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

**PUBLIC REPORT**

**Polymer in RUCO-GUARD WEB**

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.

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**Director  
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## 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/1883	R A Piesse Pty Ltd RCA International Pty Ltd  Winra Pty Ltd (trading as Oxford Technologies Australia)	Polymer in RUCO-GUARD WEB	ND*	< 10 tonnes per annum	Component of textiles, leather products, carpets, awnings and furnishings

\*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 of 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 PEC/PNEC ratio and the reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

### Recommendations

#### CONTROL MEASURES

##### Health Surveillance

- As the notified polymer is converted to a potential skin/respiratory sensitiser at elevated temperatures, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of sensitisation.

##### Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following engineering controls to minimise occupational exposure to the notified polymer when used at elevated temperatures:
  - Ventilation systems including local exhaust ventilation during transfer and application.
  - Enclosed and automated processes, where possible.
- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer when used at elevated temperatures:
  - Avoid inhalation of vapours.

- Avoid contact with skin and eyes.
- Wash hands after handling the products containing the notified polymer, or containers and equipment containing them.
- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer when used at elevated temperatures:
  - Impervious gloves
  - Overalls
  - Safety glasses
  - Respiratory protection if inhalation exposure may occur

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Atmospheric monitoring should be conducted to measure workplace concentrations of isocyanates during use of products containing the notified polymer at elevated temperatures. Employers should ensure that the exposure standard for isocyanates [NOHSC:1003 (1995)] is not exceeded for all areas where the notified polymer may be handled or present.

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- 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 of 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

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

#### Emergency procedures

- Spills or accidental release of the notified polymer should be handled by containment, physical 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 1,000 Da;or
- (2) Under Section 64(2) of the Act; if

- the function or use of the polymer has changed from component of textiles, leather products, carpets, awnings and furnishings, or is likely to change significantly;
- the amount of polymer being introduced has increased, or is likely to increase, significantly;
- the 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 product containing the notified polymer 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(S)

R A Piesse Pty Ltd (ABN: 33 060 193 875)  
16 North Point Crescent  
PELICAN WATERS QLD 4551

RCA International Pty Ltd (ABN: 50 006 843 232)  
3 Pilgrim Court  
RINGWOOD VIC 3134

Winra Pty Ltd (trading as Oxford Technologies Australia) (ABN: 97 006 583 044)  
44 Mickle Street  
DANDENONG SOUTH VIC 3175

## 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, CAS number, molecular and structural formulae, molecular weight, degree of purity, polymer constituents, residual monomers, impurities, additives/adjuvants, use details and import volume.

## 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)

RUCO-GUARD WEB (product containing the notified polymer at < 30%)

## MOLECULAR WEIGHT

> 1,000 Da

## ANALYTICAL DATA

Reference HPLC-MS, IR and GPC spectra were provided.

**3. COMPOSITION**

## DEGREE OF PURITY

> 90%

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

No loss of monomers, other reactants, additives and impurities is expected during normal conditions.

## DEGRADATION PRODUCTS

One of the polymer constituents will be released at temperatures higher than 120 °C.

#### 4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: brown highly viscous resin

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Decomposes before melting
Density	1,110 kg/m <sup>3</sup> at 20 °C	Measured
Vapour Pressure	< 1.3 × 10 <sup>-9</sup> kPa	Estimated based on the NAMW > 1,000 Da (US EPA, 2013)
Water Solubility	Insoluble	Measured#
Hydrolysis as a Function of pH	Not determined	Contains hydrolysable functionalities; however, not expected to hydrolyse rapidly or significantly under environmental conditions (pH 4–9).
Partition Coefficient (n-octanol/water)	Not determined	Not expected to be low based on low water solubility and high molecular weight.
Adsorption/Desorption	Not determined	Expected to adsorb to soil and sediment based on low water solubility, high molecular weight and cationic properties.
Dissociation Constant	Not determined	Expected to be ionised under environmental conditions (pH 4–9).
Particle Size	180 nm (average)	Measured
Flash Point	73.0 °C at 101.3 kPa*	Measured
Autoignition Temperature	Not determined	Expected to be relatively high based on the flash point
Explosive Properties	Not determined	Contains no functional groups that would infer explosive properties
Oxidising Properties	Not determined	Contains no functional groups that would infer oxidising properties

#Read-across data only, full study report not provided.

