

File No: PLC/17

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## **NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME**

### **FULL PUBLIC REPORT**

**CIN 10070751**

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act 1989*, and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Commonwealth Environment Protection Agency and the assessment of public health is conducted by the Department of Health, Housing, Local Government and Community Services.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the hours of 10.00 a.m. and 12.00 noon and 2.00 p.m. and 4.00 p.m. each week day except on public holidays.

Under subsection 34(2) of the Act the Director of Chemicals Notification and Assessment is to publish this Report in the Chemical Gazette on .

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Director  
Chemicals Notification and Assessment

**FULL PUBLIC REPORT****CIN 10070751****1. APPLICANT**

Kodak Australasia Pty Ltd of 173 Elizabeth St, Coburg, Victoria 3058 has submitted a notification for assessment of a synthetic polymer of low concern, CIN 10070751.

**2. IDENTITY OF THE POLYMER**

**Other names:** CIN 10070751, VWna-99/1

**Chemical Abstracts  
Service (CAS)**

**Registry No.:** Not available

**Number-average molecular weight:** 31100

**Weight-average molecular weight:** 71800

**Maximum percentage of low  
molecular weight species  
(polymers and oligomers)**

. (molecular weight < 1000): 1.0%  
 . (molecular weight < 500): 0.5%

**Means of identification (List of spectral data available):**

IR spectroscopy

**3. PHYSICAL AND CHEMICAL PROPERTIES**

The notified polymer will be imported into Australia as a 30-35% latex solution containing water at 65-70% and minor constituents at < 1% each (sodium sulfate, 1-tetradecanesulfonic acid, sodium salt and 1-hexadecanesulfonic acid, sodium salt).

**Appearance at 20°C and 101.3 kPa:** white liquid dispersion (latex solution)

**Density:** 1015 kg/m<sup>3</sup> at 25°C (polymer)

**Water Solubility:** estimated at < 1 mg/L at 20°C (polymer)

**Hydrolysis:** The chemical is hydrophobic and unlikely to react with the water phase. No readily hydrolysable groups are present.

**Explosive Properties:** not expected to be explosive

<b>Reactivity:</b>	not reactive. The polymer is not expected to break down by hydrolysis, thermal degradation, photodegradation, depolymerisation or otherwise. The polymer does not contain reactive functional groups that are intended or reasonably likely, to undergo further reaction
<b>Particle size distribution:</b>	range - 0.04 - 0.07 µm in water latex

### **Comments on physico-chemical properties**

While there is no test result for water solubility, the notifier argues that the polymer is essentially immiscible with water and that from the notifier's experience of modified emulsion polymers, it is concluded the likely solubility in water is < 0.1 ppm. Attempts to measure water solubility by freeze drying and centrifugation techniques on similar compounds have not been successful.

The polymer contains some anionic charged groups thus failing the PLC criterion, in theory. However, the notifier has argued that the aquatic toxicity will be low (see environmental effects section).

## **4. PURITY OF THE CHEMICAL**

The maximum level of residual monomers in the notified polymer is 0.05%.

## **5. INDUSTRIAL USE**

The notified polymer is to be used as a coupler/stabiliser in the manufacture of photographic film/paper.

## **6. OCCUPATIONAL EXPOSURE**

The notified polymer as a component of a latex solution, will be imported in 200 L polythene drums. After weighing the required amount, one employee will pump the latex solution into a mix tank about 250 times per year. Other addenda will be added to the mix tank resulting in a gelatin dispersion which is then weighed into storage containers. These containers are chilled to set the dispersion to a gel.

Prior to use, the set dispersion is broken into chunks by automated equipment and transported to the melt tanks in wheeled containers and tipped in. Other addenda are mixed in following which the gelatin dispersion is pumped to closely controlled automated processing equipment where the polymer will be incorporated into articles. The concentration of the polymer in the gelatin dispersion is about 11%.

## **7. PUBLIC EXPOSURE**

There is low potential for public exposure to the notified polymer when used in photographic paper or film. The properties of the polymer suggest that should exposure occur absorption is unlikely.

## **8. ENVIRONMENTAL EXPOSURE**

### **. Release**

There is potential for spillage in transport to and from the blending sites where the end use product is formulated. Methods outlined in the MSDS supplied for the product are adequate for containment and disposal of spills.

At the factory site there may be a release to water of up to 5% of the aqueous dispersion formulation. This would amount to a release of 750 kg per year to the sewer. At an estimated release of 5 kg per working day this would be diluted by the 400,000 L/day of sewer flow from the plant and further diluted by the 500 megaliters of water flowing into the sewerage treatment plant. The concentration in the receiving waters at the treatment works would then be 5.9 ppb.

An estimated 1% of the volume used per year (150 kg) would be sent to a secure landfill.

After use, during developing at automated film and paper processing plants, the some of polymer will be collected on the filters and become part of the filter cake that is returned to the USA for silver recovery. The rest would remain fixed to the processed film.

