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

FULL PUBLIC REPORT

Polymer in Acronal® A 240

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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**

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FULL PUBLIC REPORT**Polymer in Acronal® A 240****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

BASF Australia Ltd (ABN 62 008 437 867)
500 Princes Highway
Noble Park Vic 3074

NOTIFICATION CATEGORY

Self-Assessment: Non-hazardous – Synthetic Polymer with NAMW \geq 1000

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, Polymer Constituents, Residual Monomers/Impurities, Use Details, Manufacture/Import Volume, and Site of Manufacture/Reformulation

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

None known.

2. IDENTITY OF CHEMICAL

OTHER NAME(S)

Acronal® DS 3559

MARKETING NAME(S)

Acronal® A 240

MOLECULAR WEIGHT

Number Average Molecular Weight (Mn)	> 1000
Weight Average Molecular Weight (Mw)	> 1000
% of Low MW Species < 1000	< 20%
% of Low MW Species < 500	< 10%

3. COMPOSITION

DEGREE OF PURITY

> 99%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS

A number of hazardous impurities at levels which do not render the notified polymer hazardous according to the NOHSC criteria.

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (>1% by weight)

None.

ADDITIVES/ADJUVANTS

None.

4. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be imported by sea as a 51% component of the aqueous dispersion Acronal® A 240. Later the notified polymer will be manufactured in Australia. It will be packaged in 1000 L Schuetz semi-bulk tanks, flexibags in shipping containers or isocontainers and stored at a contracted warehouse in Melbourne. Delivery will be to the BASF site at Altona for addition of additives and then following repacking into 1000 L Schuetz semi-bulk tanks or road tankers delivery to one customer will be by road from this site.

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	100 – 1000	100 – 1000	100 – 1000	100 – 1000	100 - 1000

USE

The notified polymer is intended to be used as a pressure-sensitive adhesive for labels.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, transport and storage

PORT OF ENTRY

Melbourne.

IDENTITY OF MANUFACTURER/RECIPIENTS

BASF Australia Ltd

500 Princes Highway

Noble Park Victoria 3074

TRANSPORTATION AND PACKAGING

The notified polymer will be imported in an aqueous dispersion in 1000 L intermediate bulk containers (metal/plastic), flexibags in a shipping container or isocontainers. Following reformulation, the final product containing the notified polymer will be packaged into 1000 L intermediate bulk containers or road tankers.

5.2. Operation Description

The notified polymer will be imported as a 51% component of an aqueous dispersion and stored at a contracted warehouse in Melbourne. The aqueous dispersion will be transported to the BASF site at Altona for discharge into a bulk tank for mixing with additional coater additives and then packaged into either 1000 L intermediate bulk containers or road tankers for distribution to a customer. It is expected that after about 2 to 3 years, the notified polymer will be manufactured at the Altona site.

The aqueous dispersion containing the coater additives will be supplied to the adhesive applicator in a ready-to-use form. The dispersion containing the notified polymer will be pumped into storage tanks at the customer site and then applied to paper via a largely automated process. Adhesives are pumped from a small holding tank to a coating machine tray where it is picked up in the reverse gravure coating process by a roller which transfers it to an etched gravure roller, which in turn transfers the adhesive to paper label stock. The labels are heated and dried, a non-stick backing sheet is applied, and the labels are wound onto rolls. The labels are later cut to size.

5.3. Disposal

The residual notified polymer in import containers (intermediate bulk containers, isocontainers) will be rinsed into wastewater streams for effluent treatment before discharge to sewer. The flexibags are unlikely to be cleaned but will be disposed to authorised landfill. Wastewater containing the notified polymer from the reformulation process will be disposed of to an effluent treatment plant for treatment. Once treated, the water is disposed of to sewer according to the trade waste agreement provided by City West Water.

Wash water from equipment cleaning at the adhesive application site will be treated at the on-site treatment plant before discharge to sewer. The flocculated solids from the treatment plant will be taken to a licensed waste landfill site. The road tanker is likely to return to the Altona site for rinsing before being refilled. The intermediate bulk containers will be taken off-site to be cleaned at an approved intermediate bulk container reconditioning facility.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

In the first 2 to 3 years of introduction, the notified polymer will be imported at a concentration of 51% in 1000 L intermediate bulk containers, flexibags or isocontainers. Exposure to the notified polymer during importation, transport and storage is unlikely except in the unlikely event of an accident where the IBC or flexibag may be damaged.

