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

PUBLIC REPORT

X-18257

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 and Energy.

This Public Report is 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
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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/2069	Afton Chemical Asia Pacific LLC	X-18257	Yes	≤ 20 tonnes per annum	Component of fuel additives

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard Classification

Based on the available information, the notified polymer is a hazardous chemical according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), as adopted for industrial chemicals in Australia. The hazard classification applicable to the notified polymer is presented in the following table.

<i>Hazard classification</i>	<i>Hazard statement</i>
Skin irritant (Category 2)	H315 – Causes skin irritation
Serious eye damage (Category 1)	H318 – Causes serious eye damage

The environmental hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS) is presented below. Environmental classification under the GHS is not mandated in Australia and carries no legal status but is presented for information purposes.

<i>Hazard Classification</i>	<i>Hazard Statement</i>
Chronic (Category 2)	H411 – Toxic to aquatic life with long lasting effects

Human Health Risk Assessment

Provided that the recommended controls are being adhered to, 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

REGULATORY CONTROLS

Hazard Classification and Labelling

- The notified polymer should be classified as follows:
 - Skin irritant (Category 2): H315 – Causes skin irritation
 - Serious eye damage/eye irritation (Category 1): H318 – Causes serious eye damage

CONTROL MEASURES

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 during reformulation:
 - Local exhaust ventilation
 - Enclosed, automated systems 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 during reformulation and end use:
 - Avoid contact with skin and eyes
 - Avoid inhalation exposure if aerosols or mists are formed
- 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 during reformulation and end use:
 - Impervious gloves
 - Safety glasses or goggles
 - Protective clothing

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

- A copy of the 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.

Emergency procedures

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

Disposal

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

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 g/mol;
 - the use concentration of the polymer exceeds 0.5% in fuel or fuel additive products for public use;

or

- (2) Under Section 64(2) of the Act; if
- the function or use of the polymer has changed from component of fuel additives, 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.

Safety Data Sheet

The SDS of the notified polymer (and products containing the notified polymer) provided by the notifier were reviewed by NICNAS. The accuracy of the information on the SDS remains the responsibility of the applicant.

This notification has been conducted under the cooperative arrangement with Canada. The health and environmental hazard assessment components of the Canadian report were provided to NICNAS and, where appropriate, used in this assessment report. The other elements of the risk assessment and recommendations on safe use of the notified polymer were carried out by NICNAS.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Afton Chemical Asia Pacific LLC (ABN: 99 109 644 288)
Level 12, 20 Berry Street
NORTH SYDNEY NSW 2060

NOTIFICATION CATEGORY

Limited (Reduced fee notification): Synthetic polymer with $M_n \geq 1,000$ g/mol) – Approved Foreign Scheme (Canada)

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

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

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Schedule data requirements are varied for melting point, partition co-efficient, adsorption/desorption and dissociation constant, flammability, autoignition temperature, explosive properties, oxidising properties

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Canada (2014)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

X-18257

HITEC® 6406 (containing the notified polymer at 30-60% concentration)

HITEC® 6406C (containing the notified polymer at 60-80% concentration)

MOLECULAR WEIGHT

Number average molecular weight (M_n) is $> 1,000$ g/mol.

ANALYTICAL DATA

Reference NMR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

$> 90\%$

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

None under normal conditions of use.

DEGRADATION PRODUCTS

The notified polymer is expected to be consumed during its end use.

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: colourless liquid

Property	Value	Data Source/Justification
Freezing Point	-19.96 °C	SDS for a product containing the notified polymer at ≤ 40%
Boiling Point	Decomposes without boiling	Measured
Density	974 kg/m ³ at 20 °C	Measured
Vapour Pressure	< 4.1 × 10 ⁻⁶ kPa at 25 °C	Measured
Water Solubility	306.4 g/L at pH 7	Measured
Hydrolysis as a Function of pH	Not determined	Notified polymer is not expected to hydrolyse under environmental conditions
Partition Coefficient (n-octanol/water)	Not determined	Notified polymer is expected to be surface active
Adsorption/Desorption	Not determined	Notified polymer is expected to sorb to soil and sediments
Dissociation Constant	Not determined	Notified polymer is expected to be cationic under environmental conditions
Flash Point	204.5 °C	Measured
Flammability	Not determined	Not expected to be flammable
Autoignition Temperature	Not determined	Not expected to autoignite
Explosive Properties	Not determined	Contains no functional groups that imply explosive properties
Oxidising Properties	Not determined	Contains no functional groups that imply oxidative properties

