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

PUBLIC REPORT

Polymer W in SL211B

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 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:

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**Director
NICNAS**

TABLE OF CONTENTS

SUMMARY	3
CONCLUSIONS AND REGULATORY OBLIGATIONS	3
ASSESSMENT DETAILS	5
1. APPLICANT AND NOTIFICATION DETAILS	5
2. IDENTITY OF CHEMICAL.....	5
3. COMPOSITION	5
4. PHYSICAL AND CHEMICAL PROPERTIES	5
5. INTRODUCTION AND USE INFORMATION	6
6. HUMAN HEALTH IMPLICATIONS	7
7. ENVIRONMENTAL IMPLICATIONS.....	8
BIBLIOGRAPHY	10

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
LTD/1596	Honda Australia Pty Ltd	Polymer W in SL211B	ND*	≤ 2 tonnes per annum	Component of moisture-cured adhesives for automotive use

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the Approved Criteria for Classifying Hazardous Substances (NOHSC, 2004).

Human health risk assessment

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 assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Recommendations

REGULATORY CONTROLS

- The introducer should determine whether, based on the stability of the notified polymer, the polymer itself and/or the imported products should be classified under the Australian Dangerous Goods Code as:
 - Class 4.3 – substances that in contact with water emit flammable gases

If this classification is applicable, appropriate controls and changes to the product MSDS should be implemented.

Material Safety Data Sheet

- The MSDS provided by the notifier should be amended to note that in contact with water the notified polymer may emit flammable and toxic gas/vapour.

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
 - Use in a well-ventilated area
 - Avoid inhalation of vapours, mists and aerosols
 - Avoid contact with skin and eyes
 - Clean spills immediately, taking care to avoid inhalation

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer as introduced:
 - Gloves, overalls and goggles
 - Respiratory protection if vapour is likely to be inhaled

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.
- 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 to landfill.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical 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 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 1000;
 - products containing the notified polymer are to be sprayed.

or

- (2) Under Section 64(2) of the Act; if
 - the function or use of the polymer has changed from a component of fully formulated imported adhesive product for industrial use, or is likely to change significantly;
 - the amount of polymer being introduced has increased from 2 tonnes per annum, 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.

Material Safety Data Sheet

The MSDS provided by the notifier for the product containing the notified polymer was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Honda Australia Pty Ltd (ABN 66 004 759 611)
95 Sharps Road
TULLAMARINE VIC 3043

NOTIFICATION CATEGORY

Limited: Synthetic polymer with $M_n \geq 1000$ Da.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

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

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: Melting point/Boiling point, Specific Gravity/Density, Vapour Pressure, Water Solubility, Hydrolysis as a function of pH, Partition Co-efficient, Absorption/Desorption, Dissociation constant, Particle size, Flash point, Flammability Limits, Autoignition temperature, Explosive properties, Oxidising properties, and Reactivity.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Acrylic Polymer W
SL211B (product containing $\leq 20\%$ notified polymer)

MOLECULAR WEIGHT

$> 1,000$ Da

ANALYTICAL DATA

Reference IR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY $> 94\%$

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS

The notified polymer contains a hazardous impurity that is a skin sensitiser and a skin and respiratory irritant and is present in the notified polymer above the sensitisation cut-off threshold. However, the concentration of the monomer in the imported product is below the cut-off threshold.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

The notified polymer will be imported in a liquid product and hence residual monomers will be available for release.

DEGRADATION PRODUCTS

Not expected to degrade under the proposed conditions of use.

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Transparent yellow viscous liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	The notified polymer is imported as a liquid solution.
Boiling Point	Not determined	Decomposition is expected prior to boiling point being reached
Density	1000-1100 kg/m ³ at 22 °C	MSDS for product containing ≤ 20% notified polymer
Vapour Pressure	< 1.3 × 10 ⁻⁹ kPa	Estimated based on the NAMW > 1,000 Da (US EPA, 2007)
Water Solubility	Not determined	The notified polymer is hydrolytically unstable
Hydrolysis as a Function of pH	Not determined	Notified polymer contains functionality expected to hydrolyse rapidly in water
Partition Coefficient (n-octanol/water)	Not determined	The notified polymer is hydrolytically unstable and a meaningful partition coefficient cannot be determined
Adsorption/Desorption	Not determined	The notified polymer is expected to sorb strongly to soil and sediment based on its predominantly hydrophobic structure and the possibility of cross-linking with the soil
Dissociation Constant	Not determined	No dissociable groups present
Particle Size	Not determined	The notified polymer is imported as a liquid solution.
Flash Point	> 100°C	MSDS for product containing ≤ 20% notified polymer
Flammability	Not determined	Not expected to be highly flammable on the basis of flash point.
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 explosives.
Oxidising Properties	Not expected to be oxidising	Estimated based on chemical structure.