Following the period of importation, the notified polymer is to be manufactured at a single site in Altona, Victoria. Polymerisation of the polymer constituents takes place within a sealed reaction vessel that is vented to a thermal oxidiser unit to eliminate any vapours. Worker exposure is unlikely except in the unlikely event of a spill or pressure build up in which the notified polymer may be released through a pressure rated bursting disk.

Workers involved in the sampling and testing of samples for quality assurance purposes, although exposed to small quantities of the notified polymer, wear protective equipment such as safety helmets, safety glasses, impervious gloves, coveralls and safety boots. The finished manufactured polymer dispersion will be filtered and then drummed off into either 1000 L intermediate bulk containers or road tankers for distribution to a customer.

6.2. Summary of Public Exposure

The imported (and later manufactured) product containing the notified polymer is not directly available to the public. Members of the public are likely to be exposed to very small quantities of the notified polymer in dry form as it occurs in used labels coated with the formulation. In dry form, it is not expected that significant amounts of the notified polymer will be released from the label.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

At the manufacture/reformulation site, washing from the mixing and reaction vessels and piping will be flocculated and the majority of the notified polymer will precipitate during this process. The supernatant waste water is adjusted to near neutral pH and discharged to the sewer in accordance with the current trade waste agreement. The final concentration of the notified polymer in the sewer discharge is expected to be <1 ppm. The flocculated polymer is disposed to an authorised waste landfill site. Based on an import value of 100 tonnes, it is estimated that approx. 2% (2000 kg) of the notified polymer will be lost in this manner per annum and almost all will go to landfill. Assuming that >95% will go to landfill, the remaining (at worst) 5% (10000 kg) will release into 50 ML of effluent water. The concentration of the notified polymer is determined to be 100 kg/50 ML = 2 mg/L. Minor spills will be taken by absorbent material and ultimately sent to landfill.

During the adhesive application process, there is potential for spillage of the product to occur. It is expected that <50kg/year will be lost in this manner. This spill will be taken up by absorbent material and be disposed through industrial solid waste to a licensed waste landfill site. Wash water from

equipment cleaning will be treated at the on-site treatment plant. It is estimated that 0.01% per day (10 kg/day) of the notified polymer will go to effluent for treatment. If the adhesive is applied 200 days/annum, then approximately 2000 kg/annum for the notified polymer will go to the effluent treatment plant where the notified polymer will be precipitated with flocculants. The precipitated sludge from the treatment plant will be taken to a licensed waste landfill site. Treated supernatant liquid will be released to the sewer. It is estimated that >95% of the notified polymer will be precipitated in this manner. Therefore, up to 1850 kg/annum of the notified polymer will go to landfill via spills and cleaning and up to 100 kg/annum (very similar to the manufacturing/reformulation site) may be lost to the sewer in supernatant liquid.

The majority of the polymer will be released to the environment at the end of the useful life of the adhesive label or the product to which it is adhered. The polymer may be landfilled or incinerated with the waste product or may possibly be released to sewer during the recycling process of the product.

6.3.2. Environmental Fate

Waste generated from the manufacturing site would be disposed by licensed waste contractors. Wastes released into sewer from the manufacturing site are likely to be adsorbed to sludge and be landfilled ultimately. However, because of the high volume usage of the notified polymer, the concentration of the notified polymer in the effluent water approaches its maximum solubility level of <1 mg/L and therefore the polymer is not considered to pose an environmental risk to aquatic organisms.

In landfill the notified polymer is unlikely to leach and will degrade over time, posing minimal risk to the soil environment.

