File No: LTD/1812

April 2015

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

Polymer in Palmer Scarlett

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:

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Director
NICNAS

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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/1812	Milliken Design Inc.	Polymer in Palmer Scarlett	ND*	≤ 1 tonne/s per annum	Colourant in ink formulations

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification
Based on the available information, the notified polymer is not recommended for classification 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 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

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.

- 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

- Where reuse or recycling are unavailable or impracticable, dispose of the 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 1000;
- additional information becomes available on the repeated dose or mutagenicity/carcinogenicity potential of the notified polymer;
- the concentration of the polymer is intended to exceed 0.05% in household and laundry products;
- the notified polymer is intended to be used in children's markers in an amount greater than 0.75 g per marker, and exceeding 18% concentration.

or

(2) Under Section 64(2) of the Act; if
- the function or use of the polymer has changed from colourant in ink formulations, 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 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
Milliken Design, Inc. (ABN: 58 142 096 759)
Level 14, 380 St. Kilda Road
Melbourne VIC 3004

NOTIFICATION CATEGORY
Limited: Synthetic polymer with Mn ≥ 1,000 Da.

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, analytical data, polymer constituents, residual monomers, impurities, additives/adjuvants, use details, site of reformulation and identity of manufacturer/recipients.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed as follows: Vapour pressure, water solubility, dissociation constant, adsorption/desorption, flammability, auto-ignition temperature, explosive properties and oxidizing properties.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
USA (1989), New Zealand (1998), South Korea (2001), Taiwan (2011) and China

2. IDENTITY OF CHEMICAL

MARKETING NAME
Polymer in Palmer Scarlett

MOLECULAR WEIGHT
> 1,000 Da

ANALYTICAL DATA
Reference Electrospray-MS, GPC and UV spectra were provided.

3. COMPOSITION

DEGREE OF PURITY
> 97%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Dark red coloured liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	-10 °C	(M)SDS*
Boiling Point	100 °C at 101.3 kPa	(M)SDS*
Density	1,100 kg/m^3 at 25 °C	(M)SDS*
Vapour Pressure	< 1.3×10^{-9} kPa	Estimated based on the NAMW > 1,000 Da (US EPA, 2013)
Water Solubility	Not determined	Expected to be water soluble based on the presence of hydrophilic functional groups in the chemical structure and being sold as a polymer in water solution
Hydrolysis as a Function of pH	$t_{1/2}$ > 1 year at 25 °C, pH 4, 7 and 9	Measured

Partition Coefficient (n-octanol/water)	log Pow = - 1.25	Measured
Adsorption/Desorption	Not determined	Based on its potential cationicity, the notified polymer is expected to predominantly adsorb to soil or sediments.
Dissociation Constant	Not determined	The notified polymer is a salt and therefore, it will be ionised under environmental conditions (pH 4 – 9).
Flash Point	> 110 °C	Measured
Autoignition Temperature	Not determined	Not expected to autoignite under normal condition 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

* Product containing the notified polymer

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

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

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 in consumer products such as markers and household products such as cleaners and laundry detergents.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	0.4	0.5	0.6	0.7	0.8

TRANSPORTATION AND PACKAGING
The notified polymer will be imported into Australia as a component in consumer products. The packaging sizes will vary depending on the product type.

USE
The notified polymer will be used as a colouring agent in markers, inks, soaps, laundry products and household cleaners.

OPERATION DESCRIPTION
The notified polymer will not be manufactured or reformulated in Australia. It will be imported in end-use products such as children's markers, ink, household and laundry products. The amount used in the markers will be < 0.75 g per marker at a maximum concentration of 18%. The notified polymer may also be used in household products at a concentration of ≤ 0.05%.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure
The notified polymer will be imported as part of end-use products and will not be reformulated or repackaged in Australia. Occupational exposure of transport and retail workers will be only in the event of an accident.

Occasional dermal exposure to the notified polymer (at a concentration < 18%) during use of pens or ink by office workers may occur if surfaces are handled before the ink containing the notified polymer has dried or if there is incidental contact with the tips of pens.

Once the ink has dried, the polymer will be bound to the absorbent surface (such as paper and cardboard), and dermal exposure to the notified polymer from contact with dried ink is not expected.

Exposure to the notified polymer in end-use products (at < 0.05% concentration) may occur in professions where the services provided involve the use of household products such as in the cleaning industry. The principal route of exposure will be dermal, while ocular and inhalation exposure is also possible. Such professionals may use some PPE to minimise repeated exposure.

6.1.2. Public Exposure

The public will be exposed to the notified polymer through the use of products containing the notified polymer such as colouring markers, household and laundry products. The principal route of exposure will be dermal, while ocular exposure is also possible. Oral and dermal exposure to children is also expected to occur from use of the notified polymer in children's markers.

