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

FULL PUBLIC REPORT

Polymer in Pronal 753 W

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FULL PUBLIC REPORT

Polymer in Pronal 753 W

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Sika Australia Pty Limited (ABN 12 001 342 329) of 55 Elizabeth Street Wetherill Park NSW 2164.

NOTIFICATION CATEGORY

The notified polymer meets the PLC criteria.

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, Spectral Data, Charge Density, Polymer Constituents, Hazardous and Non-hazardous Impurities/ Residual Monomers, Additives/Adjuvants.

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

None.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polymer in Pronal 753 W (34% notified polymer)

Viscocrete 1200NT (<1% notified polymer)

3. COMPOSITION

DEGREE OF PURITY

High.

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	0.05	0.10	0.10	0.10	0.10

USE

As a defoamer in a superplasticiser to prevent aeration in concrete and mortar admixtures.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURER/RECIPIENTS

Sika Australia Pty Limited.

TRANSPORTATION AND PACKAGING

The notified polymer will be imported as a component of concrete products in 205 L drums or 1000 L intermediate bulk containers. After mixing with water, the concrete products will be transported in purpose built concrete trucks to consumer sites (approximately 10 sites).

5.2. Operation Description

The notified polymer will be imported at <1% in Viscocrete 1200NT. It is anticipated that one shipment will arrive per month. The concrete products will be pumped into the customer's on-site storage tanks or processing vessels for mixing with water. The rate of addition of the concrete is 0.2% - 1.3% based on weight of cement, or 0.09% - 0.2% based on weight of concrete. Thus, the final concentration of the notifier polymer in the concrete is <0.01% at maximum. The ready-mixed concrete will be gravity-fed into concrete transport trucks via a hopper. Cleaning of the mixer and trucks will be done by flushing them with water.

5.3. Occupational exposure

Number and Category of Workers

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Transport and warehouse workers	< 10	--	12 days/year
Concrete batching plant operators (including cleaning of the mixer and trucks)	> 40	0.5 h (cleaning)	300 days/year
Concrete transport workers	> 80	--	300 days/year
Construction workers	> 1000	--	300 days/year

Exposure Details

Transport and warehouse workers will not be exposed to the notified polymer unless there is an accident resulting in breach of containers. The MSDS advises that spills should be absorbed with dry sand or vermiculite and disposed of in accordance with government regulations.

Concrete batching plants are automated and the mixing process is enclosed, therefore plant operators are not expected to be exposed to the notified polymer. However, when involved in cleaning operations or manually handling pump lines between imported bulk container and mixing vessel, dermal and ocular exposure to spillages is possible. Dust formation within concrete batching plants is also considered a major health hazard to workers. As a consequence, the plant operators will wear suitable industrial clothing, safety glasses, chemical goggles/face shields and protective gloves. Particulate respirators will also be provided to minimise exposure to dust. Engineering controls such as ventilation, process automation and use of enclosed systems will reduce worker exposure. MSDS is also available on sites.

Construction workers may be potentially exposed to the notified polymer when laying the concrete. They will wear protective gloves but the concentration of the notified polymer in the concrete batch at this stage is only about <0.01%.

5.4. Release

It is estimated that up to 5 kg per annum of notified polymer waste will be generated. This is derived from:

Release from use of concrete additive < 1 kg/annum

Residues in imported containers	< 2 kg/annum
Spills	< 0.3 kg/annum
Equipment Cleaning	< 1.7 kg/annum

Any spills of the product will be cleaned up with absorbent material and disposed of in landfill. Empty transport containers will be rinsed with water and the water recycled into subsequent concrete batches while the containers will be sent to drum reconditioners for disposal. Wastes derived from equipment and truck cleaning will be collected and sent to onsite settling tanks where the waste water will presumably be treated to precipitate the notified polymer. The resulting solid waste will be disposed of in landfill while the clear water will be recycled within the plant.

The remainder of the notified polymer will be incorporated into concrete.

5.5. Disposal

The notified polymer will be eventually disposed of in landfill, including solid wastes from equipment cleaning and concrete rubble from building demolitions.

5.6. Public exposure

Public exposure through importation, transportation and storage is negligible. As a component of a concrete additive the notified polymer is not available to the general public. There is potential for dermal exposure by the public purchasing wet concrete for do-it-yourself concreting. However, the polymer is present only at concentrations < 0.01% in concrete, and once the concrete has set it is not bioavailable.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa Clear liquid

Melting Point Not determined.

Density 992 kg/m³ at 20 °C

Remarks Test report not provided.

Water Solubility Not determined.

