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

**PUBLIC REPORT**

**Polymer in Silikoftal ED**

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	<a href="http://www.nicnas.gov.au">www.nicnas.gov.au</a>

**Director  
NICNAS**

## **TABLE OF CONTENTS**

SUMMARY .....	3
CONCLUSIONS AND REGULATORY OBLIGATIONS .....	3
ASSESSMENT DETAILS .....	5
1. APPLICANT AND NOTIFICATION DETAILS .....	5
2. IDENTITY OF CHEMICAL.....	5
3. COMPOSITION.....	5
4. PHYSICAL AND CHEMICAL PROPERTIES .....	5
5. INTRODUCTION AND USE INFORMATION .....	6
6. HUMAN HEALTH IMPLICATIONS .....	7
6.1. Exposure Assessment.....	7
6.1.1. Occupational Exposure.....	7
6.1.2. Public Exposure.....	7
6.2. Human Health Effects Assessment .....	7
6.3. Human Health Risk Characterisation .....	7
6.3.1. Occupational Health and Safety .....	7
6.3.2. Public Health .....	7
7. ENVIRONMENTAL IMPLICATIONS.....	8
7.1. Environmental Exposure & Fate Assessment .....	8
7.1.1. Environmental Exposure .....	8
7.1.2. Environmental Fate .....	8
7.1.3. Predicted Environmental Concentration (PEC).....	8
7.2. Environmental Effects Assessment.....	8
7.2.1. Predicted No-Effect Concentration .....	8
7.3. Environmental Risk Assessment .....	8
BIBLIOGRAPHY .....	9

## SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1774	Brenntag Australia Pty Ltd	Polymer in Silikofтал ED	ND*	≤ 100 tonnes per annum	Component of surface coatings

\*ND = not determined

## CONCLUSIONS AND REGULATORY OBLIGATIONS

### Hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unreasonable risk to public health.

### Environmental risk assessment

On the basis of the reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

### Recommendations

#### CONTROL MEASURES

##### Occupational Health and Safety

- Based on the information provided, no specific engineering controls 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.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (SWA, 2012) or relevant State or Territory Code of Practice.
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS) as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

##### Disposal

- The notified polymer should be disposed of to landfill.

#### Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

#### Regulatory Obligations

##### *Secondary Notification*

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS 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 polymer has a number-average molecular weight of less than 1000;or
- (2) Under Section 64(2) of the Act; if
  - the function or use of the polymer has changed from a component of surface coatings, or is likely to change significantly;
  - the amount of polymer being introduced has increased, or is likely to increase, significantly;
  - the chemical/polymer has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the polymer on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

##### *(Material) Safety Data Sheet*

The (M)SDS of a product containing the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

## **ASSESSMENT DETAILS**

### **1. APPLICANT AND NOTIFICATION DETAILS**

#### APPLICANT

Brenntag Australia Pty Ltd (ABN: 841 1799 6595)  
262 Highett Road  
HIGHETT VIC 3190

#### NOTIFICATION CATEGORY

Limited: Synthetic polymer with  $M_n \geq 1,000$  Da.

#### EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, other names, CAS number, structural formulae, molecular weight, analytical data, degree of purity, polymer constituents, residual monomers, impurities, additives/adjuvants, and import volume.

#### VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: Boiling point, vapour pressure, water solubility, hydrolysis as a function of pH, partition coefficient, absorption/desorption, flammability limits, autoignition temperature, explosive properties, oxidizing properties and reactivity.

#### PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT

None

#### NOTIFICATION IN OTHER COUNTRIES

USA (2002) and Canada (2002)

### **2. IDENTITY OF CHEMICAL**

#### MARKETING NAME(S)

Polymer in Silikoftal ED

#### MOLECULAR WEIGHT

Number Average Molecular Weight ( $M_n$ ) > 1,000 Da

#### ANALYTICAL DATA

Reference NMR, IR and GPC data were provided.

### **3. COMPOSITION**

#### DEGREE OF PURITY

> 70%

#### LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

The notified polymer is stable under standard operating conditions and no loss of monomers, reactants, additives or impurities is expected.

