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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Crodamer E1698

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Director
Chemicals Notification and Assessment

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
PPG Australia Pty Ltd (ABN 82 055 500 939) of McNaughton Road CLAYTON VIC 3168.

T R (Chemicals Australia) Pty Ltd (ABN 57 001 268 006) 23 Koornang Road Carnegie, VIC 3163

NOTIFICATION CATEGORY
Limited: Polymer with NAMW ≥ 1000 (1 tonne or more per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formula, molecular weight, spectral data, purity and impurities, import volumes and polymer information.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
No variation to the schedule of data requirements is claimed. Some physical chemical data not provided and accepted by NICNAS.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
Not stated.

NOTIFICATION IN OTHER COUNTRIES
US (1998)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Crodamer E1698

MOLECULAR WEIGHT
Number average molecular weight >1000

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL METHOD GPC

3. COMPOSITION

DEGREE OF PURITY
High.

DEGRADATION PRODUCTS
Under extreme heat conditions such as fire, the notified polymer would burn and emit acrid fumes including oxides of carbon.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES
There is no loss of monomers, additives or impurities during the life of the coating.

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	0-1	1-10	1-10	1-10	1-10

USE
The notified polymer is a component of adhesives, inks and clear coatings. Initially, it will be used in an auto finish paint formulation.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY
Melbourne.

IDENTITY OF RECIPIENT
PPG Australia Pty Ltd.

TRANSPORTATION AND PACKAGING
The notified polymer will be imported in 300 mL aerosol auto finish paint formulation at <10% concentration weight by weight. The aerosol cans will be transported by road to the warehouse and then to the user sites. Transportation of the products will be via road to customer sites throughout Australia.

5.2. Operation Description
The notified polymer will be imported as a component of the product, 499-D8080 UV Cured Primer Surfacer, comprising <10% of the product. The product will be used without further reformulation.

5.3. Occupational exposure
Number and Category of Workers

Category of Worker	*Number*	*Exposure Duration*	*Exposure Frequency*
PPG Australia sales, technical and training staff	80	2	20
PPG warehouse staff	35	1	54
Paint application by end user	400	4	220
Transport vehicle drivers	500	1	200
Distributors warehouse staff	200	1	200

Exposure Details
The notified polymer is imported into Australia as a component of finished product. There will be one warehouse site and several customer sites in Australia.

Dermal and ocular exposure may occur during the spray application process. Engineering controls are expected to be in place, for example, well ventilated spray booths. Personal protective equipment is expected to be worn by workers.

After spray application and drying, the paint containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The notified polymer will be imported as a component of a formulation in ready-to-use 300 mL aerosol containers packed in boxes. Environmental release during importation and storage at the notifier's facility is not expected, and might potentially only occur due to a road or rail transportation accident.

The paint will only be available to commercial operators (eg. vehicle collision repair workshops) and will not be available to the general public.

The notifier estimates overspray will account for ~30% of the notified polymer. This estimate is based on spray efficiency of standard spray guns. Overspray waste, estimated at <3000 kg/y, will be captured in spray booths (masking tape, papers) and air filtration system. No liquid waste will be generated. Licensed waste disposal contractors will carry out cleaning of waste from spray booths, with waste sent to landfill.

The notifier indicates that ~2% (<200 kg/y) of the notified polymer may remain as residues in emptied aerosol cans. This will dry to form a non-leachable solid and will be disposed of as solid waste to landfill.

RELEASE OF CHEMICAL FROM USE

The notified polymer will be incorporated within an inert surface coating matrix and is not expected to leach or migrate. Applied products will eventually be metal recycled or sent to landfill for disposal. Heating during metal recycling is expected to destroy the notified polymer releasing oxides of carbon and water. Within a landfill environment, the notified polymer is expected to release only very slowly into the landfill matrix.

5.5. Disposal

Overspray waste and emptied aerosol cans will be collected by licensed waste contractors for landfill disposal.

5.6. Public exposure

The notified polymer is intended only for use in industry. It will not be available to the public.

Members of the public may make dermal contact with articles painted with products containing the notified polymer.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear, light green to grey, viscous liquid
Melting Point/Freezing Point	Not determined
Remarks	The notified polymer is a viscous liquid, physical state transition is not noticeable.
Boiling Point	Not determined
Remarks	The notified polymer will polymerise before the boiling point is reached.
Density	1.21 kg/m^3 at 20°C
METHOD	OECD TG 109 Density of Liquids and Solids. EC Directive 92/69/EEC A.3 Relative Density.
Remarks	
TEST FACILITY	SafePharm Laboratories Ltd (2003a)

Vapour Pressure 5.4 x 10^{-6} kPa at 25ºC.

