File No PLC/1143

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Fatty acids, tall-oil, diesters with polypropylene glycol

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 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

March 2014

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/1143	Solvay Chemicals Pty Ltd	Fatty acids, tall-oil, diesters with polypropylene glycol	No	≤ 80 tonnes per annum	Component of paint

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 hazard profile 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.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (Safe Work Australia, 2012) or relevant State or Territory Code of Practice.

- 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.

Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

Disposal

- The notified polymer should be disposed of to landfill.

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 paint, 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 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
Solvay Chemicals Pty Ltd (ABN: 80 004 449 870)
44 Real Avenue
NORMAN PARK QLD 4170

2. IDENTITY OF POLYMER

Marketing Name(s)
DV 10076

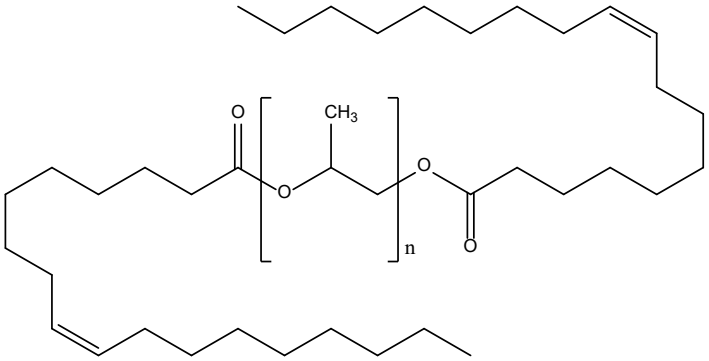
Chemical Name
Fatty acids, tall-oil, diesters with polypropylene glycol

CAS Number
68648-12-4

Other Name(s)
Propylene glycol ditallate ester

Molecular Formula
$((C_3H_6O)_nH_2O.Unspecified)_x$

Structural Formula



Representative Structure of the notified polymer

Purity
94-97%

Molecular Weight

Number Average Molecular Weight (Mn)	2900 Da
Weight Average Molecular Weight (Mw)	3600 Da
Polydispersity Index (Mw/Mn)	1.24
% of Low MW Species < 1000 Da	2.92%
% of Low MW Species < 500 Da	0.23%

Hazardous Impurities/Residual Monomers
None

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Not applicable
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	Light Amber Liquid
Melting Point/Glass Transition Temp	< −80 °C
Boiling Point	> 300 °C

Flash Point	> 116 °C
Density	964.6 kg/m^3 at 25 °C
Water Solubility	0.12 mg/L (based on OECD 105 – turbidimetric method
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	25	35	45	65	80

Use
The notified polymer will be used as a component of paint. The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia at a concentration of 94-97%. The notified polymer will be reformulated in Australia into finished water-based paint products containing the notified polymer at a concentration of < 5%. The water-based paint is expected to be used in DIY applications (70%) and industrial applications (30%). The water-based paint is intended for use on wood, concrete, fibreboard, other painted surfaces, and other construction materials.

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.

7. ENVIRONMENTAL RISK ASSESSMENT

The following ecotoxicological data were submitted for the notified polymer. The endpoints are summarised in the table below.

Endpoint	*Result*	*Assessment Conclusion*
Fish Toxicity	EC50 > 80 mg/L	May be harmful to fish
Daphnia Toxicity	LC50 = 11.7 mg/L	Harmful to aquatic invertebrates

The notified polymer is colloidal in nature, requiring consideration of its dispersion behaviour. In water, low molecular weight fractions of the notified polymer may go into solution which could affect aquatic organisms. It can thus be considered that increasing the concentration of the notified polymer can lead to the observed toxicity.

The majority of the notified polymer will be incorporated into products available to the do it yourself (DIY) market. DIY users are expected to apply products by brushes and rollers, using similar practices to professional users. However, approximately 5% of the notified polymer used by DIY users may be incorrectly disposed of to the sewer, drains or ground from waste and washing of application equipment. Assuming these releases occur nationwide and equally over the entire year, the predicted environmental concentration (PEC) is estimated to be 2.42 µg/L. [PECriver = 10.96 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. This PEC is well below the end point of the most sensitive species (*Ceriodaphnia dubia* LC50 = 11.7 mg/L). Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations.

Most of the notified polymer will be bound within the inert paint polymer matrix. It will share the fate of the substrate to which it has been applied and is expected to be eventually disposed of to landfill. The notified polymer, from residues in empty containers, is expected to be disposed of to landfill.

The notified polymer is not likely to bioaccumulate due its high molecular weight. In landfills and in the aquatic compartment, the notified polymer is expected to eventually degrade biotically and abiotically to form water and oxides of carbon. Therefore, based on its assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.