File No PLC/1249

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

2-Propenoic acid, 2-methyl-, C9-11-branched alkyl esters, polymers with Bu methacrylate, 2-butoxyethyl methacrylate, C12-15-branched and linear alkyl methacrylate, cetyl methacrylate, hydroxy-terminated hydrogenated polybutadiene monomethacrylate and stearyl methacrylate

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government 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

January 2015

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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 SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1249	Toyota Tsusho (Australasia) Pty Ltd	2-Propenoic acid, 2-methyl-, C9-11-branched alkyl esters, polymers with Bu methacrylate, 2-butoxyethyl methacrylate, C12-15-branched and linear alkyl methacrylate, cetyl methacrylate, hydroxy-terminated hydrogenated polybutadiene monomethacrylate and stearyl methacrylate	No	≤ 100 tonnes per annum	Component of engine oil

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- 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 not available or appropriate, dispose of the notified chemical in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
  - Store in a segregated and approved area.

Emergency Procedures

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

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 polymer 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 polymer, 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 notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the notified polymer has changed from a component of engine oil, or is likely to change significantly;
  - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
  - the notified polymer has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the notified 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 polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Toyota Tsusho (Australasia) Pty Ltd (ABN: 24 056 847 315)
231-233 Boundary Rd
LAVERTON NORTH VIC 3026

Exempt Information (Section 75 of the Act)
No details are claimed exempt from publication.

2. IDENTITY OF POLYMER

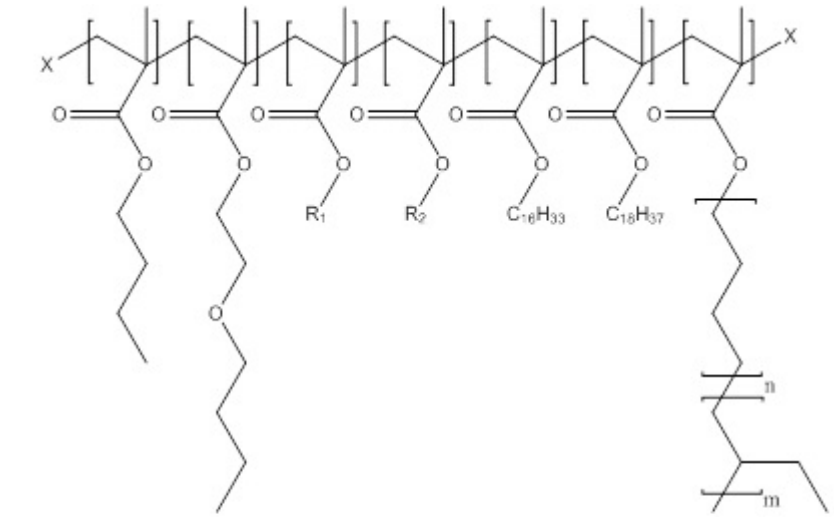
Marketing Name(s)
PAS-1400 (contains the notified polymer at ~25% concentration)

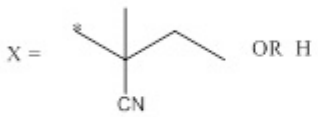
Chemical Name
2-Propenoic acid, 2-methyl-, C9-11-branched alkyl esters, polymers with Bu methacrylate, 2-butoxyethyl methacrylate, C12-15-branched and linear alkyl methacrylate, cetyl methacrylate, hydroxy-terminated hydrogenated polybutadiene monomethacrylate and stearyl methacrylate

CAS Number
1571956-78-9

Molecular Formula
Unspecified

Structural Formula





$R_1 = C_{9-11}H_{9-23}$ (branched)

$R_2 = C_{12-15}H_{25-31}$ (branched and linear)

Molecular Weight (MW)

Number Average Molecular Weight (Mn)	24,147 Da
Weight Average Molecular Weight (Mw)	43,861 Da
Polydispersity Index (Mw/Mn)	1.82
% of Low MW Species < 1000 Da	0.17%
% of Low MW Species < 500 Da	0.08%

Reactive Functional Groups

The notified polymer contains only low concern functional groups.

Polymer Constituents

Chemical Name	*CAS No.*	*Weight % starting*	*Weight % residual*
2-Propenoic acid, 2-methyl-, butyl ester	97-88-1	60.0	0.1
2-Propenoic acid, 2-methyl-, 2-butoxyethyl ester	13532-94-0	10.0	0.1
2-Propenoic acid, 2-methyl-, C9-11-branched alkyl esters	85566-84-3	0.1	0.01
2-Propenoic acid, 2-methyl-, C12-15-branched and linear alkyl esters	90552-02-6	14.34	0.1
2-Propenoic acid, 2-methyl-, hexadecyl ester	2495-27-4	0.1	0.01
1,3-Butadiene, homopolymer, hydrogenated, hydroxy-terminated, monomethacrylate	260057-97-4	15.0	3.0
2-Propenoic acid, 2-methyl-, octadecyl ester	32360-05-7	0.1	0.1
Butanenitrile, 2,2'-(1,2-diazenediyl)bis[2-methyl-*	13472-08-7	0.36	0

*Not included in the polymer name as < 2% wt.

Hazardous Impurities/Residual Monomers

Chemical Name	2-Propenoic acid, 2-methyl-, butyl ester
CAS No.	97-88-1 *Weight %* 0.1
Hazardous Properties	Xi; R36/37/38 R43 Conc. ≥ 20%: C; Xi; R36/37/38; R43 ≥ 1% Conc. < 20%: Xi; R43

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Colourless solid
Glass Transition Temp	< -60 °C
Density	875 kg/m^3 at 25 °C
Water Solubility	The notified polymer is not expected to be water soluble

	based on its hydrophobic structure and high molecular weight
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	0.1	5	10	20	50

Use
The notified polymer is a viscosity index improver for car engine oils. The finished engine oils will contain the notified polymer at ~2% concentration. No reformulation of the notified polymer will occur in Australia. The engine oil will be imported into Australia in the engine oil reservoirs of new cars.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia. These are present/not present in the notified polymer as introduced above the cut off concentrations for classification.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Polymers without significant ionic functionality are generally of low concern to the environment.

The notified polymer will not be manufactured, reformulated or repackaged in Australia. Therefore, release of the notified polymer from these activities is not expected. Spills of the notified polymer during transportation or use stages of the life cycle are expected to be minimal. Any spilt product is expected to be contained and disposed of in accordance with local regulations. The notifier has indicated that the notified polymer will not be supplied to the general public or supplied through retail outlets. Therefore, Do It Yourself (DIY) use is not expected.

Based on its use as an additive to improve the characteristics of engine oils, the notified polymer is expected to have limited potential for release to the aquatic environment. The majority of the imported quantity of notified polymer is expected to be thermally decomposed to water and oxides of carbon during use or as a result of waste oil re-use or recycling. A fraction of the notified polymer may be released to soil from engine leaks where it is expected to adsorb to soil particles based on its hydrophobicity. A proportion of the notified polymer may enter the aquatic environment through transport of soil particles contaminated with engine oil or through inappropriate disposal of waste oil. The notified polymer is expected to be associated with the sediment compartment where it is unlikely to be bioavailable. The notified polymer is not expected to cross biological membranes due to its high molecular weight and it is therefore not expected to bioaccumulate.

Therefore, based on its assumed low hazard and assessed pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.