METHOD OECD TG 104 Vapour Pressure.
EC Directive 92/69/EEC A.4 Vapour Pressure.
Remarks Vapour pressure balance. A series of tests was undertaken after the test material had been held under vacuum for ~185 hours. Temperature and pressure readings were taken at 190-200°C with a one hour dwell at 190°C. The notified polymer is only very slightly volatile (Mensink *et al*., 1995).
TEST FACILITY SafePharm Laboratories Ltd (2003b)

Water Solubility 1.31 x 10^{-3} g/L at 20ºC

METHOD OECD TG 105 Water Solubility.
EC Directive 92/69/EEC A.6 Water Solubility.
Remarks Flask method. Preliminary and definitive tests were conducted. Analytical Method: HPLC. The notified polymer is only slightly soluble in water (Mensink *et al*., 1995).
TEST FACILITY SafePharm Laboratories Ltd (2003a)

Hydrolysis as a Function of pH Not determined

Remarks Due to low water solubility this test was not done. The notified polymer has esters which could hydrolyse but not at environmentally relevant pH range of 4-9.

Partition Coefficient (n-octanol/water) Not determined

Remarks Due to low water solubility this test was not done. The notified polymer is expected to favour the octanol phase.

Adsorption/Desorption Log Koc range = <1.25 to >5.63

METHOD OECD TG 121 Method.
Remarks HPLC Screening Method.

Approximately 80% of the material has a Log Koc of >5.63 and ~97% of the material has a Koc >4.15. The notified polymer is expected to have a high affinity to organic matter and is not expected to be mobile in soils.
TEST FACILITY SafePharm Laboratories Ltd (2003a)

Dissociation Constant Not determined

Remarks Due to low water solubility this test was not done. The notified polymer contains non-ionisable functionality and is unlikely to dissociate.

Particle Size Not relevant

Remarks Liquid polymer

Flash Point 151 ± 2ºC at 101.325 kPa

METHOD EC Directive 92/69/EEC A.9 Flash Point.
Remarks
TEST FACILITY SafePharm Laboratories Ltd (2003b)

Flammability Limits Not determined

Remarks Combustible based on flash point results

Autoignition Temperature Not determined

Remarks Not determined based on flash point results

Explosive Properties Not determined

Remarks No component of the polymer has a functionality which could be potentially explosive.

Reactivity

Remarks The polymer contains an inhibitor to keep it stable, and is thus not reactive till reacted under controlled processing condition (during manufacture of product).

7. TOXICOLOGICAL INVESTIGATIONS

No toxicity data were submitted.

8. ENVIRONMENT

No ecotoxicity data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

The notified polymer is only slightly soluble in water, non-volatile and will strongly bind to organic matter. The proposed use and disposal pattern indicate a very low potential for release of the notified polymer to the aquatic environment, and no predicted environmental concentrations could be determined. The largest quantity of waste (up to 3 tpa) will derive from overspray, which will be sent to landfill for disposal in a diffuse manner.

9.1.2. Environment – effects assessment

No ecotoxicological data were provided. Boethling and Nabholz (1996) indicate that non-ionic polymers with NAMW >1000 are often of low ecotoxicity due to their low water solubility and low potential to cross respiratory membranes of aquatic organisms.

9.1.3. Environment – risk characterisation

Most of the notified polymer imported will eventually be disposed of to landfill. This includes wastes from spills, overspray, emptied imported aerosol containers and coated products at the end of their useful life. Some materials will be metal recycled, resulting in the destruction of the notifier polymer to form oxides of carbon and water. In landfill, the notified polymer is bound and not expected to be mobile. It will eventually degrade to give water vapour and oxides of carbon and nitrogen.

It is not possible to determine a realistic PEC value in order to assess the risk to aquatic organisms, as the use pattern of the notified polymer will result in limited exposure to the aquatic environment. Due to the limited release to water, it is unlikely that the polymer would exist at levels which could accumulate and pose a threat to aquatic organisms or to bioaccumulate. Based on the proposed use pattern, the release of the notified polymer to the aquatic environment is expected to be very low. Abiotic or slow biotic processes are expected to be largely responsible for the eventual degradation of the notified polymer as it is not expected to be readily biodegradable.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Dermal and ocular exposure can occur during the spray application process. However, exposure to significant amounts of the notified polymer is limited because of the small volumes used (300 mL aerosol cans) and the engineering controls in place during the application process. Personal protective equipment worn by workers will further reduce exposure.