\*The notifier stated that the low flash point is due to residual acetic acid, 1-methylethyl ester (CAS No. 108-21-4) in the sample. The notified polymer is expected to have a high flash point based on the expected low vapour pressure.

#### DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, refer to Appendix A.

#### Reactivity

The notified polymer will release one of the polymer constituents at elevated temperatures (> 120 °C). The notified polymer then undergoes cross-linking reactions with other chemical components.

#### 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 of 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. It will be imported into Australia at concentration of < 30%.

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

Year	1	2	3	4	5
Tonnes	< 10	< 10	< 10	< 10	< 10

PORT OF ENTRY  
Melbourne

**TRANSPORTATION AND PACKAGING**

The product, containing the notified polymer at < 30% concentration, will be imported by sea in 120 L polyethylene drums and transported within Australia by road. The reformulated product, containing the notified polymer (< 3% concentration) will be transported in 1,000 L intermediate bulk containers (IBCs) by road.

**USE**

The notified polymer will be used as a component of factory-applied oil and water repellent for textiles, leather products, carpets, awnings and furnishings at < 3% concentration.

**OPERATION DESCRIPTION**

The notified polymer will not be manufactured in Australia. The notified polymer will be imported at < 30% concentration, and will be reformulated before application to substrates at industrial sites such as textile mills.

*Reformulation*

At the reformulation site the imported containers containing the notified polymer (< 30% concentration) will be moved to the blending area, either by forklift or manually. The contents of the imported containers will either be manually poured into the blending equipment, or for larger containers pumped through pipes into the blending tank. Reformulation of the imported product containing the notified polymer will be enclosed and automated with local exhaust ventilation in place. Once reformulation is complete, sampling for quality assurance purposes will take place and the product containing the notified polymer will be pumped to filling machines where will be transferred to 1,000 L IBCs.

*Application to substrates*

At the application sites, the formulated product containing the notified polymer (< 3% concentration) will be applied to substrates such as textiles, leather or carpets. This may occur by immersing the substrates in a bath consisting of the product containing the notified polymer. Any excess liquid will then be squeezed out and the substrates will be dried and cured in a drying oven (at temperatures > 120 °C) which is supplied with local exhaust ventilation. Another method of application involves coating the substrate with the product, with surplus liquid removed with squeegees before the drying/curing process. Spray application will not occur. The concentration of the notified polymer on the finished and dried substrates will be < 1%. It is expected that excess formulated product will be collected and re-used.

**6. HUMAN HEALTH IMPLICATIONS****6.1. Exposure Assessment****6.1.1. Occupational Exposure****CATEGORY OF WORKERS**

<i>Category of Worker</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Harbour worker	1	10
Truck driver (to distributor)	1	10
Warehouse staff at distributor	2	30
Workers diluting and filling the dispersion of the polymer	2	10
Truck driver (to textile mill)	1	10
Workers preparing the application liquor at textile mill	¼	25
Workers cleaning the machinery at textile mill	½	25

**EXPOSURE DETAILS***Transport and storage workers*

Transport and storage workers will only come into contact with the notified polymer (< 30% concentration) in the unlikely event of an accident.

*Reformulation processes*

Dermal and ocular exposure may occur when workers manually weigh and pour imported products containing the notified polymer (< 30% concentration) into mixing equipment, or when connecting and disconnecting hoses, and during cleaning and maintenance operations. Inhalation exposures are not expected based on the non-



spray methods of application, expected low vapour pressure of the notified polymer and because aerosols are not expected to be generated during reformulation processes. The remainder of the formulation process, including packaging, is expected to be mostly automated and exposure is expected to be low.

#### *Application to substrates*

Dermal and ocular exposure may occur when workers manually weigh and pour formulated products containing the notified polymer (< 3% concentration) into the application equipment, or when connecting and disconnecting hoses, during cleaning and maintenance operations, and when handling the treated substrates. During the drying process at elevated temperatures all volatile components are released in a manner to minimise exposure to workers (such as local exhaust ventilation and exhaust air washing). Inhalation exposure is not expected unless aerosols are generated during the application and drying processes. PPE is expected to be worn, including gloves, safety glasses, protective clothing and respiratory protection when aerosols or mist may be present.