DISCUSSION OF PROPERTIES

It is noted that calculated values for adsorption/desorption and dissociation constant were provided. However, these are considered unreliable as polymers with surfactant properties are difficult to accurately calculate using QSAR modelling. Based on structural considerations, the notified polymer is expected to exhibit cationic and surfactant properties. The method used to determine water dispersion study also appears to be unreliable. 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 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 as a component of fuel additive package ("add-pack") products at < 80% concentration and as a component of finished gasoline treatment products at < 0.5% concentration.

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	5 – 10	5 – 10	10 – 15	10 – 20	10 – 20

PORT OF ENTRY

Sydney, Melbourne, Brisbane, Perth

IDENTITY OF RECIPIENTS

Major fuel manufacturers (for additive package) and retailers (for packaged gasoline treatment products).

TRANSPORTATION AND PACKAGING

The product containing the notified polymer will be transported and stored in 200 kg steel drums or as finished gasoline treatment products in small containers (≤ 300 mL). These products will be mainly distributed by road or rail to warehouses for storage, and then delivered to reformulation sites or retailers.

USE

The notified polymer will be used as an additive of fuel at $< 0.5\%$ concentration.

OPERATION DESCRIPTION

Reformulation

At the reformulation site, the add-packs containing the notified polymer will be added to fuel with various other ingredients. The blended fuel will then be transported to gas stations for retail. Alternatively, the add-packs may be blended to form fuel treatment products, and distributed through retail shops or automotive dealerships.

End Use

The automotive fuel containing the notified polymer at $< 0.5\%$ concentration will be available for commercial and consumer use. Alternatively, the gasoline treatment products containing the notified polymer (at $< 0.5\%$ concentration) will be manually mixed into automotive fuel by service staff, mechanics, or the general public.

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>
QC/QA staff (add-pack)	0.5	12
Storage and transport	8	24
Reformulation (fuel or additive)	8	24
Product QC (fuel or additive)	0.5	24
Filling and packaging (additive)	4	24
Maintenance of blending equipment	4	4
Service staff	8	24
Commercial fuel or fuel additive users	8	24

EXPOSURE DETAILS

Transport and Storage

Transport and storage workers may come into contact with the notified polymer only in the unlikely event of an accident, breaching the containers.

Reformulation

For fuel blending, dermal and ocular exposure of workers to the notified polymer at $< 80\%$ may occur when mixing and transferring materials containing the polymer or during QA laboratory testing, equipment cleaning and maintenance. Given that the notified polymer has low vapour pressure, significant inhalation exposure is not expected, unless aerosols or mists are formed during the blending processes. Exposure to the notified polymer during blending is expected to be minimised through the use of enclosed and automated systems, local exhaust ventilation and suitable personal protective equipment (PPE) to protect workers from exposure to the notified polymer, including gloves, eye protection and protective clothing.

End use

Dermal and ocular exposure to the notified polymer at $< 0.5\%$ concentration may occur during transfer of fuel containing the notified polymer from the storage tanks at service stations to the automotive when connecting and disconnecting transfer lines. Given the very low concentration of the notified polymer in the fuel, exposure to the notified polymer will be low.

Service station workers and mechanics may experience dermal and possibly ocular exposure to the notified polymer at $< 0.5\%$ concentration during vehicle maintenance or when adding and draining the final product from

equipment. Given the very low concentration of the notified polymer in fuel and expected use of PPE, such as overalls and safety boots, exposure to the notified polymer will be low.