6.2. Human Health Effects Assessment

The results from toxicological investigations conducted on the notified polymer are summarised in the following table. For full details of the studies, refer to Appendix B.

Endpoint	*Result and Assessment Conclusion*
Rat, acute oral toxicity	LD50 > 5,000 mg/kg bw; low toxicity
Rabbit, skin irritation	non-irritating

Toxicokinetics, metabolism and distribution.

No toxicokinetics, metabolism and distribution studies were submitted for the notified polymer. The changes in urine colour to that of test substance observed in an acute toxicity study in rats suggests the polymer can be absorbed through the gastrointestinal tract. For dermal absorption, molecular weights below 100 Da are favourable for absorption and molecular weights above 500 Da do not favour absorption (ECHA, 2014). A substance is not likely to be sufficiently lipophilic to cross the stratum corneum if log P values are < -1; hence, dermal absorption is likely to be low (ECHA, 2014). Due to the high molecular weight (> 1,000 Da., 0% < 500 Da) and the low partition coefficient (log Pow = - 1.25) of the notified polymer, its dermal absorption is expected to be low.

The notified polymer is an azo dye. The azo linkage is the most labile portion of an azo dye molecule, and it is readily enzymatically metabolised in mammals, including man (SCCNFP, 2002). Liver azo reductase enzymes reductively cleave the molecule into component amines. Some metabolism may also occur in the cells of the bladder wall, and during percutaneous absorption. Anaerobic intestinal bacteria are also capable of catalysing reductive cleavage of the azo bond. On this basis, azo dyes are assessed for mutagenicity/carcinogenicity and classified similarly to their component amines (DFG, 2005). Bacterial skin microflora have also been reported to be able to break down azo dyes into smaller amine species through azo reduction (SCCNFP, 2002).

Acute toxicity.

The notified polymer was of low acute toxicity via the oral route in rats with an LD_{50} > 5,000 mg/kg bw.

Irritation and sensitisation.

The notified polymer was found to be non-irritating to the skin when tested on rabbits.

Repeated dose toxicity.

No repeated dose toxicity data were submitted on the notified polymer. Given the low potential for dermal absorption, systemic toxicity by the dermal route is not expected.

Mutagenicity/Genotoxicity.

No mutagenicity/genotoxicity studies were provided for the notified polymer. As mentioned above the mutagenicity/carcinogenicity of an azo compound is often linked to that of the component amines. The amines formed from the breaking of the azo bond in the notified polymer are not classified for mutagenicity/carcinogenicity and are not close analogues of any amines that are. However, due to the lack of

data on the notified polymer the potential for the notified polymer to cause mutagenic effects cannot be completely ruled out.

Health hazard classification
Based on the available information, the notified polymer is not recommended for classification 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
The notified polymer is of low acute toxicity and is not irritating to the skin. In addition, due to the predicted low dermal absorption the potential for systemic effects is also reduced. While the potential for mutagenicity/carcinogenicity via the oral route cannot be completely ruled out, in the absence of data, the amines formed from the breaking of the azo bond in the notified polymer are not classified for mutagenicity/carcinogenicity.

Dermal exposure to the notified polymer by office workers is possible during the use of pens, inks or household products containing it. However, exposure is expected to be low due to the low concentration in household products and the incidental nature of the exposure to pens and inks containing the notified polymer. Therefore, based on the expected low exposure of workers to the notified polymer, the risk to health of workers from use of the notified polymer is not considered to be unreasonable.

6.3.2. Public Health
Public exposure to the notified polymer by adults is expected to be similar, though less frequent than that experienced by office workers. Therefore, the risk to the health of adult members of the public from use of the notified polymer is not considered to be unreasonable.

Children may experience oral and dermal exposure to the notified polymer through its use in children's markers. Dermal absorption is expected to be low; however, the notified polymer is expected to be absorbed through the gastrointestinal tract. No acute effects would be expected following oral exposure; this is supported by the low acute toxicity seen in rats. While the potential for systemic or mutagenic effects following oral exposure cannot be ruled out in the absence of data, these are expected to be minimised by the occasional nature of any exposure, the low amount of the notified polymer in the markers (< 0.75 g), oral contact with the polymer restricted to the marker tip only, and the negligible amount that would be transferred from the marker to the child's mouth. Therefore, the risk to the health of children from use of 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 part of a finished good. The notified polymer will not be manufactured or reformulated in Australia; therefore there will be no release of the notified polymer to the environment from these activities.

