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

FULL PUBLIC REPORT

Acrylic Polymer in Viscopol 9898

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**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

1.	APPLICANT AND NOTIFICATION DETAILS	3
2.	IDENTITY OF CHEMICAL	3
3.	COMPOSITION	3
4.	INTRODUCTION AND USE INFORMATION.....	3
5.	PROCESS AND RELEASE INFORMATION	4
5.1.	Operation Description.....	4
6.	EXPOSURE INFORMATION	4
6.1.	Summary of Environmental Exposure.....	4
6.2.	Summary of Occupational Exposure	5
6.3.	Summary of Public Exposure	5
7.	PHYSICAL AND CHEMICAL PROPERTIES	5
8.	HUMAN HEALTH IMPLICATIONS.....	5
8.1.	Toxicology.....	5
8.2.	Human Health Hazard Assessment.....	5
9.	ENVIRONMENTAL HAZARDS	5
9.1.	Ecotoxicology.....	5
9.2.	Environmental Hazard Assessment	6
10.	RISK ASSESSMENT	6
10.1.	Environment	6
10.2.	Occupational Health and Safety	6
10.3.	Public Health	6
11.	CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	6
11.1.	Environmental Risk Assessment	6
11.2.	Human Health Risk Assessment.....	6
11.2.1.	Occupational health and safety	6
11.2.2.	Public health.....	6
12.	MATERIAL SAFETY DATA SHEET	6
12.1.	Material Safety Data Sheet	6
13.	RECOMMENDATIONS	6
13.1.	Secondary Notification	7
14.	BIBLIOGRAPHY	7

Acrylic polymer in Viscopol 9898.

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Nuplex Industries (Australia) Pty Ltd of 49-61 Stephen Road, Botany, NSW, 2019.

NOTIFICATION CATEGORY

Polymer of Low Concern

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, Manufacture/Import Volume, and Site of Manufacture/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)

No

NOTIFICATION IN OTHER COUNTRIES

No

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Acrylic polymer in Viscopol 9898.

Viscopol 9898 is an aqueous dispersion (40-55%) of the notified polymer.

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

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>	30-100	100-300	100-300	100-300	100-300
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USE

The notified polymer, in the form of an aqueous dispersion, is used as a clear coating to cementitious surfaces, particularly roof tiles.

5. PROCESS AND RELEASE INFORMATION**5.1. Operation Description***Manufacture*

The notified polymer is manufactured in Australia in a totally enclosed manufacturing vessel from raw materials commonly used by latex manufacturers. The aqueous polymer dispersion containing the notified polymer at a concentration of 40-55% is sampled through approved sampling valves to determine any adjustments required.

The polymer dispersion is filled into 200 L drums or 1000 L mini bulk containers either using a packing machine or manually. Hoses are connected from the holding tank to the packing machine; the packing machine then dispenses a predetermined weight of the product. With the manual fill, the container is placed on a scale and the correct quantity added to the container using a manual valve controlled by the operator. Appropriate sealing of the container is manually completed in both cases. At conclusion of the packing, the hoses would be disconnected and rinsed to the site waste water system.

Workers wear overalls, safety shoes, gloves and safety glasses

End Use

For application, the polymer dispersion may be diluted or applied as is. Application of the clear coating to cementitious surfaces is most likely to be carried out by spray (usually airless spray), although application could also be by roller or brush. An airless spray rig consists of the pumping unit, hose and a gun. The coating is pumped through the high pressure hose and forced through very small tips which break up the coating into various size spray pattern fans. The biggest advantage to airless spraying is that since no air is used to force the coating out, there is very little overspray and the air is not filled with mist. Applicators of the coating wear overalls, safety shoes, gloves and safety glasses. In addition appropriate face masks may be worn during spraying.

6. EXPOSURE INFORMATION**6.1. Summary of Environmental Exposure***Release of polymer during transportation, storage and formulation*

Environmental release during manufacture is expected to be very small, as the polymer (dispersed in aqueous phase) is manufactured in an enclosed emulsion reactor. Wash water from the reactor and storage vessels is held for use in subsequent batches or treated on site prior to discharge generally to the sewer or trade waste system. Water that cannot be treated on site is removed by a licensed waste contractor for disposal.

