

File No: LTD/1390

January 2009

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

FULL PUBLIC REPORT

RC-49181

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (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 Ageing, 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, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, 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**

TABLE OF CONTENTS

<u>FULL PUBLIC REPORT</u>	3
1. APPLICANT AND NOTIFICATION DETAILS.....	3
2. IDENTITY OF CHEMICAL.....	3
3. COMPOSITION.....	3
4. PHYSICAL AND CHEMICAL PROPERTIES.....	4
5. INTRODUCTION AND USE INFORMATION.....	4
6. HUMAN HEALTH IMPLICATIONS.....	5
6.1 Exposure assessment.....	5
6.1.1 Occupational exposure.....	5
6.1.2 Public exposure.....	6
6.2. Human health effects assessment.....	6
6.3. Human health risk characterisation.....	6
6.3.1. Occupational health and safety.....	6
6.3.2. Public health.....	6
7. ENVIRONMENTAL IMPLICATIONS.....	6
7.1. Environmental Exposure & Fate Assessment.....	6
7.1.1 Environmental Exposure.....	6
7.1.2 Environmental fate.....	7
7.1.3 Predicted Environmental Concentration (PEC).....	7
7.2. Environmental effects assessment.....	7
7.2.1 Predicted No-Effect Concentration.....	7
7.3. Environmental risk assessment.....	7
8. CONCLUSIONS AND REGULATORY OBLIGATIONS.....	7
Hazard classification.....	7
Human health risk assessment.....	7
Environmental risk assessment.....	8
Recommendations.....	8
Regulatory Obligations.....	8
<u>BIBLIOGRAPHY</u>	10

FULL PUBLIC REPORT**RC-49181****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Dupont (Australia) Ltd (ABN 59 000 716 469)

NOTIFICATION CATEGORY

Limited: Synthetic polymer with Mn \geq 1000 Da.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name, Other names, CAS number, Molecular formula, Structural formula, Molecular weight, Polymer constituents, Spectral data, Methods of detection and determination, Purity, Impurities, Import volume, Use details.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows:

Vapour pressure, Water solubility, Hydrolysis as a function of pH, Partition coefficient, Adsorption/desorption, Dissociation constant, Particle size, Flash point, Flammability limits, Autoignition temperature.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

No

NOTIFICATION IN OTHER COUNTRIES

Yes but not by notifier.

Canada

Korea

USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

RC-49181

9050 Elastic Additive (containing < 70% notified polymer)

MOLECULAR WEIGHT

>1000 Da

ANALYTICAL DATA

Reference IR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY > 90%

ADDITIVES/ADJUVANTS None

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20°C AND 101.3 kPa: Translucent white solid.

Property	Value	Data Source/Justification
Melting Point/Freezing Point	-62 to -55°C	Measured
Density	1080 kg/m ³ at 20°C*	MSDS.
Vapour Pressure	< 1.3x10 ⁻⁹ kPa	Estimated based on NAMW > 1000 Da (US EPA 2007)
Water Solubility	Not determined	Expected to be low (in the low mg/L range) based on structure.
Hydrolysis as a Function of pH	Not determined	Contains potentially hydrolysable functionality, but is expected to be stable within the environmental pH range (4-9).
Partition Coefficient (n-octanol/water)	Not determined	Expected to partition to phase boundaries rather than between bulk phases based on structure.
Adsorption/Desorption	Not determined	Expected to adsorb to organic carbon, soil and sediment
Dissociation Constant	Not determined	Contains only terminal carboxylic acid groups capable of dissociation under environmental pH (4-9)..
Particle Size	Not determined	Will only be imported in solution.
Flash Point	27°C*	MSDS
Flammability	Not determined	Not expected to be flammable under normal conditions of use.
Autoignition Temperature	Not determined	Not expected to autoignite under normal conditions of use.
Explosive Properties	Not expected to be explosive	The structural formula contains no explosophores

* For imported solvent based paint containing < 70% notified polymer.

