File No PLC/1076

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Synfluid mPAO 40 cSt
Synfluid mPAO 100 cSt

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government Department of Health and Ageing, 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 Sustainability, Environment, Water, Population and Communities.

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

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

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

Director
NICNAS

July 2012

Table of Contents

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/1076	Chevron Phillips Chemicals Australia Pty Ltd	Synfluid mPAO 40 cSt Synfluid mPAO 100 cSt	No	<100 tonnes per annum	Component of lubricants

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the predicted 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.

- A copy of the MSDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified polymer should be disposed of in accordance with local regulations for recycling, re-use or recovery of calorific content.

Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- 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 lubricants, 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 MSDS of the notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Chevron Phillips Chemicals Australia Pty Ltd (ABN 29 107 015 896)
Suite 409, 685 Burke Road
Camberwell VIC 3124

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: molecular weight and manufacture/import volume.

2. IDENTITY OF POLYMER

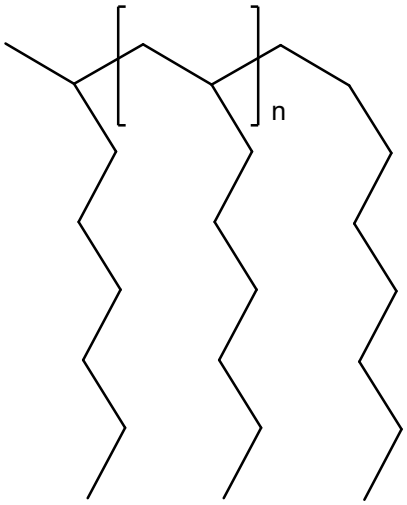
Marketing Name(s)
Synfluid mPAO 40 cSt (100% notified polymer)
Synfluid mPAO 100 cSt (100% notified polymer)

Chemical Name
1-Octene, homopolymer, hydrogenated

CAS Number
70693-43-5

Molecular Formula
Unspecified

Structural Formula



Molecular Weight
Number Average Molecular Weight (Mn) is > 1,000 Da.

Reactive Functional Groups
The notified polymer contains only low concern functional groups.

Polymer Constituents

Chemical Name	*CAS No.*	*Weight % starting*	*Weight % residual*
1-Octene	111-66-0	100	ND

ND, not detectable.

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	Clear oil
Melting Point/Glass Transition Temp	-50°C
Density	840 kg/m^3 at 15.5°C
Vapour Pressure	< 2.5 × 10^{-7} Pa at 25°C*
Water Solubility	< 1 × 10^{-9} g/L*
Log K_{OW}	> 7.64*
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

*Based on data for analogue 1

5. INTRODUCTION AND USE INFORMATION

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<100	<100	<100	<100	<100

Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia at a concentration of 100%. Lubricant products containing the notified polymer will be reformulated in Australia. The lubricant products containing the notified polymer will be used at a concentration of 5-98%.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. The notifier provided toxicology summaries for suitable analogue chemicals. The analogues were of low acute oral (LD50> 5000 mg/kg bw), dermal (LD50> 2000 mg/kg bw) and inhalation (LC50> 5 mg/L) toxicity. The analogues were not skin or eye irritants to rabbits. The analogues were not skin sensitisers in Buehler or maximisation studies in guinea pigs. There were no treatment related findings in a 28-day oral study in rats (NOAEL= 1000 mg/kg bw/day). The analogues were negative in Ames tests, an *in vitro* chromosome aberration study, and in *in vivo* micronucleus studies. All results were indicative of low hazard.

Occupational Health and Safety Risk Assessment
Dermal and ocular exposure to the notified polymer from drips, spills and splashes is possible during the reformulation and end use of the finished lubricants. Reformulation is expected to be mostly automated and therefore exposure is expected to be minimal. Industrial users such as machine operators and mechanics are expected to be exposed to formulated products containing the notified polymer. However, due to the predicted low hazard of the notified polymer, the risk to workers is not considered to be unreasonable.

Public Health and Safety Risk Assessment
The general public may be exposed to the notified polymer during do-it-yourself (DIY) oil changes. However, given the predicted low hazard of the notified polymer and the expected infrequent exposure, the risk to public health is not considered to be unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

The notifier has provided the following acute toxicity endpoints of an acceptable analogue (analogue 1) to fish, daphnia and alga with brief summaries of each test conducted on water accommodation fractions (WAFs). Full study reports were not provided.

Endpoint	*Result (in WAF)*	*Assessment Conclusion*
Fish Toxicity	96 h LC50 = 1000 mg/L	Not harmful
Daphnia Toxicity	48 h EC50 = 1000 mg/L	Not harmful
Algal Toxicity	96 h EC50 = 1000 mg/L	Not harmful

All the above endpoints suggest that analogue 1 and, by inference, the notified polymer, are not harmful to aquatic life up to their limit of water solubility.

Most of the notified polymer is expected to be consumed during use as a component of lubricant oil. For professional users, any spills or releases in case these occurred are expected to be collected for recycling or disposal to landfill. Limited releases of the notified polymer to the aquatic environment are expected from blending reformulation and use of the final lubricant products (by DIY enthusiasts), which is expected to be < 0.72% of the total imported volume of the notified polymer. It is estimated that 0.02% of the notified polymer may be left as residues in the blending tank, which is expected to be cleaned by lube oil and steam. The waste water will be sent to waste water treatment facilities where most of the oil phase is expected to be collected and sent to a used oil recycler, and the water will be sent to a municipal sewer. Very minor release of the notified polymer to the environment from blending processes is expected. Releases of the notified polymer from use are expected mainly from DIY enthusiasts when replacing the used oil. In a worst case scenario involving the 14% of used oil removed by DIY enthusiasts, about 0.7% (5% × 14%) of the total import volume of the notified polymer could potentially enter the aquatic environment through inappropriate disposal into the stormwater system. The release of the notified polymer to surface waters is not expected to reach ecotoxicologically significant concentrations. Therefore, no unreasonable risk to aquatic organisms is expected from the release of the notified polymer to the aquatic environment from DIY enthusiasts.

The provided ready biodegradability data for analogue 1 shows it is not readily biodegradable (6% by Day 28, OECD TG 301B). Due to the similarity of the chemical structure of the notified polymer with the analogue, in addition to its higher molecular weight, the notified polymer is not expected to have potential for biodegradation and it is expected to be stable under environmental conditions. It is also not considered to have potential for bioaccumulation given the high molecular weight. Most of the notified polymer is expected to be thermally decomposed from use or degraded in landfill, forming water and oxides of carbon. Therefore, based on the discussion, the notified polymer is not considered to pose an unreasonable risk to the environment.