6.1.2. Public Exposure

The public may experience dermal and possibly ocular exposure to the notified polymer at < 0.5% concentration while pumping fuel containing the notified polymer into fuel tanks at service stations or during vehicle maintenance. Given the very low concentration of the notified polymer in fuel, exposure to the notified polymer will be low.

6.2. Human Health Effects Assessment

No toxicity data were submitted for the notified polymer. However, several endpoints were assessed by Health Canada using information on an analogue polymer having a similar structure and lower molecular weight. The results from toxicological investigations conducted on the analogue polymer are summarised in the following table.

<i>Endpoint</i>	<i>Result and Assessment Conclusion</i>
Rat, acute oral toxicity	LD50 = 2,135 mg/kg bw; low toxicity
Rabbit, acute dermal toxicity	LD50 > 3,000 mg/kg bw; low toxicity
Rabbit, eye irritation	Severely irritating
Rabbit, skin irritation	Irritating
Mutagenicity – bacterial reverse mutation	Non mutagenic
Genotoxicity – <i>in vitro</i> mammalian chromosome aberration test	Non genotoxic

Toxicokinetics, metabolism and distribution

No data on toxicokinetics for the notified polymer was provided. For dermal absorption, molecular weights below 100 g/mol are favourable for absorption and molecular weights above 500 g/mol do not favour absorption (ECHA, 2017). Dermal uptake is likely to be low to moderate if the water solubility is between 1-100 mg/L and moderate to high if the water solubility is between 100-10,000 mg/L (ECHA, 2017). The notified polymer has a high molecular weight (> 1000 g/mol) favouring low dermal absorption. However, due to the high water solubility of the polymer, absorption possibility across biological membranes cannot be ruled out.

Acute toxicity

Based on the results of a study of the analogue polymer (LD50 = 2,135 mg/kg bw), the notified polymer is expected to be of low acute toxicity via the oral route.

An acute dermal toxicity study was conducted in rabbits using the analogue polymer. The test substance was applied dermally at 3,000 mg/kg bw for a 24 hour period. There were no deaths observed. Treatment related symptoms included decreased muscle tone, no faeces present and poor grooming. Erythema, oedema, necrosis, sloughing and fissuring of the skin were observed. No visible lesions were noted during necropsy. Based on the results of this study on the analogue polymer (LD50 > 3,000mg/kg bw), the notified polymer is expected to be of low acute toxicity via the dermal route.

Irritation

The analogue polymer was tested in a skin irritation study in rabbits. The test substance was found to be irritating to the skin with different degrees of erythema, oedema and skin necrosis observed in all animals when the test substance was applied with 3-minute, 60-minute, 4-hour and 24-hour exposure. Fissuring and sloughing of the skin at the application site was also observed. Based on the results of this study of the analogue polymer, the notified polymer is expected to be irritating to the skin but not corrosive.

The analogue polymer was tested in an eye irritation study in rabbits. The test substance was found to cause severe reactions to the eyes, with the Draize Score of 15.8 at 1 hour. Due to significant damage to the eyes, the study was terminated at the 48 hour observation period. The damage to the eyes caused by the test substance was not expected to be reversible. The test substance was considered to cause severe eye irritation in the rabbit, and therefore, the notified polymer is expected to cause serious damage to the eyes.

Mutagenicity/Genotoxicity

A bacterial reverse mutation test was performed in *Salmonella typhimurium* strains TA98, TA100, TA1535 and TA1537, and *Escherichia coli* strain WP₂uvrA for the analogue polymer. The concentrations used were 25, 50,

100, 200, and 500 µg/mL (in the presence and absence of metabolic activation). No increase in revertant number was noted at any of the tested concentrations. The analogue polymer was not considered to be mutagenic to bacteria under the conditions of this study.

A chromosome aberration study was conducted in Chinese hamster lung cells for the analogue polymer. With metabolic activation, there were no statistically significant increases in the number of aberrant metaphases in any treated groups, but there was a statistically significant increase in the number of aberrant metaphases at 2.4 µg/mL without metabolic activation. This increase was not dose dependent as no other concentrations showed an increase in the number of aberrations. Based on these results, the analogue polymer was not considered to be clastogenic.