RELEASE OF CHEMICAL FROM USE
The notified polymer will be used as a colouring agent in markers, inks, paints, soaps, laundry products and household cleaning products. As a worst case scenario, the majority of the notified polymer is expected to be released to sewers across Australia during use in soap, laundry products and household cleaning products. As such, it is expected that effectively the entire quantity of imported notified polymer will be disposed of to the sewer after use, apart from the very small quantity that remains in empty containers which is expected to be disposed of to landfill.

RELEASE OF CHEMICAL FROM DISPOSAL
The majority of the notified polymer will be disposed of to the sewer after use. A very small proportion of the total imported quantity is expected to be disposed of to landfill, as residues in containers or from spills or leaks.

7.1.2. Environmental Fate

No environmental fate data were submitted for the notified polymer. The notified polymer is hydrolytically stable under normal environmental conditions ($t_{1/2}$ > 1 year at 25 °C, pH 4 – 9). Following its use in Australia, the majority of the notified polymer is expected to enter the sewer system before potential release to surface waters on a nationwide basis. During waste water treatment processes in sewage treatment plants (STPs), a significant amount of the notified polymer is expected to be removed from waste waters, by partition to sludge, due to its potential cationicity and high molecular weight. If a small amount of the notified polymer is released to surface waters, it is expected to disperse and eventually degrade.

Sewage sludge will be disposed of to landfill or used in soil remediation. Notified polymer disposed of to landfill is expected to associate with negatively charged humic material and consequently be effectively immobilised. The notified polymer is not likely to bioaccumulate due to its low water/n-octanol partition coefficient (log Pow = -1.25) and high molecular weight. In landfill, soil, or surface water, the notified polymer is expected to gradually degrade via biotic or abiotic pathways to form water vapour, oxides of carbon and nitrogen, and inorganic salts.

7.1.3. Predicted Environmental Concentration (PEC)

The calculation for the Predicted Environmental Concentration (PEC) is summarised in the table below. Based on the reported use in soaps, laundry products and household cleaning products, it is assumed as a worst case scenario that 100 % of the total import volume of polymer would be released to sewer on a nationwide basis over 365 days per year. It was assumed that 0% of the notified polymer partitions to sludge in STPs for this scenario, although it is a cationic polymer.

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	800	kg/year
Proportion expected to be released to sewer	100%	
Annual quantity of chemical released to sewer	800	kg/year
Days per year where release occurs	365	days/year
Daily chemical release:	2.19	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:	0.48	µg/L
PEC - Ocean:	0.05	µg/L

STP effluent re-use for irrigation occurs throughout Australia. The agricultural irrigation application rate is assumed to be 1000 L/m^2/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 1500 kg/m^3). Using these assumptions, irrigation with a concentration of 0.485 µg/L may potentially result in a soil concentration of approximately 3.23 µg/kg. Assuming accumulation of the notified polymer in soil for 5 and 10 years under repeated irrigation, the concentration of notified polymer in the applied soil in 5 and 10 years may be approximately 16.2 µg/kg and 32.3 mg/kg, respectively.

7.2. Environmental Effects Assessment

The result from ecotoxicological investigations conducted on the notified polymer for fish is summarised in the table below. Details of this study can be found in Appendix C.

Endpoint	*Result*	*Assessment Conclusion*
Fish Toxicity (96h)	EC50 < 100 mg/L	Not harmful to aquatic invertebrates

The notified polymer is not harmful to fish. Based on the acute toxicity endpoint for fish, the notified polymer is not considered harmful to aquatic organisms. Therefore, the notified polymer has not been formally classified under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS; United Nations, 2009) for the acute and chronic toxicity.

7.2.1. Predicted No-Effect Concentration

The predicted no-effect concentration (PNEC) for the notified polymer has been calculated and is presented in the table below. The PNEC is calculated using the acute toxicity endpoint of the notified polymer to fish. An assessment factor of 1000 has been used as an acute toxicity endpoint for only one trophic level is available.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
LC50 (Fish).	1,000	mg/L
Assessment Factor	1,000	
PNEC:	1,000	µg/L

7.3. Environmental Risk Assessment

Based on the above PEC and PNEC values, the following Risk Quotient (Q) has been calculated:

Risk Assessment	***PEC µg/L***	***PNEC µg/L***	***Q***
Q - River:	0.48	1000	0.0001
Q - Ocean:	0.05	1000	0.00001

The calculated Risk Quotient (PEC/PNEC) for discharge containing the notified polymer to the aquatic environment was << 1 for both river and ocean water systems. The RQ value indicates that the notified polymer is unlikely to reach ecotoxicologically significant concentrations based on its reported use pattern and annual introduction quantity. The notified polymer is expected to slowly degrade in the environment and it is not expected to be bioaccumulative. On the basis of the PEC/PNEC ratio, maximum annual import volume and assessed use pattern, the notified polymer is not expected to pose an unreasonable risk to the environment.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES

Hydrolysis as a Function of pH Hydrolytically stable

Method OECD TG 111 Hydrolysis as a Function of pH.

pH	*T (°C)*	*$t_{½}$*
4	25	> 1 year
7	25	> 1 year
9	25	> 1 year

Remarks At pH 4, 7 and 9, less than 10% hydrolysis were observed when the test solutions were incubated at 50 °C for 5 days in the preliminary test, equivalent to the half-life of greater than 1 year. No further test was required as per test guideline requirement. Therefore, the test substance was considered hydrolytically stable under environmental conditions.