DISCUSSION OF PROPERTIES

Reactivity

The notified polymer is expected to undergo cross-linking reaction in the presence of moisture releasing toxic and flammable gas.

Dangerous Goods classification

Based on the available data the notified polymer may be classified as follows according to the Australian Dangerous Goods Code (NTC, 2007): Class 4.3 – substances that in contact with water emit flammable gases. There is insufficient information to be able to confirm the classification.

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 moisture-cured adhesive at a concentration of up to 20%.

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

Year	1	2	3	4	5
Tonnes	< 1	< 1	< 1	< 1.5	< 2

PORT OF ENTRY
Melbourne

TRANSPORTATION AND PACKAGING

The product containing the notified polymer will be imported by sea in 125 ml labelled plastic tubes, packed in cartons. These tubes will be transported by road from Melbourne port to relevant warehouses in Australia for storage and/or end use.

USE

The final product that contains the notified polymer will be used as an adhesive for automotive parts such as bonding the side garnish to the body panel. The adhesive that contains the notified polymer will be used for OEM (original equipment manufacturer) and aftermarket repairs. The product containing the notified polymer will not be available to the public for DIY use.

OPERATION DESCRIPTION

The product that contains the notified polymer will be manufactured and packaged overseas. No reformulation is expected in Australia.

The end use of the final product that contains the notified polymer will be for the adhesion of automotive parts to the car body. At the end-use site the product will be applied manually from the tubes to each substrate, which could be metal, plastic, textiles, aluminium or PVC, and the two surfaces will be brought together for bonding. Excess adhesive will be removed with a cloth.

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>
Transport and storage	5 – 8	10 – 20
Applicators original equipment manufacture	8 – 12	200
Applicators aftermarket	0.5 – 2	20 – 50

EXPOSURE DETAILS

Exposure of transport and storage workers to the notified polymer is not expected except in the event of accidental breach of packaging.

As the adhesive will be applied manually, dermal exposure to the notified polymer (< 20%) is possible during application and manipulation of the automotive parts. Inhalation exposure would be limited by the expected low vapour pressure (< 1.3×10^{-9} kPa) of the notified polymer and the low level of low molecular weight species.

Workers may also be exposed to the toxic and flammable vapours (methanol) that are released during end-use.

Exposure to the notified polymer will be minimised as workers are expected to wear personal protective equipment consisting of impervious overalls, gloves and eye protection goggles.

Once the adhesive has cured, the notified polymer becomes bound within a polymer matrix and hence is unavailable for exposure.

6.1.2. Public Exposure

The notified polymer is intended for industrial use only. The public may be exposed to automobiles to which the adhesive has been applied, however the adhesive would be cured, and the notified polymer bound within a polymer matrix and hence unavailable for exposure.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

While passive diffusion of the notified polymer across the gastrointestinal (GI) tract and dermal absorption may occur, it is expected to be limited by the high molecular weight (NAMW > 1000 Da) of the notified polymer.

The notified polymer contains functional groups (methoxysilyl) that have been associated with systemic toxicity and skin irritation. The systemic concerns in particular relate to lung toxicity from vapours or aerosols and are based on data from low molecular weight molecules. The potential for these effects may be limited by the high molecular weight of the notified polymer.

The notified polymer also releases toxic and flammable vapour (methanol) during end-use.

Health hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

No toxicological data were provided for the notified polymer. However, systemic lung toxicity and skin irritation effects following exposure to the imported product (< 20% notified polymer) cannot be ruled out. The notified polymer also releases a toxic and flammable vapour during end-use.