Environmental release during manufacture, storage and transportation is unlikely except in the event of accidental spillage.

Release of polymer from use

The majority of the polymer will be tied to the fate of the finished product. The notified polymer is formulated at concentrations up to 55% in products whose end use causes the notified polymer to become entrained. This results in an expected low environmental impact. Empty cans and pails containing 1% dry paint residue (containing up to 3000 kg of the notified polymer per annum) will be consigned to landfills. Most of the notified polymer will be applied by airless spray. During this process the majority of the overspray containing the notified polymer will be bound to sheets or paper forming an inert matrix, to be disposed of to landfill or be incinerated, or more likely overspray will be

allowed to settle on the ground. Typically, the fraction that fails to reach its target (overspray) is up to 50% (Settles, 1998), in this case up to 150 tonnes. A further 1% (up to 3000 kg) of the notified polymer may be disposed of to the sewer systems during the cleaning of application equipment, especially brushes or rollers. Waste polymer may be expected to partition to the sediment of an aquatic environment.

6.2. Summary of Occupational Exposure

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

Dermal and ocular exposure can occur during certain manufacturing processes such as connection/disconnection of hoses, manual filling, and sampling. However, exposure to significant amounts of the notified polymer is limited because of the personal protective equipment worn by workers.

Exposure to the notified polymer at a concentration of up to 55% could occur during application of the coating. Dermal and ocular exposure are the most likely routes, for application by brush or roller. Spray application could also lead to exposure by aerosol inhalation. However, exposure to significant amounts of the notified polymer is limited because of the personal protective equipment worn by workers.

After application and once dried, the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

6.3. Summary of Public Exposure

The coating containing the notified polymer is normally only supplied to qualified applicators and is not available to the general public. Any public contact will be with the dried clear coating on a particular cementitious surface, mostly roofing tiles. Once dried, the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Translucent almost colourless solid.
Melting Point/Glass Transition Temp	Not determined
Density	1140-1150 kg/m ³ (notified polymer, calculated) 1030-1090 kg/m ³ (Viscopol 9898)
Water Solubility	<1 mg/L at 22°C. Measured using the method based on OECD Guideline 120. The notified polymer is said to be dispersible in water.
Dissociation Constant	Not determined. The notified polymer contains some free carboxylic acid functionality expected to have typical acidity.
Reactivity	Stable under normal conditions of use.
Degradation Products	Oxides of carbon

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were submitted.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Based on the high molecular mass and insoluble nature of the polymer, it is predicted to have large Kow and Koc values and shouldn't hydrolyse despite having hydrolysable groups present. The nature of the notified polymer indicates that the polymer is expected to adsorb onto particles of sediment and sludge, with very little of the polymer remaining in the water compartment. The notified polymer is not expected to cross biological membranes due to its high molecular weight and therefore is not expected to bioaccumulate. Nonionic polymers which have MW > 1000 are generally of low concern.

10. RISK ASSESSMENT**10.1. Environment**

Most of the notified polymer once sprayed will form a very high molecular weight and stable polymer matrix. Even though a large portion is expected to settle on the ground, it is expected to be immobile and pose little risk to the environment. As the coating degrades over time, any fragments, chips and flakes of the coating will be of little concern as they are expected to be inert.

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

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low due to limited exposure and the expected low toxicity.

10.3. Public Health

The notified polymer is intended for use by qualified applicators, and will not be sold to the public. Following application, the notified polymer will become trapped within an inert matrix and will not be bioavailable. 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 accordance with local authority regulations.

Emergency procedures

- Spills/release of the notified polymer should be contained as described in the MSDS. Do not flush down drains or sewer. Dike or contain spill with sand or earth. Clean up before the material dries. Adsorb the liquid with sand earth or other adsorbent, place in sealable container and dispose of to landfill.

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.

No additional secondary notification conditions are stipulated.

14. BIBLIOGRAPHY

Settles, GS, Miller, JD, Hartranft, TJ, and Brandt, AD (1998) Visualization And Collection of Overspray from Airless Spray Painting: In Proceedings of the 8th International Symposium on Flow Visualization, Sorrento, Italy, Sept. 1-4, 1998, Paper No. 138.