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

FULL PUBLIC REPORT

Polymer in ZQ7-42406

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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**

TABLE OF CONTENTS

FULL PUBLIC REPORT	3
1. APPLICANT	3
2. IDENTITY OF THE CHEMICAL.....	3
3. POLYMER COMPOSITION AND PURITY.....	3
4. PLC JUSTIFICATION.....	3
5. PHYSICAL AND CHEMICAL PROPERTIES.....	3
6. USE, VOLUME AND FORMULATION.....	5
7. OCCUPATIONAL EXPOSURE	6
8. PUBLIC EXPOSURE	7
9. ENVIRONMENTAL EXPOSURE	7
9.1. Release.....	7
9.2. Fate	7
10. EVALUATION OF HEALTH EFFECTS DATA.....	8
11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA	8
12. ENVIRONMENTAL RISK ASSESSMENT	8
13. HEALTH AND SAFETY RISK ASSESSMENT	8
13.1. Hazard assessment	8
13.2. Occupational health and safety	9
13.3. Public health	10
14. MSDS AND LABEL ASSESSMENT	10
14.1. MSDS	10
14.2. Label	10
15. RECOMMENDATIONS.....	10
15.1 Secondary notification	11
16. REFERENCES	12

FULL PUBLIC REPORT**Polymer in ZQ7-42406****1. APPLICANT**

BASF Coatings Pty Ltd of 231-233 Newton Road Wetherill Park NSW 2164 (ABN 93 080 438 464) has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) Polymer in ZQ7-42406.

2. IDENTITY OF THE CHEMICAL

The chemical name, CAS number, molecular and structural formulae, molecular weight, purity, spectral data and details of the polymer composition have been exempted from publication in the Full Public Report.

Marketing names: Polymer in ZQ7-42406

3. POLYMER COMPOSITION AND PURITY

Details of the polymer composition have been exempted from publication in the Full Public Report.

4. PLC JUSTIFICATION

The notified polymer meets the PLC criteria.

5. PHYSICAL AND CHEMICAL PROPERTIES

The following physico-chemical properties relate to the notified polymer unless otherwise stated.

Property	Result	Comments
Appearance		The imported product containing the notified polymer is a grey liquid.
Boiling point	Not determined	
Density	Not determined	1346 kg/m ³ (for the product containing the notified polymer)

Water solubility	Not determined	The notifier has indicated that the notified polymer is miscible in water. The polymer consists largely of hydrophobic constituents with only a small amount (<5%) of carboxylic acid functionality neutralized by the amine. It is unlikely that this would lead to appreciable solubility at this level and the polymer may be best described as dispersible in water rather than truly soluble.
Flammability	Not flammable	
Autoignition temperature	>200°C	
Flash point	≥70°C	
Explosive properties	>35 g/m ³ (Lower Explosive Limit)	
Stability/reactivity	Not determined	The notified polymer is expected to be stable under normal conditions of use
Hydrolysis as function of pH	Not determined	The notified polymer contains ester and carbamate groups but is unlikely to hydrolyse at pH 4-9 due to its solubility.
Partition coefficient	Not determined	The notified polymer is likely to associate with octanol phase.
Adsorption/desorption	Not determined	The notified polymer is likely to associate with soil/sediment due to its low water solubility.
Dissociation constant	Not determined	The notified polymer contains small amount of carboxylic acid groups present with typical acidity (estimated pKa of 4.87).

6. USE, VOLUME AND FORMULATION

Use:

The notified polymer is a component in car re-finish paints for automotive smash repair workshops.

Manufacture/Import volume:

The notified polymer is not manufactured or reformulated in Australia. BASF Coatings will import up to 1.6 tonnes of the notified polymer (50-75 tonnes of the paint product) over the first five years.

Formulation details:

The notified polymer will be imported at up to 2.13% as a component of car re-finish paints. The ready to use paint mixtures containing the notified polymer, known as Glasurit 1K-Primer Filler 76-71 (Product Code AG76-7100), will be imported in 2500 mL tin cans. The paint products will be applied by spray guns. Prior to spray application these products are added to a hardener and then reduced with a solvent to obtain the desired viscosity.