Remarks It is indicated that the notified polymer has surfactant like properties which reduce surface tension and suppress the formation of bubbles in the concrete. On the basis of its use pattern, the notifier expects the polymer to be water soluble, despite the lack of hydrophilic groups.

Particle Size Not applicable.

Remarks The notified polymer will be imported in a liquid product.

Flammability Not flammable.

Remarks Test not conducted.

Explosive Properties Not explosive.

Remarks Test not conducted.

Reactivity Stable under normal conditions of storage.

Remarks The notified polymer is not expected to undergo degradation, but may decompose if heated. In the event of a fire, combustion products including oxides of carbon and hydrogen may be produced.

7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

8. ENVIRONMENT

No ecotoxicological data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

The empty transport containers are rinsed with water prior to disposal and the rinsate is recycled into subsequent concrete mixtures. Washings from cleaning of equipment such as mixer and cement trucks are also recycled. Thus, there would be minimal release of the notified polymer to sewer or receiving waters. Any spilt polymer is contained within bunding and is collected using absorbent material, which is disposed of to landfill as will solid wastes resulting from treatment of the cleaning waste water. As the notified polymer will be used as a defoamer to prevent aeration in concrete, once the concrete has set, the notified polymer will be trapped and will not be available for release. Following building demolitions, concrete rubble is usually directed to landfill. As a result, environmental exposure is assessed as low.

9.1.2. Environment – hazard assessment

There is no ecotoxicological data available. However, on the basis that the polymer satisfies the criteria for a PLC and bioaccumulation is not expected due to its high molecular weight and its limited exposure to the aquatic and terrestrial compartments, the environmental hazard would be minimal.

9.1.3. Environment – risk characterisation

Most of the notified polymer will be incorporated into the matrix of the concrete and as such pose minimum risk to the environment.

The wastes derived from the use of the concrete additive, including concrete rubble, equipment cleaning and rinsing of empty containers, will be disposed of to landfill. Over time the notified polymer is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes to water vapour and oxides of carbon. Due to its high molecular weight the polymer is not expected to cross biological membranes and bioaccumulate.

Taken together, there will be a minimal risk to the environment when the notified polymer is used in the manner and levels indicated by the notifier.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

During transport and storage, workers are unlikely to be exposed to the notified polymer. Accidental spills will be handled as outlined in the MSDS.

Dermal and ocular exposure can occur during certain mixing processes. However, the concentration of the notified polymer in the concrete batch is only 1% at maximum. Also considering the engineering controls implemented throughout the plant to reduce dust formation and personal protective equipment worn by workers, the occupational exposure is determined to be low. The national exposure standard for nuisance dusts is 10 mg/m³ TWA (NOHSC, 1995). Australia has no exposure standard for respirable dust, however, the ACGIH TLV of 3 mg/m³ TWA is recommended [ACGIH, 2001].

9.2.2. Public health – exposure assessment

The notified polymer will not be available to the public. Members of the public may come into contact with the wet concrete products containing the notified polymer at concentration <0.01%. As a result, public exposure is assessed as negligible.

9.2.3. Human health - effects assessment

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

9.2.4. Occupational health and safety – risk characterisation

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* (NOHSC, 1999), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

9.2.5. Public health – risk characterisation

Exposure is limited to dermal contact with cement products containing <0.01% notified polymer. Once the concrete is set, the polymer is not bioavailable. Therefore, the risk to public health will be negligible.

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

10.1. Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the *NOHSC Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

10.2. Environmental risk assessment

On the basis of the available information, the polymer 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 Negligible Concern to public health when used in the proposed manner.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the products containing <1% notified polymer (Viscocrete 1200NT) provided by the notifiers were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 labels for the products containing <1% notified polymer (Viscocrete 1200NT) provided by the notifiers were 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

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.
- Concrete batching plant operators should wear suitable industrial clothing, safety glasses, chemical goggles/face shields and protective gloves. Particulate respirators should be used as required, to minimise exposure to dust.
- Engineering controls such as ventilation, process automation and use of enclosed systems at the mixing vessel should be implemented to reduce worker exposure to dust.
- Occupational exposure to nuisance/respirable dust or decomposition products during reformulation of the notified polymer solution should be maintained below the relevant NOHSC and ACGIH Exposure 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.

Emergency procedures

- Spills/release of the notified polymer should be handled as outlined in the MSDS.

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 Section 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 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.

13. BIBLIOGRAPHY

ACGIH (2001) The American Conference of Governmental Industrial Hygienists: Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices 2001. ACGIH, Cincinnati, Ohio.

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NOHSC (1995) Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)] & [NOHSC:1003(1995)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

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