The main route of exposure to the notified polymer (< 20% concentration) to workers is expected to be dermal exposure, during application of the adhesive. Exposure is expected to be limited with the use of personal protective equipment (gloves, protective clothing and safety glasses/goggles). Inhalation exposure to the notified polymer is unlikely due to the viscous nature of the adhesive product and the expected very low vapour pressure of the notified polymer and low percent of low molecular weight species in the polymer. However workers may be exposed to small quantities of the vapour released during end-use of the adhesive. Therefore, given the proposed use of PPE to reduce exposure to the adhesive, safe work practices to avoid contact with the released vapour, and the small volume of the adhesive packages, exposure to the notified polymer is not expected to pose an unreasonable health risk to workers.

6.3.2. Public Health

The adhesive which contains the notified polymer will not be sold to the public. The public may be exposed to automobiles to which the adhesive has been applied, however the adhesive would be cured, and the notified polymer bound within a polymer matrix and unavailable for exposure. Therefore when used in the proposed manner, the notified polymer is not considered to pose an unreasonable risk to public health.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer is not manufactured or reformulated in Australia; therefore, there is no release from these activities. Accidental spills during transport are expected to be absorbed onto suitable material and disposed of to landfill.

RELEASE OF CHEMICAL FROM USE

Most of the notified polymer will be applied as adhesive to automobiles. The notified polymer in the adhesive is expected to self-cure and harden into a solid, inert mass on contact with moisture in the atmosphere. Once the adhesive has cured, the notified polymer will be trapped and not available for exposure.

Limited release to the environment is expected due to residual adhesive remaining in the empty tubes/containers and as a result of wiping excess adhesive with a cloth or that which has deposited onto masking tape. Collected wastes and import containers are expected to be disposed of to landfill.

RELEASE OF CHEMICAL FROM DISPOSAL

There will be no disposal to sewer. The notified polymer in adhesive will share the fate of the articles to which it has been applied. At the end of their useful life most of the articles, collected waste and residues in empty

containers are disposed of to landfill. Metal automobile components containing notified polymer in bonded parts may also be subjected to recycling processes.

7.1.2. Environmental Fate

No environmental fate data were submitted. The mixture containing the notified polymer reacts or cures on contact with atmospheric moisture to form an inert solid. Most of the notified polymer will be fixed with the adhesives to the automobiles at the customer sites, and will remain on the automotive as the bonded vehicle part until it reaches the end of its lifespan. Therefore, the majority of the notified polymer applied to automobiles will be either disposed of to landfill, or be recycled for plastic or metal reclamation. Any releases from use and residues in the imported containers will also be disposed of to landfill. In the landfill, the notified polymer is expected to eventually degrade by biotic and abiotic processes to form water and oxides of sulphur, silicon and carbon. The notified polymer is not likely to cross biological membranes due to its high molecular weight and is therefore not expected to bioaccumulate.

7.1.3. Predicted Environmental Concentration (PEC)

The notified polymer is not expected to be present at significant concentrations in the aquatic environment because of the very low potential for direct release to surface waters when used as adhesive in automobiles. A Predicted Environmental Concentration (PEC) has therefore not been calculated.

7.2. Environmental Effects Assessment

No ecotoxicity data for the notified polymer were submitted. The notified polymer will tend to form insoluble cross-linked solids in water that will have low bioavailability. The notified polymer is therefore not expected to pose a toxic hazard to aquatic life.

7.2.1. Predicted No-Effect Concentration

A Predicted No-Effect Concentration (PNEC) was not calculated as no ecotoxicological data were submitted and there will be very low potential for aquatic exposure.

7.3. Environmental Risk Assessment

The calculation of the risk quotient, Q ($Q = \text{PEC}/\text{PNEC}$) is not possible due to the unavailability of the ecotoxicity data for the notified polymer. The notified polymer contains groups which undergo hydrolysis on exposure to moisture and polymer crosslinks during the curing process of the adhesive. The release of the notified polymer to the environment in the uncured form is not expected to occur. Due to high molecular weight, the notified polymer will not cross the biological membrane and therefore, bioaccumulation in the aquatic compartment is not expected. The majority of notified polymer is expected to share the fate of the automobiles or the bonded vehicle part to which it has been applied and be disposed of to landfill, or subjected to recycling processes at the end of its useful life. In landfill, the notified polymer is expected to undergo slow degradation to smaller molecules and eventually to oxides of sulphur, silicon and carbon. On the basis of the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

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