7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
END USE		
<i>Spray Booth Operators (1000 workers, 5 hrs/week, 150 applications/year)</i>		
dermal, ocular, inhalation	The paint is manually decanted into holding tanks and mixed with solvents using a spatula or a slow-speed motorised mixing paddle. The mixture is applied using a HVLP or high pressure spray gun.	Mixing carried out under local exhaust ventilation. Spraying carried out inside a down draft spray booth. Respiratory protection, safety goggles or face shields, gloves, and protective clothing.
TRANSPORT AND STORAGE		
<i>Transport, Dockside and Warehouse workers (<10 workers)</i>		
Dermal, ocular, inhalation	No exposure expected except in the event of an accident.	Not stated
DISPOSAL		
dermal	Notified polymer will be trapped within the paint matrix, therefore there is little potential for exposure.	Not stated

8. PUBLIC EXPOSURE

Public exposure through importation, transportation or storage is negligible. Reprocessing is limited to the addition of an activator prior to application. The notified polymer is a component in car refinishing paint applied within enclosed spray booths. There is significant public exposure to painted surfaces; however once cured the polymer is locked within the paint matrix.

9. ENVIRONMENTAL EXPOSURE

9.1. Release

No release of the notified polymer is expected during shipping and transport. The small size of the containers (2500 mL) will limit the extent of any spills in the event of a transport accident.

Release of the notified polymer to the environment may occur at smash repair workshops during preparation and application of the paint containing the polymer. The notifier estimates a loss of up to 30% of paint containing the notified polymer may be incurred as a result of overspray during paint application using HVLP spray guns. Slightly higher losses are expected when outdated high-pressure spray guns are used. Engineering controls implemented to capture overspray typically include spray booth filters, water scrubbers, cloth drop-sheets or newspaper. Any overspray and used filters will be collected and disposed of by incineration or landfill.

Assuming an annual import volume of 320 kg notified polymer and 30% overspray loss, approximately 96 kg of notified polymer may be generated for disposal each year.

Some losses of the polymer may occur as a result of incidental spills during the preparation of the paint for use. A small amount of waste may also be generated as a result of residues remaining in empty containers or in spray tanks and equipment. These residues are normally rinsed out with solvent, the solvent allowed to evaporate, and the residues allowed to cure and solidify. The solidified residues are disposed of to landfill. The notifier estimates that <1% of paint (ie less than 3.2 kg per year of notified polymer) will remain in the containers after use. The containers will be rinsed with solvent, which is subsequently collected and disposed of by a licensed solvent waste contractor, and then sent to landfill.

In summary, about 100 kg of notified polymer wastes could be generated in smash repair workshops each year as a result of vehicle spray-painting. It is expected that the paint product will be used in workshops throughout Australia and therefore waste generation and disposal will occur in a diffuse manner.

9.2. Fate

No data were provided on the expected environmental fate of the notified polymer. Any of the paint containing the notified polymer collected as spills, or as over-spray will be incinerated or landfilled by licensed waste disposal contractors. Incineration will destroy the polymer producing water vapour and oxides of carbon and nitrogen. In landfill, mobility is unlikely to occur when cured and solidified form of the polymer is disposed of. As such the

polymer is not expected to leach into aquatic compartments via the soil environment. The polymer contains ester groups, which may hydrolyse under extreme conditions such the presence of acid or base catalysts. Nevertheless, in the absence of a catalyst, and under ambient temperatures and environmental pH, no hydrolysis of the notified polymer is anticipated. The polymer is also not expected to readily biodegrade. It will likely to undergo slow degradation through both biotic and abiotic processes.

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

Once applied to the panels of motor vehicles the notified polymer will be incorporated into a hard, durable, inert film and would not present a hazard to the environment. The metal panels coated with the polymer are likely to be either recycled for steel reclamation or placed into landfill at the end of their useful life. When recycled the polymer would be destroyed in blast furnaces and converted to water vapour and oxides of carbon and nitrogen.

10. EVALUATION OF HEALTH EFFECTS DATA

No toxicological data were submitted.

11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA

No ecotoxicological data were submitted.

12. ENVIRONMENTAL RISK ASSESSMENT

The majority of the imported polymer will be incorporated into cured inert automotive re-finish paint on car panels. Approximately 100 kg of the notified polymer may be generated during car spray-painting each year. These will be disposed of in a cured and solidified form by landfill or incineration.

Given the nationwide use of the paint products, waste generation and disposal will occur in a diffuse manner. The most likely route of disposal is by incineration or in landfill. Incineration will destroy the polymer producing water vapour and oxides of carbon and nitrogen. In landfill, the solidified paint containing the notified polymer is expected to remain immobile and slowly degrade to gases such as carbon dioxide through abiotic and bacteriological processes.

Under normal usage, the notified polymer is not expected to enter the aquatic environment or pose any significant hazard to aquatic organisms. In the event of an accidental spill into the water compartment, the high molecular weight of the polymer will prevent movement across biological membranes and bioaccumulation. Overall, the paint product containing the notified polymer is not expected to pose a significant risk to the environment.

