.

The expected quantity of waste generated from the coating application is less than 50 kg of notified polymer/annum. Up to 3% residue will remain in the empty 200 L drums used in the metal finishing industry, which is approximately 30 kg per annum (based on import levels of 1000 kg per annum of the notified polymer). Residues remaining in the drums will be reused. The drums will be cleaned with water and the wash water resulting from cleaning of the drums will be reused in the coating process. Empty drums will be collected by a licensed waste contractor and sent off-site for disposal.

6.3.2. Environmental Fate

No environmental fate data are available.

The notified polymer is expected to be highly water soluble and, as a result, would be mobile in both terrestrial and aquatic compartments. However, there would be no release of the notified polymer to receiving waters. In landfill the notified polymer is expected to slowly degrade through abiotic and biotic processes to water vapour and oxides of carbon and nitrogen. The notified polymer is not expected to cross biological membranes due to its high molecular weight and water solubility and therefore is not expected to bioaccumulate.

7. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|--|
| Appearance at 20°C and 101.3 kPa | Pale yellow liquid (Palene 710A) |
| Melting Point/Glass Transition Temp | ~100°C (Palene 710A) |
| Density | 1040 kg/m ³ at 20°C (Palene 710A) |
| Water Solubility | Completely miscible with water |
| Dissociation Constant | Not determined. There are no dissociable groups present. |
| Particle Size | Not applicable, as it is a liquid |
| Reactivity | Stable under normal environmental conditions. Keep away from strong oxidising agents and strong acids |
| Degradation Products | Oxides of nitrogen |

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

The following toxicological end-points were submitted:

| <i>Endpoint</i> | <i>Result</i> | <i>Classified?</i> | <i>Effects Observed?</i> |
|--|---------------|--------------------|--------------------------|
| Rat, acute oral LD50 >10000 mg/kg bw in the diet | low toxicity | no | yes |

The results were indicative of low hazard.

8.1.1. Discussion of observed effects

Nine males and nine females were evaluated. The rats that finished the test diet showed slight diarrhoea on the first post-treatment day. This phenomenon has disappeared on the second post-treatment day and the rats looked healthy throughout the remaining part of the observation period. No deaths occurred.

Macroscopic examination of the rats did not reveal any treatment-related gross alteration.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The results of toxicity testing data submitted support this conclusion.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

No ecotoxicological data were provided for the notified polymer. Following application and drying, the notified polymer is likely to be cross-linked within an inert matrix and of very low bioavailability and thus toxicity. Non-ionic polymers are generally of low ecotoxicity to aquatic organisms.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer will interact with other components to form a stable chemical matrix and, once dry, is expected to be immobile and pose little risk to the environment. After the useful life of the coated aluminium components in motor vehicles, most of the notified polymer will be recycled through metal recycling and some parts sent to landfill. Recycling treatment will destroy the notified polymer. Within a landfill environment, the notified polymer contained in waste from manufacture and application process and in metal scrap is expected to break down at a slow rate.

The notified polymer is not likely to present a risk to the environment when it is stored, transported, used, recycled and disposed of in the proposed manner.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

10.3. Public Health

Members of the public are unlikely to come into contact with the notified polymer unless there is an accident during transport or storage. The public will be exposed to coated car components, however, at this stage, the notified polymer is bound within the paint matrix and not available for exposure. Therefore, the risk to public from exposure to the notified polymer is considered low.

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

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.
 - 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 in landfill or incineration.

Emergency procedures

- Spills/release of the notified polymer should be handled by sweeping onto suitable material and transfer to a sealable waste container for appropriate disposal in accord with government regulations.

13.1. 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 subsection 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

- (2) Under subsection 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.