Health Hazard Classification

Based on the available information, the notified polymer is a hazardous chemical according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS), as adopted for industrial chemicals in Australia. The hazard classification applicable to the notified polymer is presented in the following table.

<i>Hazard classification</i>	<i>Hazard statement</i>
Skin irritant (Category 2)	H315 – Causes skin irritation
Eye irritant (Category 1)	H318 – Causes serious eye damage

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

The notified polymer is irritating to skin, and severely irritating to the eyes.

Reformulation

During reformulation, workers may be at risk of skin and eye irritation when handling the notified polymer as introduced at < 80% concentrations. The notifier anticipates that worker exposure will be limited through the use of engineering controls such as enclosed, automated systems and local exhaust ventilation. The use of appropriate PPE (gloves, eye protection and protective clothing) will also be used to limit worker exposure.

End-Use

Workers may be exposed to the notifier polymer at < 0.5% concentration when handling fuel containing the notified polymer. Given the very low concentration of the notified polymer in fuel, exposure to the notified polymer will be low. Furthermore, exposure is expected to be minimised through the use of PPE including overalls, gloves and safety boots.

Provided that the recommended controls are being adhered to, under the conditions of the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

6.3.2. Public Health

The public may experience dermal and possibly ocular exposure to the notified polymer at < 0.5% concentration while pumping fuel containing the notified polymer into fuel tanks at service stations or during vehicle maintenance. The exposure is anticipated to be infrequent. After the fuel has been consumed by combustion, the notified polymer is expected to be consumed and released with exhaust.

Considering the very low concentration in fuel, infrequent and short term use, the risk to the public 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 not be manufactured in Australia.

The majority of the notified polymer will be blended into fuels for sale. The blending process is automated and uses engineering controls which will limit the potential for release. Any spills which occur during the blending process are to be contained within concrete bunds and reclaimed where practicable or collected for appropriate disposal.

The small amount of the notified polymer will also be imported as stand-alone after-market fuel additive products which will be available in 300 mL add-packs for use by the general public. There are no controls available for the accidental release from general public.

RELEASE OF CHEMICAL FROM USE

The notified polymer is expected to be fully consumed via combustion during its use as a fuel additive.

RELEASE OF CHEMICAL FROM DISPOSAL

Residues of the notified polymer will remain in the transport containers or commercial bottles. Transport materials will be washed and recycled, and any of the wash water used in the cleaning of the containers is collected for disposal at a licenced waste management facility. The empty containers from the aftermarket add-packs will be disposed of either via landfill or collected for recycling at a licenced waste management facility. Wastes and residue of the notified polymer in empty commercial containers will either share the fate of the container and be disposed of to landfill, or being released to sewer when containers are rinsed, before recycling through an approved waste management facility.

7.1.2. Environmental Fate

Any of the notified polymer released into the environment is not expected to be biodegradable based on the environmental study conducted on an analogue polymer (0% degradation after 28 days). For further details see Appendix C.

The notified polymer is not expected to bioaccumulate due to its high molecular weight (NAMW >1000 Da).

7.1.3. Predicted Environmental Concentration (PEC)

The notified polymer is not expected to be released into aquatic environments as it will be consumed through its use as a fuel additive. Any wash water used in the cleaning of transport materials is to be disposed of to a licenced waste management facility. The wash water generated from this process may contain small amounts of the notified polymer.

7.2. Environmental Effects Assessment

The results from an ecotoxicological investigation conducted on the notified polymer are summarised in the table below. Details of this study can be found in Appendix C.

<i>Endpoint</i>	<i>Result</i>	<i>Assessment Conclusion</i>
Algal Toxicity	EL50 = 3.5 mg/L	Notified polymer is harmful to algal growth

The notified polymer contains potentially cationic functionalities with Functional Group Equivalent Weight (FGEW) < 5,000 and therefore is potentially harmful to aquatic organisms in environmental waters.

7.2.1. Predicted No-Effect Concentration

The Predicted No-Effect Concentration (PNEC) was not calculated as the notified polymer is not expected to reach ecotoxicologically significant concentrations in the aquatic environment.