13. HEALTH AND SAFETY RISK ASSESSMENT

13.1. Hazard assessment

No toxicological data were provided for the notified polymer. However, the notified polymer is not expected to cross biological membranes due to its high molecular weight. The notified polymer meets the criteria for a Polymer of Low Concern and is unlikely to be a hazardous substance according to the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999a).

Based on the presence of hazardous additives in the imported paint mixture containing the notified polymer, the notifier classified the paint product as a hazardous substance with risk phrases: Possible risks of irreversible effects (R40); Harmful: danger of serious damage to health by prolonged exposure through inhalation (R48/20); and Harmful: may cause lung damage if swallowed (R65) (NOHSC, 1999b). NOHSC has established Exposure Standards for crystalline silica (NOHSC, 1995). Toxicological information in the MSDS for the paint products indicated that exposure to component solvent vapour concentrations in excess of the stated occupational exposure limit may result in mucous membrane and respiratory system irritation and adverse effects on kidney, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Prolonged or repeated contact with the product may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin. The liquid splashed in the eyes may cause irritation and reversible damage.

13.2. Occupational health and safety

The health risk for transport and storage workers is expected to be negligible under normal conditions. The greatest exposure is in the mixing and spraying of the paints.

The paint mixture containing the notified polymer could contain a wide variety of additional ingredients. They are likely to pose human health hazards. The presence of many potential hazardous substances in the paint formulations requires the use of stringent engineering controls, such as a correctly constructed and maintained spray booth, and of a high level of personal protective equipment, such as impermeable overalls and gloves, a full face shield, and respirator. The use of the paint mixture should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b). The level of protection from exposure afforded by the standard protective measures will provide adequate protection from the notified polymer, which is likely to be less intrinsically toxic than most of the solvents and other components of the paint mixture. The low concentration of the notified polymer in the paint mixture means a low risk of adverse health effects from the polymer alone.

Similar considerations apply in the cleaning of spray equipment and disposal of the polymer. The precautions used to prevent exposure to other paint components should be adequate for protection from the notified polymer. In addition, much of the polymer will be crosslinked and hardened, and therefore immobile, by the time of disposal.

Once the applied final paint mix has hardened, the polymer will not be separately available for exposure or absorption.

Conclusion

The notified polymer itself is of low risk to occupational health and safety. Apart from the controls already in place to prevent exposure to other paint components and to the notified polymer during spraying, no additional controls are required.

13.3. Public health

Public exposure to the notified polymer is essentially limited to dermal contact with the cured paint on cars. Curing binds the polymer in the paint matrix. The notified chemical will therefore not be biologically available. The notified chemical also has a high molecular weight and is present at low concentrations. Based on the information provided and intended end use, public exposure to the notified polymer is expected to be very low. As such the notified chemical is not likely to pose any significant risk to public health.

14. MSDS AND LABEL ASSESSMENT

14.1. MSDS

The MSDS of the products 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 part of the assessment report. The accuracy of the information on the MSDS remains the responsibility of the applicant.

14.2. Label

The label for the products 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.

15. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

No special precautions are required for the notified polymer when used at low quantities as a component of ready to use paint products for automotive smash repair workshops. However, in the interests of good occupational health and safety, the following guidelines and precautions should be observed for use of paint products containing the notified polymer.

- Employers should implement the following engineering controls to minimise occupational exposure to the spray painting products containing the notified polymer:
 - Exhaust ventilation during paint make-up and cleaning of equipment
 - Automated spray painting
 - Enclosed spray painting booth with exhausts or filter system

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the spray painting products containing the notified polymer:
 - Use of the paint containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting*
 - Employers should ensure that the NOHSC exposure standards for all of the components of the final paint mix are not exceeded in the workplace
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the spray painting products containing the notified polymer:
 - Chemical resistant gloves
 - Overalls or antistatic overalls during spray painting
 - Footwear or antistatic footwear during spray painting
 - Eye protection or full-face shield during spray painting
 - Air purifying respirator 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 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.

Environment

- The following control measures should be implemented to minimise environmental exposure during end use of the notified polymer:
 - Engineering emission control measures must be in place and cleaned regularly
 - All wastes containing the notified polymer should be disposed of in an approved manner by licensed waste contactors

Disposal

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

Emergency procedures

- In the event of a spill, the notified polymer should be contained and prevented from entering drains, streams or any water body. The material should be cleaned up with a non-combustible absorbent such as sand, which should be put into a suitable container and disposed of by a licensed waste contractor.

15.1 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(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.and
- (2) 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.

16. REFERENCES

Connell D. W. (1990) General characteristics of organic compounds which exhibit bioaccumulation. In Connell D. W., (Ed) Bioaccumulation of Xenobiotic Compounds. CRC Press, Boca Raton, USA.

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