### **6.1.2. Public Exposure**

The public may be exposed to the notified polymer through dermal contact with residues in treated articles, such as textiles, leather products or carpets. The notified polymer is expected to form a cohesive film via adsorption to the substrate fibres. However, cleaning of the substrates to which the notified polymer is applied is expected to be undertaken and may result in the notified polymer becoming dislodged and available for exposure.

## **6.2. Human Health Effects Assessment**

No toxicity data were submitted.

The notified polymer is not expected to cross biological membranes (skin or gastrointestinal tract) based on its high molecular weight (> 1,000 Da) and low proportion (< 2%) of low molecular weight species (< 500 Da). In addition, inhalation of the notified polymer is not expected to result in significant absorption from the respiratory tract.

The notified polymer releases a hazardous polymer constituent at elevated temperatures (> 120 °C) which has been classified as Carcinogenicity (Category 2), Eye Damage (Category 1), Acute Dermal Toxicity (Category 4) and Skin Sensitisation (Category 1). After the monomer has been released, the notified polymer contains isocyanate functional groups that may cause skin sensitisation.

#### **Health hazard classification**

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System of 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**

During reformulation automated processes are expected to be in place and PPE (gloves, safety glasses and protective clothing) is expected to be worn. The risk to reformulation workers handling the notified polymer is therefore not considered to be unreasonable.

Repeated dermal exposure of workers to the notified polymer may occur during application of textile and fibre stain repellents containing the notified polymer (at < 3% concentration). There is no repeated dose toxicity data for the notified polymer; however, systemic exposure to the notified polymer is expected to be low based on the high molecular weight (> 1,000 Da) and the low proportion (< 2%) of low molecular weight species (< 500 Da). In addition, the use of engineering controls (ventilation systems) and PPE (gloves, safety glasses, protective clothing and respiratory protection) are expected to further lower exposure to the notified polymer. During the application process at elevated temperatures, a hazardous polymer constituent will be released as a vapour. The hazardous constituent will be removed through ventilation and pumping systems to control the release of vapour below the occupational exposure limit (1 mg/m<sup>3</sup>). After the release of the hazardous constituent, the notified polymer contains isocyanate groups which are potentially sensitising. The isocyanate groups completely react with other chemicals or the aqueous treatment solution during curing and are not present in the final product.

Provided that the stated controls are in place, the risk of repeat dose toxicity to workers resulting from repeated dermal exposure is not considered to be unreasonable.

### 6.3.2. Public Health

The public may be exposed to the notified polymer through dermal contact with surfaces or articles that have been treated with products containing the notified polymer. This exposure may be on a long term repeated basis. The high molecular weight ( $> 1,000$  Da) of the notified polymer and the low proportion ( $< 2\%$ ) of low molecular weight species  $< 500$  Da is expected to prevent any significant dermal absorption. Therefore, the risk to public health from repeated dermal contact with the notified polymer is not considered to be unreasonable.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Environmental Exposure & Fate Assessment

#### 7.1.1. Environmental Exposure

##### RELEASE OF CHEMICAL AT SITE

The notified polymer will be imported as a component of a solution at  $< 30\%$  concentration, for reformulation into finished industrial textile treatment solutions. There is unlikely to be any significant release to the environment from transport and storage, except in the case of accidental spills and leaks. In the event of spills, the product containing the notified polymer is expected to be collected with adsorbents, and disposed of to landfill in accordance with local government regulations.

The reformulation process will involve blending operations that will be highly automated, and is expected to occur within a fully enclosed environment. Therefore, significant release of the notified polymer from this process to the environment is not expected. Empty containers, mixing vessels and transfer lines will be cleaned with water, and waste water recycled into subsequent batches where possible. Waste water controls will be established both at the facility for reformulating and at the customer facilities for application. Prior to release, the waste water is expected to be tested and reported to regulatory authorities.