Test Facility Unspecified

Partition Coefficient (n-octanol/water) log Pow = - 1.25

Method In house method in accordance to OECD TG 107 Partition Coefficient (n-octanol/water).

Remarks Flask Method. Only study summary was provided. Test substance (1.07 g) was dissolved into HPLC water and 1-octanol. The solution shaken vigorously for 2 minutes. The mixtures were allowed to settle overnight to allow the test substance to separate into two phases. The concentration of test substance in the top octanol layer was determined by spectrophotometric method.

Test Facility Unspecified

Flash Point > 110 °C

Method Open cup

Remarks The test material boiled away without a flash being observed.
Study report not sighted

Test Facility Unspecified

APPENDIX B: TOXICOLOGICAL INVESTIGATIONS

B.1. Acute toxicity – oral

TEST SUBSTANCE	Notified polymer
METHOD	Similar to the OECD TG 401 Acute Oral Toxicity. US EPA TSCA Guidelines, 40 CFR, Part 798, Subpart B, Sec. 798.1175. – Acute Oral Toxicity Study in Rats.
Species/Strain	Rat/Crl:CD®(SD)BR
Vehicle	Distilled water
Remarks - Method	No significant deviations from the OECD guideline. At the time that terminal body weights were recorded, the automatic water hook-up to the rack was found disconnected. The animals apparently were without water for less than 24 h.

RESULTS

Group	*Number and Sex of Animals*	*Dose mg/kg bw*	*Mortality*
I	5 F & 5 M	5,000	0/10

LD50	> 5,000 mg/kg bw
Signs of Toxicity	None reported
Effects in Organs	None reported
Remarks - Results	Test substance coloured urine and faeces was observed in rats till day 3 of observation which was attributed to staining by the test substance. All the rats gained weight from start to day 7 of the study and lost weight from day 7 to day 14. This was attributed to the dehydration because of the unavailability of water on day 14 due to piping error.
CONCLUSION	The notified polymer is of low toxicity via the oral route.
TEST FACILITY	Hazelton (1987a)

B.2. Irritation – skin

TEST SUBSTANCE	Notified polymer
METHOD	Similar to the OECD TG 404 Acute Dermal Irritation/Corrosion.
Species/Strain	Rabbit/New Zealand White
Number of Animals	6 (3M & 3F)
Vehicle	None
Observation Period	72 h
Type of Dressing	Semi-occlusive.
Remarks - Method	No significant deviations from the OECD guideline.

RESULTS

Remarks - Results	No erythema and/or oedema were noted at any stage of the study. All the animals survived the test.
CONCLUSION	The notified polymer is non-irritating to the skin.
TEST FACILITY	Hazelton (1987b)

APPENDIX C: ENVIRONMENTAL FATE AND ECOTOXICOLOGICAL INVESTIGATIONS

C.1. Ecotoxicological Investigations

C.2.1. Acute toxicity to fish

TEST SUBSTANCE	Notified polymer
METHOD	Static Acute Toxicity Test with Feathead Minnows following ABC Protocol No. 7601
Species	Fathead Minnows (*Pimephales promelas*)
Exposure Period	96 hours
Auxiliary Solvent	Not reported
Water Hardness	130 - 142 mg $CaCO_3$/L
Analytical Monitoring	None reported
Remarks – Method	The test was conducted according to the guidelines above. However, the study was not in compliance with good laboratory practice (GLP) principles. No significant deviations from the test guidelines were reported. The above stated test guideline is very similar to OECD TG 203.

RESULTS

Nominal Concentration (mg/L)	*Number of Fish*	*Cumulative Mortality(96 h)*		
		48h	*72h*	*96h*
Control	10	0	0	0
100	10	0	0	0
180	10	0	0	0
320	10	0	0	0
560	10	0	0	0
1000	10	0	0	0

LC50	> 100 mg/L at 96 hours.
NOEC	100 mg/L at 96 hours.
Remarks – Results	All validity criteria for the test were satisfied. The 96 h LC 50 was determined based on visual observations. The MSDS reported the LC50 value of the test substance was > 1000 mg/L.
CONCLUSION	The notified polymer is not harmful to fish
TEST FACILITY	ABC (1996)

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