7.3. Environmental Risk Assessment

The risk quotient was not calculated as the notified polymer is not expected to reach the aquatic environment as the majority is expected to be combusted during use. On the basis that there is negligible release into the environment, the notified polymer is not considered to pose an unreasonable risk to the environment.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES**Boiling Point** Decomposes without boiling

Method OECD TG 103 Boiling Point
EC Council Regulation No 440/2008 A.2 Boiling Temperature
Remarks Siwoloboff method was used.
Test Facility Intertek (2018a)

Density 974 kg/m³ at 20 ± 1 °C

Method OECD TG 109 Density of Liquids and Solids
EC Council Regulation No 440/2008 A.3 Relative Density
Remarks A hydrostatic balance method on the KRUSK11 tensiometer was used.
Test Facility Intertek (2018b)

Vapour Pressure < 4.1 × 10⁻⁶ kPa at 25 °C

Method OECD TG 104 Vapour Pressure
EC Council Regulation No 440/2008 A.4 Vapour Pressure
Remarks Vapour pressure balance method was used.
Test Facility Harlan (2013a)

Water Solubility 306.4 g/L at pH 7 (extractability 30.5 mg/L)

Method In house method compatible with OECD TG 120
Remarks Flask Method
The method used membrane filtration to determine water extractability. This method is considered unreliable as a solid form of the notified polymer was used, also the notified polymer has surface active properties and formed an emulsion at low pH.
Test Facility Harlan (2013b)

Flash Point 204.5 °C

Method ASTM D3278 Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus
Test Facility FAI (2018)

APPENDIX C: ENVIRONMENTAL FATE AND ECOTOXICOLOGICAL INVESTIGATIONS

C.1. Environmental Fate

C.1.1. Ready Biodegradability

TEST SUBSTANCE	Analogue polymer
METHOD	Guidelines of National Institute of Environmental Research Korea
Inoculum	Activated sludge
Exposure Period	28 days
Auxiliary Solvent	None
Analytical Monitoring	Biochemical Oxygen Demand (BOD) and HPLC
Remarks – Method	Method used is similar to OECD test guidelines, however a toxicity control is not conducted in this method. Aniline was used as the reference substance.

RESULTS

<i>Test Substance</i>		<i>Aniline</i>	
<i>Day</i>	<i>% Degradation</i>	<i>Day</i>	<i>% Degradation</i>
7	0	7	72.8
14	0	14	76.9
28	0	28	70.7

Remarks – Results The following validity criteria was met: the difference of extreme replicate values of the removal of the test chemical at the plateau did not vary by more than 20% in the reference substance.

CONCLUSION The test substance is not readily or inherently biodegradable.

TEST FACILITY KRICT (1998)

C.2. Ecotoxicological Investigations

C.2.1. Algal Growth Inhibition Test

TEST SUBSTANCE	Notified polymer
METHOD	OECD TG 201 Alga, Growth Inhibition Test EC Council Regulation No 440/2008 C.3 Algal Inhibition Test
Species	<i>Pseudokirchneriella subcapitata</i>
Exposure Period	72 hours
Concentration Range	Nominal: 1-100 mg/L (WAFs)
Auxiliary Solvent	None
Analytical Monitoring	MS
Remarks – Method	As per OECD test guidelines. No deviations were noted.

RESULTS

<i>Growth rate</i>		<i>Yield</i>	
<i>ErL₅₀</i> <i>(mg/L at 72 h)</i>	<i>NOEL</i> <i>(mg/L)</i>	<i>EyL₅₀</i> <i>(mg/L at 72 h)</i>	<i>NOEL</i> <i>(mg/L)</i>
3.5 (WAF)	1.0	2.8 (WAF)	1.0

Remarks – Results All validity criteria were met. The growth factor in the control test was 118, the coefficient of variation for section by section specific growth was 17% and the coefficient of variation for average specific growth was 1%.

CONCLUSION	The test substance is harmful to algal growth.
TEST FACILITY	Harlan (2013c)

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