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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**Polymer in Afranil SLO**

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**FULL PUBLIC REPORT****Polymer in Afranil SLO****1. APPLICANT**

BASF Australia Ltd of 500 Princes Highway, Noble Park, Victoria 3174 (ABN 62 008 437 867) has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) **Polymer in Afranil SLO**.

**2. IDENTITY OF THE CHEMICAL**

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

**Marketing names:** Afranil SLO

**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**

Unless otherwise stated, the physical and chemical properties below refer to the notified polymer as an aqueous suspension (at 1.6%).

Property	Result	Comments
Appearance	Beige solid	Appearance of neat notified polymer
Melting point	0°C	Solidification temperature of product
Boiling point	100°C	
Density	960 kg/m <sup>3</sup>	

<b>Water solubility</b>	Insoluble	See comments below
<b>Particle size</b>	Not determined	
<b>Flammability</b>	Not flammable	
<b>Autoignition temperature</b>	Not determined	
<b>Explosive properties</b>	Not explosive	
<b>Stability/reactivity</b>	Stable	
<b>Hydrolysis as function of pH</b>	Not determined	See comments below
<b>Partition coefficient</b>	Not determined	See comments below
<b>Adsorption/desorption</b>	Not determined	See comments below
<b>Dissociation constant</b>	Not determined	See comments below

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### 5.1 Comments on physical and chemical properties

No test results for the water solubility of the notified polymer were provided. The notifier has stated that the polymer is insoluble.

The hydrolysis potential of the notified polymer was not determined. However, the polymer contains ester linkages but these would not be expected to hydrolyse under environmental conditions (pH 4-9)

The partition coefficient of the notified polymer was not determined. However, its low water solubility indicates that it will preferentially partition into the organic phase.

The adsorption/desorption behaviour of the notified polymer was not determined. However, its low water solubility indicates that it will associate with soils and sediments and is unlikely to be mobile.

The notified polymer does not contain any functional groups that would be expected to dissociate under environmental conditions (pH 4-9).

## 6. USE, VOLUME AND FORMULATION

**Use:** Foam inhibitor and pulp deaerator for paper manufacture. Notified chemical is present in imported product at 1.6%.

**Manufacture/Import volume:** 1 – 10 tonnes/annum for 5 years

**Formulation details:** The notified polymer is imported as an aqueous suspension product in 1000L Schuetz containers at 1.6%. The imported product is transported to a single end use customer where it is pumped directly from import containers into fibres suspensions in the paper manufacturing stream.

## 7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
<b><i>Transport and Storage</i></b>		
<i>Dockside unload, transport to warehouse and storage (7 workers, 6 hours/year)</i>		
Dermal and/or ocular	Accidental breach of 1000L Schuetz tanks containing 1.6% polymer.	No exposure controls specified.
<i>Transport from warehouse to end use customer storage and return (5 workers, 12 hours/year)</i>		
Dermal and/or ocular	Accidental breach of 1000L Schuetz tanks containing 1.6% polymer.	No exposure controls specified.
<b><i>End use – Paper making</i></b>		
<i>Connection and disconnection of automatic metering lines to outlet valves of import containers (20 workers, 6 hours/year)</i>		
Dermal and/or ocular	Spillage of product (1.6% polymer) during manipulation of lines and valve assembly	Coveralls, protective footwear, chemical goggles, PVC, rubber or nitrile gloves. Natural ventilation.
<b><i>Quality Analysis</i></b>		
<i>Sampling of imported polymer (10 workers, 8 hours/year)</i>		
Dermal and/or ocular	Spillage during manual sampling of imported product (1.6% polymer)	Coveralls, protective footwear, chemical goggles, PVC, rubber or nitrile gloves. Exhaust ventilation.
<b><i>Disposal</i></b>		
<i>Cleaning/reconditioning of import containers</i>		
Dermal and/or ocular	Contact with product residue during container rinsing (1.6% polymer)	No exposure controls specified.

## 8. PUBLIC EXPOSURE

Public exposure during importation and transportation will only occur as a result of rupture of containers in an accident. In the event of a spill the MSDS advises that the material should be contained, then collected using absorbent material and disposed of in accordance with regulations.

During use the notified chemical will be added to a pulp mixture via metered pumps directly from the imported Schuetz containers and be present in very low concentrations. Public exposure during processing is expected to be negligible.

Waste water from the processing will either be recycled or discharged into the sewer. It is expected this waste water will have a very low concentration of the notified chemical. Empty

Schutz containers will be returned to BASF for cleaning and re-use. Public exposure to the chemical through waste is negligible.

The product is used solely by industrial end users and is not available to the public.

## **9. ENVIRONMENTAL EXPOSURE**

### **9.1. Release**

The notified polymer is imported to Australia within its final formulation and is not re-packed prior to being delivered to the customer site. There is only one customer site in Australia.

Given the proposed use pattern, releases to air and soil can be considered negligible except in the circumstances of accidental spillage.

The product containing the notified polymer at a concentration of 1.6% is used as a stock deaerator and foam inhibitor for use in the paper industry. Within the pulp and paper mill, wood chip is subject to high temperature and mechanical action which separates and evenly distributes fibres forming a suspension containing 5% solids. This is diluted to form a 1% solids fibre suspension with recycled process water. The notified polymer is added directly from the supply container during this dilution. It is mixed into the fibre suspension and reduces foaming. Five hundred grams of the end product is used for every tonne of paper produced.