#### DEGRADATION PRODUCTS

Not expected to occur under normal conditions of use.

### **4. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE AT 20 °C AND 101.3 kPa: Yellowish liquid

Property	Value	Data Source/Justification
Melting Point	Point/Freezing Not determined	The notified polymer is liquid at ambient temperature
Boiling Point	Not determined	Expected to decompose prior to boiling
Density	1,135–1,150 kg/m <sup>3</sup>	(M)SDS*

Vapour Pressure	$< 1.3 \times 10^{-9}$ kPa	Estimated based on the NAMW $> 1,000$ Da (US EPA, 2013)
Water Solubility	Not determined	Expected to have low water solubility based on the largely hydrophobic nature of the chemical structure
Hydrolysis as a Function of pH	Not determined	Hydrolysis of some pendant functional groups may occur at the extremes of the environmental pH range (4 – 9)
Partition Coefficient (n-octanol/water)	Not determined	The hydrophobic nature of the notified polymer indicates a strong potential to partition to the octanol phase
Adsorption/Desorption	Not determined	Expected to be relatively immobile in soil based on the hydrophobic structure and possibility of cross-linking with soil
Dissociation Constant	Not determined	The notified polymer does not contain readily dissociable functionality
Flash Point	110 °C	(M)SDS*
Autoignition Temperature	Not determined	Not expected to autoignite under normal conditions of use.
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	Contains no functional groups that would imply oxidative properties

\* For a product containing the notified polymer at  $> 70\%$  concentration.

#### DISCUSSION OF PROPERTIES

##### *Reactivity*

The notified polymer is expected to be stable under normal conditions of use.

##### *Dangerous Goods classification*

Based on the submitted physical-chemical data in the above table the notified polymer is not classified according to the Australian Dangerous Goods Code (NTC, 2007). However, the data above do not address all Dangerous Goods endpoints. Therefore, consideration of all endpoints should be undertaken before a final decision on the Dangerous Goods classification is made by the introducer of the chemical.

##### *Physical hazard classification*

Based on the submitted physico-chemical data depicted in the above table, the notified polymer is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

## 5. INTRODUCTION AND USE INFORMATION

#### MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia as the neat raw material.

#### MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	1	2	3	4	5
Tonnes	$< 50$	$< 50$	$< 50$	$< 100$	$< 100$

#### PORT OF ENTRY

Melbourne

#### TRANSPORTATION AND PACKAGING

The notified polymer will be imported in 200 L metal drums, and transported by road.

#### USE

The notified polymer will be used for coating concrete substrates. The final concentration of the notified polymer in the coating will be approximately  $120 \text{ g/m}^2$  of concrete after drying.

#### OPERATION DESCRIPTION

The notified polymer will be pumped from the imported 200 kg drums into a mixing tank where it will be combined with other components. The concentration of the notified chemical in the formulated coating products will be < 50%.

The final reformulated coating containing the notified polymer will be applied to infrastructure concrete surfaces by hand brush, roller or airless spray.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### 6.1.1. Occupational Exposure

##### EXPOSURE DETAILS

Transport and storage workers are unlikely to be exposed to the notified polymer (at > 70% concentration) except in the event of an accident.

During reformulation dermal and ocular exposure to the notified polymer (at > 70% concentration) may occur during transfer, final product testing (at < 50% concentration) and cleaning and maintenance of equipment. Dermal and ocular exposure to the notified polymer may also occur during the application of the finished products (containing < 50% notified polymer) to the surface of concrete. Inhalation exposure is expected to be limited by the predicted low vapour pressure of the notified polymer and the proposed use of airless sprays. Exposure may be minimised by the use of PPE including respirators, eye protection, impervious gloves, overalls and safety boots, as stated by the notifier. The imported product containing the notified chemical also contains a skin sensitising chemical at sufficient concentrations for the product to be classified and the protective measures (the (M)SDS states protective clothing and respiratory protection) taken to reduce exposure to this chemical will also reduce the exposure to the notified chemical.

Workers will likely make dermal contact with surface coatings containing the notified polymer after application. However, once the paint is cured, the notified polymer will be reacted into the polymer matrix and will not be bioavailable.