##### RELEASE OF CHEMICAL FROM USE

The majority of the notified polymer will be adsorbed onto the surface or incorporated into the surface matrix of the treated substrates after application. The application methods include immersing the substrates in a bath consisting of product containing the notified polymer. Any excess liquid will then be squeezed out and the substrates will be dried and cured in an oven which is supplied with local exhaust ventilation. Another application method is coating the substrate with the product, with surplus liquid removed with squeegees before the drying/curing process. Spray application will not occur. Sources of potential release will be residues in empty containers (factory and site use), splashes and drips during decanting, mixing and loading into application equipment, cleaning of equipment. The residual application bath solution (approximately 60 L including a maximum 1 kg notified polymer) will be collected as 'Hazardous Waste' by licensed waste collectors and disposed of, if not reused for further applications. The empty application bath and the equipment will be rinsed with water, which will be collected in large holding tanks and taken off site as 'Hazardous Waste' by licensed waste collectors. It is estimated that per year, approximately 1,000 L in sum will be collected as waste water after several cleansings of the equipment. It is estimated that these 1,000 L will include a maximum 2 kg of the residual notified polymer.

During drying and condensation all volatile components are expected to evaporate and be trapped by exhaust filters. Depending upon the equipment of the customers, the exhaust air will be either released directly to the environment via an exhaust air unit, or passed on to an exhaust air washer meeting the national requirements on emission.

##### RELEASE OF CHEMICAL FROM DISPOSAL

Empty import containers will be cleaned with several washings, with almost the entire remaining product trapped and transferred to reformulation. It is estimated that 0.1% of the import volume of the notified polymer will remain in the import containers, which will be reused for reformulated product or collected by an approved drum recycling facility. The empty import containers and residues will be treated according to the national regulations. In total, it is estimated by the notifier that approximately 0.4% of the total import of the notified polymer (or 40 kg) may be released to sewer through the cleaning of import containers and equipment, or the result of cleaning accidental spills and leaks.

The notified polymer is expected to adhere to the substrate surfaces to which they have been applied. However, the use in textiles, leather products, carpets, awnings and furnishings is expected to result in some relocation of the notified polymer. Estimates for losses due to abrasion from these uses are not available. The portion of the

notified polymer that remains associated with the textiles, leather products, carpets, awnings and furnishings is expected to share the fate of the associated articles. The majority of the articles are expected to ultimately be disposed of to landfill. The notified polymer applied to surfaces may also degrade as a result of weathering upon being exposed to environmental conditions.

### 7.1.2. Environmental Fate

No environmental fate data for the notified polymer were submitted. The majority of the notified polymer is expected to adhere to the applied substrates following application of the product containing the notified polymer. Treated articles and other dried residues containing the notified polymer are expected to ultimately be disposed of to landfill. When associated with the articles to which the products containing the notified polymer have been applied, the notified polymer is not likely to be mobile or bioavailable in landfill.

Over time, the notified polymer is expected to become dissociated from the articles. The notified polymer is insoluble in water, and is not expected to rapidly hydrolyse under environmental conditions (pH 4–9, 25 °C) based on structural considerations. Based on its chemical structure, the notified polymer has biodegradable functionalities; however, it is not expected to be readily biodegradable based on its high molecular weight. The notified polymer is not expected to be bioaccumulative based on its high molecular weight and low water solubility. The notified polymer is likely to adsorb strongly to soil and sediment due to its high molecular weight, low water solubility, and cationic properties, and is therefore not expected to be mobile within the environment. In surface waters and in landfill, the notified polymer is expected to eventually degrade by biotic and abiotic processes to form oxides of carbon and nitrogen.

### 7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) from this process is calculated assuming a worst-case scenario, where there is no removal of the notified polymer during STP processes. It is estimated by the notifier that approximately 0.4% of the notified polymer (or 40 kg of the total import volume) is expected to be released to sewer per year across 260 working days.

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	10,000	kg/year
Proportion expected to be released to sewer	0.4%	
Annual quantity of chemical released to sewer	40	kg/year
Days per year where release occurs	260	days/year
Daily chemical release:	0.15	kg/day
Water use	200.0	L/person/day
Population of Australia (Millions)	22.613	million
Removal within STP	0%	
Daily effluent production:	4,523	ML
Dilution Factor - River	1.0	
Dilution Factor - Ocean	10.0	
PEC - River:	0.034	µg/L
PEC - Ocean:	0.003	µg/L

STP effluent re-use for irrigation occurs throughout Australia. The agricultural irrigation application rate is assumed to be 1,000 L/m<sup>2</sup>/year (10 ML/ha/year). The notified polymer in this volume is assumed to infiltrate and accumulate in the top 10 cm of soil (density 1,500 kg/m<sup>3</sup>). Using these assumptions, irrigation with a concentration of 0.03 µg/L may potentially result in a soil concentration of approximately 0.23 µg/kg. Assuming accumulation of the notified polymer in soil for 5 and 10 years under repeated irrigation, the concentration of the notified polymer in the applied soil in 5 and 10 years may be approximately 1.13 µg/kg and 2.27 µg/kg, respectively.