Water drained from the paper pulp is recycled and reused to dilute incoming wood fibre suspensions. Some of this recycled water will be discharged to sewer. The notifier estimates the customer facility has a production rate of 770 tonnes of paper per day amounting to 385 kg of the end use product per day. At a concentration of 1.6% in the end use product, this amounts to 6.2 kg of the notified polymer. The notifier estimates that 1% of this is discharged with effluent, and 50 ML per day of effluent are released from the mill. Therefore, the notified polymer is expected to be present in mill effluent at a concentration of  $1.2 \times 10^{-3}$  µg/L.

The containers in which the product is supplied to the customer site contain 1000 L of product. The notifier estimates that up to 5 L may remain in these tanks. This residue is likely to be cleaned at an outside tank reconditioner facility at a rate of approximately 3-4 tanks per week giving up to 20 L of product per week for discharge to effluent treatment facilities. This amounts to 0.32 kg of notified polymer per week.

### **9.2. Fate**

The notified polymer is stated by the notifier as being insoluble in water, although no supportive data have been provided. Assuming this to be the case, the notified polymer would be expected to partition more readily to organic media. During the use in pulp mills, the chemical is added to reduce foaming during a dilution phase to dilute the suspension of wood fibres. Here it may be expected to remain associated with the fibres and be removed from solution.

Any of the notified polymer remaining in the wastewater could reach receiving waters. However, again it is more likely to associate with the organic component of sediments and not be bioavailable.

The characteristics of low expected solubility coupled with the polymers molecular weight indicate it will not be bioaccumulative (Connell, 1990).

## **10. EVALUATION OF HEALTH EFFECTS DATA**

No toxicological data were submitted.

## **11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA**

No ecotoxicological data were provided.

## **12. ENVIRONMENTAL RISK ASSESSMENT**

When used in the manner prescribed, the polymer is unlikely to lead to adverse effects in the environment. Release estimates indicate the notified polymer will be present in mill effluent at a concentration of  $1.2 \times 10^{-3}$  µg/L and assumes that 1% of the notified polymer is released with mill effluent.

The notified polymer makes up 1.6% of the end use product, which is stated as miscible with water in the MSDS. Assuming a worst-case scenario that all notified polymer used during a days production is released with effluent, the concentration in effluent would be 0.12 µg/L. If this is released straight to receiving waters with local dilution of 10:1, the concentration in receiving waters would be 0.012 µg/L.

While no ecotoxicological data are available for the notified polymer, releases of this concentration are not expected to lead to adverse environmental impacts.

## **13. HEALTH AND SAFETY RISK ASSESSMENT**

### **13.1. Hazard assessment**

No toxicological information has been provided for the notified polymer. However, due to its high molecular weight and presence of only low concern reactive functional groups, it is unlikely to be a hazardous substance in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999b). The notified polymer meets the criteria for a Polymer of Low Concern and thus is unlikely to represent a health hazard.

### **13.2. Occupational health and safety**

Exposure to the notified polymer is not expected during import and storage of the polymer suspension which contains 1.6% notified polymer. Import containers of polymer are not opened prior to end-use and so occupational exposure of import/storage workers to the polymer would only be envisaged in the case of accidental puncture of containers.

For paper plant operators and personnel involved in quality analysis, the main exposure routes will be dermal and ocular from splashes and spills. Exposure is only likely to occur during connection and disconnection of pump lines to import containers and during manual sampling of imported polymer for quality analysis. The low likelihood of vapour or aerosol formation during transfer and the use of exhaust ventilation at the dryer sections of the paper plant make inhalation exposure to the notified polymer unlikely.

Since wash water is recycled, the notified polymer will be present in the final manufactured paper only at very low levels. Therefore the possibility of exposure of workers involved in any manual handling of finished paper is very low. Drum recyclers may be exposed to the polymer residue via mainly the dermal route when reconditioning import containers.

A combination of personal protective equipment worn by workers and engineering controls in the form of enclosed transfer lines and general and local ventilation will control exposure to the polymer during end use. These controls will be adequate also to limit exposure to other potentially hazardous components of the imported polymer solution such as formaldehyde, a carcinogen and skin sensitiser, present in the imported solution at < 0.05%. Formaldehyde has a NOHSC exposure standard of 1.2 mg/m<sup>3</sup> TWA, 2.5 mg/m<sup>3</sup> STEL (National Occupational Health and Safety Commission, 1995). Where exposure control measures have not been specified and exposure is likely eg. for container reconditioners, personal protective equipment should be worn to limit exposure to the polymer and other potentially hazardous components of the imported solution.

Given these controls, the low possibility of exposure and the low health hazard associated with the notified polymer the health risk for these workers would be assessed as low.

### **13.3. Public health**

The product containing the notified chemical is used by industrial users at very low concentrations and is not available to the public. Hence the risk to public health is not expected to be significant.

## **14. MSDS AND LABEL ASSESSMENT**

### **14.1. MSDS**

The MSDS of the product containing the notified polymer was provided by the notifier 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 product containing the notified polymer 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. However, in the interests of good occupational hygiene practice, employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer in the product Afranil SLO:
  - Impervious coveralls and footwear
  - PVC, rubber or nitrile gloves
  - Chemical goggles

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.

### 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 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.

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

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