### **. Fate**

In the water phase released to the environment the low concentration of the notified polymer would be widely dispersed into the receiving waters and some would also become part of the sludge in the sewerage treatment process.

In landfill the polymer would be expected to be immobile and not subject to breakdown.

In the silver recovery process the polymer would be incinerated.

## **9. ASSESSMENT OF ENVIRONMENTAL EFFECTS**

No ecotoxicological data were provided, which is acceptable for polymers of low concern.

CIN 10070751 has the potential to exhibit some aquatic toxicity due to the presence of anionic groups but low concentrations are expected in release waters. There are few data to draw any firm conclusions about the toxicity of poly(aromatic sulphonates). It is suspected that any toxicity that these polymers may possess would be to algae, as observed for polycarboxylates (1). Polycarboxylates exert this toxicity by chelating nutrient ions, particularly when the carboxylate groups are on

alternate carbons. The low number of sulphonate groups in the notified substance would make it a very weak chelator of nutrient ions, and toxic effects on algae are therefore not expected.

## **10. ASSESSMENT OF ENVIRONMENTAL HAZARD**

The chemical is exposed to the environment in low concentrations that are unlikely to cause environmental hazard as they are dispersed quickly in the receiving waters. The mechanism of algae toxicity exhibited by the anionic polymers is likely to be as a result of chelating the metals that some algae use for nutrition. In this case the concentration of anionic groups is too low for toxicity to be exhibited.

## **11. ASSESSMENT OF OCCUPATIONAL AND PUBLIC HEALTH AND SAFETY EFFECTS**

CIN 10070751 has been notified as a synthetic polymer of low concern under section 23 for the purposes of section 24A of the *Industrial Chemicals (Notification and Assessment) Act, 1989*. The polymer meets most of the criteria for a synthetic polymer of low concern specified in regulation 4A of the *Act* except that it contains some anionic charged groups. However, this should not contribute to mammalian toxicity and the notified polymer can be considered of low hazard to human health.

Exposure to the notified polymer is expected to be limited to spills and splashing during pumping of the latex solution to a mix tank, running the resulting gelatin dispersion into storage containers and mixing the final product prior to production of coated articles using automated equipment. Under normal conditions of use, exposure to the notified polymer during these operations is expected to be low.

The risk of adverse health effects occurring as a result of transport, storage or use of the notified polymer is expected to be low.

## **12. RECOMMENDATIONS**

To minimise occupational exposure to CIN 10070751 the following guidelines and precautions should be observed:

- . if engineering controls and work practices are insufficient to reduce exposure to a safe level, then personal protective devices which conform to and are used in accordance with Australian Standards (AS) for eye protection (AS 1336, AS 1337) (2,3) and impermeable gloves (AS 2161) (4) should be worn. Industrial clothing (AS 2919) (5) and footwear (AS 2210) (6) also should be worn;
- . good work practices should be implemented to avoid spillages and splashing;
- . good housekeeping and maintenance should be practised. Spillages should be cleaned up promptly with absorbents which should then be put into containers for disposal in accordance with Local or State government regulations;

- . good personal hygiene should be observed; and
- . a copy of the Material Safety Data Sheet (MSDS) should be easily accessible to employees.

### **13. MATERIAL SAFETY DATA SHEET**

The attached Material Safety Data Sheet for CIN 10070751 was provided in an acceptable format.

This MSDS was provided by Kodak Australasia Pty Ltd as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of Kodak Australasia Pty Ltd.

### **14. REQUIREMENTS FOR SECONDARY NOTIFICATION**

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of CIN 110070751 shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

### **15. REFERENCES**

1. Nabholz JV, Miller P and Zeeman M, 1993, 'Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act (TSCA) Section Five'. In *Environmental Toxicology and Risk Assessment. ASTM STP 1179*. G Landis, JS Hughes, MA Lewis (eds). American Society for Testing and Materials, Philadelphia. p 50.
2. Standards Australia, 1994, *Australian Standard 1336-1994, Recommended Practices for Eye Protection in the Industrial Environment*, Standards Association of Australia Publ., Sydney, Australia.
3. Standards Australia, 1992, *Australian Standard 1337-1992, Eye Protectors for Industrial Applications*, Standards Association of Australia Publ., Sydney, Australia.
4. Standards Australia, 1978, *Australian Standard 2161-1978, Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)*, Standards Association of Australia Publ., Sydney, Australia.
5. Standards Australia, 1987, *Australian Standard 2919 - 1987 Industrial Clothing*, Standards Association of Australia Publ., Sydney, Australia.
6. Standards Australia, 1994, *Australian Standard 2210 - 1994 Occupational Protective Footwear, Part 1: Guide to Selection, Care and Use. Part 2: Specifications*, Standards Association of Australia Publ., Sydney, Australia.