### 7.2. Environmental Effects Assessment

No ecotoxicity data were submitted for the notified polymer. Ecotoxicological endpoints for aquatic organisms for the notified polymer were calculated based on structure-activity relationship (SAR) equations, assuming a worst case cationic charge density for the polymer (Boethling and Nabholz, 1997). The endpoints are summarised in the table below.

<i>Endpoint</i>	<i>Result</i>	<i>Assessment Conclusion</i>
<u><i>Acute Toxicity</i></u>		
Fish	96 h LC50 = 30.80 mg/L	Predicted to be harmful to fish
Daphnia	48 h EC50 = 11.00 mg/L	Predicted to be harmful to aquatic invertebrates
Algae	96 h EC50 = 4.40 mg/L	Predicted to be toxic to algae
<u><i>Chronic Toxicity</i></u>		
Fish	ChV = 1.71 mg/L	Not predicted to be harmful to fish in the long term
Daphnia	ChV = 0.61 mg/L	Predicted to be harmful to aquatic invertebrates in the long term
Algae	ChV = 2.20 mg/L	Not predicted to be harmful to algae in the long term

Based on the above worst case SAR estimations, the notified polymer is potentially acutely toxic to algae and harmful to fish and aquatic invertebrates. The notified polymer is also potentially chronically harmful to aquatic invertebrates, although it is not expected to be chronically harmful to fish and algae. The SAR estimation procedure used here is a standard approach, and is considered reliable to provide general indications of the likely environmental effects of the polymer for the purposes of risk assessment. However, this method is not considered sufficient to formally classify the acute and chronic hazards of the notified polymer to aquatic life under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) (United Nations, 2009).

#### 7.2.1. Predicted No-Effect Concentration

The predicted no-effects concentration (PNEC) has been calculated from the most sensitive endpoint for *Daphnia*. A safety factor of 10 was used given acute and chronic endpoints for three trophic levels are available.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
ChV ( <i>Daphnia</i> , 21 d)	0.61	mg/L
Assessment Factor	10	
Mitigation Factor	1.00	
PNEC:	61	µg/L

#### 7.3. Environmental Risk Assessment

The Risk Quotient ( $Q = \text{PEC}/\text{PNEC}$ ) has been calculated based on the predicted PEC and PNEC.

Risk Assessment	PEC µg/L	PNEC µg/L	Q
Q - River	0.034	61	<b>0.001</b>
Q - Ocean	0.003	61	<b>&lt; 0.001</b>

The risk quotient for discharge of treated effluents containing the notified polymer to the aquatic environment indicates that the notified polymer is unlikely to reach ecotoxicologically significant concentrations in surface waters, based on its maximum annual importation quantity. The notified polymer is not expected to be readily biodegradable. It is not expected to be bioavailable or bioaccumulative due to its high molecular weight and low water solubility. On the basis of the PEC/PNEC ratio, maximum annual importation volume and assessed use pattern in textile treatment solutions, the notified polymer is not expected to pose an unreasonable risk to the environment.

**APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES**

**Density** 1,110 kg/m<sup>3</sup> at 20 °C  
Method OECD TG 109 Density of Liquids and Solids.  
EC Council Regulation No 440/2008 A.3 Relative Density.  
Remarks Measured using a hydrometer  
Test Facility Rudolf GmbH (2015a)

**Water Solubility** 0 g/L at 20 °C  
Method OECD TG 105 Water Solubility.  
EC Council Regulation No 440/2008 A.6 Water Solubility.  
Remarks Flask Method  
Test Facility Rudolf GmbH (2015c)

**Particle Size** 180 nm (Z-average)  
Method Dynamic light scattering  
Remarks Measured using a Malvern Zetasizer Nano S  
Test Facility Rudolph GmbH (2015b)

**Flash Point** 73.0 °C at 101.3 kPa  
Method DIN EN ISO 3679  
Remarks Measured with the Seta-Flash (S7) apparatus.  
Test Facility Henkel (2015)

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