7. ESTABLISHMENT OF LOW PHYSICAL AND CHEMICAL HAZARD

Appearance at 20°C and 101.3 kPa	White milky liquid with slight aromatic odour
Melting Point	0°C (aqueous dispersion containing the notified polymer)
Boiling Point	100°C (aqueous dispersion containing the notified polymer)
Density	1000 kg/m ³ at 20°C (aqueous dispersion containing the notified polymer)
Vapour Pressure	23 kPa at 20°C (water)
Water Solubility	<1 mg/L at 20°C by comparison with similar polymers.
Hydrolysis as a Function of pH	The polymer contains hydrolysable groups; however, hydrolysis is unlikely in the environment pH range of 4 to 9, due to the polymer's low water solubility.
Partition Coefficient (n-octanol/water)	Not undertaken as notified polymer is expected to be insoluble in water and will largely partition into n-octanol rather than water.
Adsorption/Desorption	Due to the low water solubility, the polymer is expected to become associated with the organic component of soil and sediments.
Dissociation Constant	Some residual anionic groups are expected, these are expected to show typical acidity.
Particle Size	Not applicable as the polymer is manufactured as a dispersion in water and is never isolated.
Flash Point	The polymer latex in water is not flammable.
Flammability	Not applicable.
Explosive properties	Not likely to be explosive based on structure.
Reactivity	The notified polymer is expected to be stable under normal environmental conditions. It does not have any oxidising properties and incompatible materials are not known. The polymer is not resistant to frost and, therefore, freezing temperatures should be avoided. The polymer is also sensitive to heat and, therefore, temperatures above 30°C should be avoided. Decomposition products expected are oxides of carbon.

7.1. Discussion of Observed Effects

By comparison to similar polymers, the notified polymer is not expected to be volatile under the conditions of use. The polymer solution (dispersion) is also expected to boil and freeze at the temperature of water, while the vapour pressure of the polymer is also predicted to be very low.

The water solubility was not determined, but the polymer is expected to have low solubility (less than 1 mg/L) due to the presence of hydrophobic groups. Due to low water solubility, hydrolysis is unlikely in the environmental pH range of 4 to 9.

The determination of partition coefficient and adsorption/desorption was not undertaken as the notified polymer is expected to be insoluble in water and will largely partition into n-octanol rather than water. Due to its low water solubility, the polymer is expected to become associated with the organic component of soils and sediments.

8. ESTABLISHMENT OF LOW HUMAN HAZARD

8.1. Toxicological Investigations

No toxicological data were submitted.

8.2. Human Health Hazard Assessment

The notified polymer is considered to be of low hazard.

9. ESTABLISHMENT OF LOW ENVIRONMENTAL HAZARD

9.1. Ecotoxicological Investigations

No ecotoxicological data were submitted.

9.2. Environmental Hazard Assessment

Due to its high molecular weight and the low water solubility, the notified polymer has little potential for bioaccumulation.

10. RISK ASSESSMENT

10.1. Environment – risk characterisation

The majority of the notified polymer will share the same fate as the adhesive label or the product to which it is adhered.

It is expected that during reformulation and manufacture of the labels that 4000 kg per annum of the notified polymer will be released from the sites with 200 kg being released to sewer.

Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the anionic group is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer. The toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

Due to its low water solubility, the notified polymer is expected to be adsorbed onto soil/sediments and thus unlikely to leach into soil. The notified polymer will ultimately degrade via biotic and abiotic processes to form oxides of carbon and water vapour.

The polymer is not expected to be toxic to aquatic organisms up to the level of its solubility, namely < 1 mg/L. Consequently irrespective of the polymer's release pattern it is unlikely to pose an unacceptable risk to the aquatic environment.

In landfill the notified polymer is unlikely to leach and will degrade over time, posing minimal risk to the aquatic or soil environment.

10.2. Occupational health and safety – risk characterisation

The notified polymer is not hazardous and worker exposure is limited by engineering controls such as local exhaust ventilation, sealed reaction vessels and automated transfer and application processes. There is also a small amount of exposure during the drumming off of the manufactured polymer dispersion into either 1000 L intermediate bulk containers or road tankers for distribution to a customer.

Worker exposure to the notified polymer during transport and storage is only possible in the event of an accidental spillage.

The OHS risk associated with the notified polymer is assessed as low.

10.3. Public health – risk characterisation

The notified polymer will not be available to the public. Members of the public may make dermal contact with labels containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is of high molecular weight, not hazardous, and not expected to be released from dried labels.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Hazard classification

Based on the available data the notified chemical is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

11.2. Environmental risk assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.3. Human health risk assessment

11.3.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.3.2. Public health

There is Negligible Concern to public health when used in the manner proposed.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS in accordance with the NOHSC National Code of Practice for the Preparation of Material Safety Data Sheets. It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- 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 MSDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

Disposal

- The notified chemical should be disposed of by landfill or be incinerated.

Storage

- Keep from freezing; material may coagulate. The minimum and maximum temperatures recommended for storage are 10 and 30°C respectively.

Emergency procedures

- Keep unprotected persons away. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

13.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 64(1) of the Act; if
 - additional information has come available so that the notified polymer does not meet the definition of a non-hazardous chemical.or
- (2) Under subsection 64(2) of the Act:
 - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.