DISCUSSION OF PROPERTIES

The notified polymer is expected to have a low water solubility and vapour pressure, and expected to be immobile in soils.

Reactivity

The notified polymer is expected to be stable under normal storage and handling conditions.

5. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be imported as a component of a solvent based automotive finished paint additive at a concentration of < 70%.

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

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

PORT OF ENTRY

Sydney and Melbourne.

TRANSPORTATION AND PACKAGING

The product containing the notified polymer (at up to 70%) will be imported by sea in 1, 4 and 5 L steel cans

and transported by road to the distributors warehouse before distribution to automotive spray painting/smash repair businesses throughout Australia

USE

Resin for automotive refinish spray paints.

OPERATION DESCRIPTION

No reformulation of the automotive finished paint additive containing the notified polymer (at up to 70%) occurs within Australia.

End use

Weighing and mixing:

At automotive smash repair shops, the imported solvent based automotive paint additive containing the notified polymer (at up to 70%) will be poured into a measuring container and mixed with other components including an isocyanate catalyst, pigments, binder and thinner to form the finished paint (at up to 20% notified polymer) for spray application.

Spray application:

The finished paints (at up to 20% notified polymer) will be applied by professional spray painters to plastic parts such as bumpers, spoilers, air dams and skirts. There is the potential for the product to be used at up to 1000 sites in Australia. The majority of these applications will occur in a spray booth. The level of ventilation present in the spray booths will vary between workshops. In smaller automotive refinish repair shops spray applications may occur outside of a spray booth.

Equipment cleaning:

After the refinishing is complete, the spray gun and lines will be emptied and any residual paint will be placed into a "paint waste" drum for recycling. The spray gun is then cleaned at an earthed recycled solvent wash station.

6. HUMAN HEALTH IMPLICATIONS

6.1 Exposure assessment

6.1.1 Occupational exposure

NUMBER AND CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport driver inwards	1	4	1
Warehouse storemen	10	0.05	250
Transport drivers outwards	30	4	80
Professional spray painters			
Weighing and mixing	1000	0.8	2
Spraying	1000	0.6	2
Cleaning	1000	0.25	2

EXPOSURE DETAILS

Exposure of transport and storage workers is not expected except in the event of accidental spillage or breach of packaging.

Professional spray painters

Dermal and ocular exposure to the notified polymer (at up to 70%) may occur during manual weighing and mixing to form the finished paint. Inhalation exposure is unlikely due the low vapour pressure of the notified polymer. It is stated by the notifier that the operation will be conducted in a well-ventilated area and that workers are expected to wear gloves and safety glasses to limit exposure.

Dermal and ocular exposure to the notified polymer (at up to 20%) may occur during spray application of the

finished paints to automobile parts and when cleaning spray gun equipment. However, exposure should be minimised where PPE consisting of coveralls, gloves, safety boots and eye protection goggles are worn. The level of PPE will vary between workshops.

Due to the formation of aerosols, inhalation exposure is also likely during spray application, particularly where the level of ventilation within the spray booths is insufficient and workers do not wear air respirators.

Workers will likely make dermal contact with the notified polymer after application. However, once the paint is cured, the notified polymer will be reacted into the polymer matrix and will not be bioavailable.

6.1.2. Public exposure

The general public will not use products containing the notified polymer. The public will likely make dermal contact with surfaces containing the notified polymer on automobiles, however once cured the notified polymer is bound within a polymer matrix and will not be bioavailable.

6.2. Human health effects assessment

No toxicity data were submitted.

The notified polymer has a relatively high percentage of species with $M_n < 1000$ Da, however it does not contain any high or moderate concern reactive functional groups. It is a polyester that except for one reactant is constructed from reactants that are on the list of prescribed reactants for a polymer of low concern. However, given the reactant that is not listed is closely analogous to a listed monomer, the notified polymer is highly similar to a structure derived from prescribed reactants (i.e. a PLC) and hence no additional hazard contribution is expected.