After application and drying, the coating containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

9.2.2. Public health – exposure assessment

The notified polymer will not be sold to the public except in the form of finished articles. There is potential for public exposure to articles comprised wholly or partly of the notified polymer. However, public exposure will be low because the notified polymer is in an inert matrix and unavailable for absorption.

9.2.3. Human health - effects assessment

No toxicity data were provided for the notified polymer. The polymer has a high number average molecular weight of > 1000, and is unlikely to cross biological membranes. The notified polymer contains pendent high concern reactive functional groups, resulting in probable irritant and sensitising properties.

9.2.4. Occupational health and safety – risk characterisation

The health effects of the notified polymer have not been characterised by testing. However, its absorption into the body is expected to be low because of its high molecular weight. It may have skin sensitising and irritating effects because it contains pendant functional groups that have these characteristics.

In spray painting both engineering controls such as spray booths and full personal protective equipment are needed to reduce the exposure and the risk of skin irritation and sensitisation to acceptable levels. The risk would be further reduced by spray painting being carried out according to the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b).

Once the final paint mix has hardened, the notified polymer is bound within the matrix and unavailable for exposure. Therefore, should exposure occur, the risk of health effects from the polymer is low.

Worker exposure during transport, storage and distribution of the notified polymer and its products is unlikely, except in the event of an accidental spill. Exposure after a spill should be controlled by the recommended practices for cleaning up of spills stated in the MSDS.

Overall the health risk to workers arising from potential exposure to the notified polymer is considered low, due to the expected use of appropriate engineering controls to prevent exposure and due to the small volume of spray can (300 mL).

9.2.5. Public health – risk characterisation

Once the paint containing the notified polymer is applied to the substrate in the automotive industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable. Therefore no significant exposure to the public is expected and the risk to public health is low.

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

10.1. Hazard classification

Based on the available data the notified polymer is likely to be classified as hazardous substance under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC 1999a), with the following risk phrases:

- R36/38 (irritating to eyes and skin)
- R43 (May cause sensitisation by skin contact).

10.2. Environmental risk assessment

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

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 as a component of auto refinish paint products.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the product containing the 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 product containing the polymer 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

REGULATORY CONTROLS

Hazard Classification and Labelling

- The following risk phrases for the notified polymer are recommended:
  - R36/38 (irritating to eyes and skin)
  - R43 (May cause sensitisation by skin contact).

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following isolation and engineering controls to minimise occupational exposure to the notified polymer:
  - Use of engineering controls in spray painting to minimise exposure of workers.

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer;
  - Spray application of paint containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b)
  - Workers using spray products containing the notified polymer should be instructed in their proper handling and use, including information about the additional risks posed by spray application.

- Employers should ensure that the following personal protective equipment is used by

workers to minimise occupational exposure to the notified polymer:

- Protective gloves
- Safety glasses or goggles
- Industrial clothing
- Respiratory protection during spray painting, or if aerosols are formed
- Full body protection during spray painting

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 chemical are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC 1999a), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

Disposal

- Unserviceable emptied imported aerosol containers should be emptied and sent to landfill for disposal in accordance with local regulations and MSDS instructions.
- Serviceable cans should be recycled in accordance with MSDS instructions where specific aerosol can recycling facilities are available, or otherwise sent to landfill for disposal. Damaged cans should be placed in a container outdoors, away from sources of ignition, until the pressure has dissipated ad then sent to landfill for disposal.
- Spilled materials containing the notified polymer should be allowed to dry and sent to landfill or incinerator for disposal.

Emergency procedures

- Contain spill with approved absorbent materials (soil, sand, vermiculite or other inert material).
- Place spilled material in suitable labelled container and dispose of in accordance with local regulations.
- Do not allow spill to enter drains, sewers or other waterways. Contact environment agency in the event of release to sewer or waterways.
- Limit water use for clean up.

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 Subsection 64(1) of the Act; if

- introduced as the notified polymer, or
- manufactured in Australia.

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.

Secondary notification conditions including the provision of aquatic toxicity data will apply if the use pattern of the notified polymer is proposed to be changed resulting in significant release of the notified polymer to sewer or the aquatic compartment. If the notified polymer is introduced and secondary notification resulted, toxicity date including skin and eye irritation and skin sensitisation would need to be submitted.

13. BIBLIOGRAPHY

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