#### 6.1.2. Public Exposure

The general public will not use products containing the notified polymer. The public may have dermal contact with concrete surfaces coated with products containing the notified polymer, however once cured the notified polymer is bound within a polymer matrix and will not be bioavailable.

### 6.2. Human Health Effects Assessment

No toxicity data were submitted. At the stated molecular weight of the notified polymer there are no functional groups with concerns for human health. The notified polymer is not expected to be absorbed across biological membranes, based on the high molecular weight.

#### *Health hazard classification*

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### 6.3. Human Health Risk Characterisation

#### 6.3.1. Occupational Health and Safety

Dermal and ocular exposure may occur during reformulation and application of products containing the notified polymer to concrete surfaces. The notified polymer is not expected to be hazardous to human health, and therefore is not expected to pose an unreasonable risk to workers.

#### 6.3.2. Public Health

The notified polymer will not be available to the public, except after the product has been applied and cured and the notified polymer becomes bound within a polymer matrix. The notified polymer will not be available for exposure, hence the risk to the public is not considered unreasonable.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Environmental Exposure & Fate Assessment**

#### **7.1.1. Environmental Exposure**

##### **RELEASE OF CHEMICAL AT SITE**

The imported notified polymer may be reformulated into coating products locally. All potential small spills are expected to be collected in waste disposal bins and disposed of to landfill. Any washing from post production cleaning are collected and expected to be disposed of using a licensed waste contractor. Empty drums are expected to be disposed of through an approved drum recycler. The storage areas for raw materials and finished goods are also expected to be connected to a containment pit and/or water treatment plant.

##### **RELEASE OF CHEMICAL FROM USE**

Coating formulations containing the notified polymer will be applied by qualified personnel to concrete substrates by brush, roller and spray methods. During the application by spray techniques, typically 20-50% of coating may be released to the environment as overspray. It is expected that the overspray will cure into inert particles and associate with soil. Notified polymer captured on inert material is expected to be disposed of to landfill. Notified polymer in rinsing water is expected to be contained for reuse or disposal as solid waste after it has been allowed to cure. Notified polymer contained in accident spills and residues in empty end-use containers is expected to be disposed of to landfill.

##### **RELEASE OF CHEMICAL FROM DISPOSAL**

Notified polymer in coatings is expected to share the fate of the substrate to which it has been applied. Should reapplication be required, some coating may be removed by physical means (sandpaper/scraping), and it is expected that the collected waste will be disposed of to landfill.

#### **7.1.2. Environmental Fate**

No environmental fate data were submitted. The majority of the notified polymer in coatings is expected to share the fate of the substrate to which it has been applied, namely to landfill. The notified polymer may undergo partial hydrolysis under normal environmental conditions, but is expected to be cured into a solid polymer matrix as part of its normal use pattern. In landfill, the notified polymer will be present as a cured solid film and is not expected to be bioavailable nor readily biodegradable. Bioaccumulation of the polymer is unlikely due to the high molecular weight of the polymer even before curing. In landfill, the notified polymer is expected to slowly degrade *in situ* primarily by abiotic processes to form water and oxides of carbon and silicon.

#### **7.1.3. Predicted Environmental Concentration (PEC)**

As aquatic release is not expected at any stage of the notified polymer's lifecycle in Australia, a predicted environmental concentration (PEC) was not calculated for the aquatic compartment.

### **7.2. Environmental Effects Assessment**

No ecotoxicity data were submitted. High molecular weight polymers with low water solubility and without significant ionic functionality are generally of low concern to the aquatic organisms.

#### **7.2.1. Predicted No-Effect Concentration**

The predicted no-effect concentration (PNEC) has not been calculated as no ecotoxicity data were submitted.

### **7.3. Environmental Risk Assessment**

A risk quotient cannot be quantified as a PEC and PNEC were not determined. However, the environmental exposure of the notified polymer is expected to be minimal. Therefore, based on its assumed low hazard and assessed use, the notified polymer is not expected to pose an unreasonable risk to the environment.



**BIBLIOGRAPHY**

NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

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