Health hazard classification

Based on the available data the notified polymer is not classified as hazardous under the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human health risk characterisation

6.3.1. Occupational health and safety

Although the level of exposure will vary between workshops, given the expected low order of toxicity of the notified polymer, the risk to workers is not considered to be unacceptable.

To minimise exposure to aerosols, spraying should be carried out according to the *National Guidance Material for Spray Painting* (NOHSC, 1999).

6.3.2. Public health

The notified polymer is not available to the public, except after the product has been applied and cured and the notified polymer becomes bound within a matrix. The notified polymer is not available for exposure, hence the risk to the public is negligible.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1 Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer is imported in a ready to use product.

RELEASE OF CHEMICAL FROM USE

The notifier estimates that 3.75% of the imported quantity of the notified polymer may be disposed of to landfill as container residues, with a further 1.25% incinerated when containers are sent for metals reclamation.

Overspray will be collected by the water curtains of spray booth/room filters and sent to landfill as dried polymer. This will typically amount to 20% of the paint that is applied by experienced tradesmen, but could range up to 50% in exceptional circumstances.

Residues may also remain in the mixing containers and the spray equipment. These residues are typically removed by washing with solvent. Together, they may amount to 8% of the notified polymer.

RELEASE OF CHEMICAL FROM DISPOSAL

Solvent borne residues will typically be handled by a solvent recycling firm. Residual polymer is recovered as a solid rubbery mass. This may be sent to landfill or used as a rubbery filler tackifier in asphalt, once it has satisfied water extractability criteria.

7.1.2 Environmental fate

No environmental fate data were submitted. The notified polymer is expected to be immobile in landfill and to slowly degrade. Spills to land or water would associate with soils and sediments and slowly degrade. No bioaccumulation is expected, because of very low aquatic exposure and low bioavailability.

7.1.3 Predicted Environmental Concentration (PEC)

It is neither necessary nor meaningful to determine a PEC, as aquatic exposure is expected to remain very low when the polymer is used as intended in automotive paint.

7.2. Environmental effects assessment

No ecotoxicity data were submitted. Nonionic polymers with molecular weight above 1000 are of low concern to the aquatic environment.

7.2.1 Predicted No-Effect Concentration

A PNEC cannot be calculated, as no aquatic toxicity data are available.

7.3. Environmental risk assessment

The notified polymer is not expected to enter aquatic environments in significant quantities when it is used as intended for automotive refinishing, and is of low concern to the aquatic environment based on its structure. Therefore, the notified polymer is not considered to pose a risk to the environment.

8. CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)].

and

As a comparison only, the classification of the notified polymer using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations 2003) is inapplicable as no toxicity data are available. The notified polymer is not expected to be harmful to aquatic life, based on its structure.

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

Environmental risk assessment

On the basis of the reported use pattern and expected low ecotoxicity, the notified polymer is not considered to pose a risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls 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 MSDS should be easily accessible to employees.
- Employers should implement the following safe work practices to minimise occupational exposure to the notified polymer during spray application:
 - Use of spray paints containing the notified polymer should be in accordance with the NOHSC National Guidance Material for Spray Painting (NOHSC 1999).
- If products and mixtures containing the notified chemical 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 chemical should be disposed of by landfill.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by containment, 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 chemical 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;
- or
- (2) Under Section 64(2) of the Act; if
- the function or use of the chemical has changed from a resin for automotive refinish paints, or is likely to change significantly;
 - the amount of chemical being introduced has increased from one tonne per annum, or is likely to increase, significantly;
 - the chemical has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the chemical 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 product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

BIBLIOGRAPHY

- NOHSC (1994) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.
- NOHSC (1999) National Guidance Material for Spray Painting. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.
- NOHSC (2003) National Code of Practice for the Preparation of Material Safety Data Sheets, 2nd edition [NOHSC:2011(2003)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.
- NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.
- United Nations (2003) Globally Harmonised System of Classification and Labelling of Chemicals (GHS). United Nations Economic Commission for Europe (UN/ECE), New York and Geneva.
- US EPA (2007). Interpretative Assistance for the Assessment of Polymers. United States Environmental Protection Agency.