

File No PLC/698

April 2007

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

**FULL PUBLIC REPORT**

**Polymer in Gelva GME AX 3312-22 Adhesives**

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 and Water Resources.

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:

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**Director  
NICNAS**

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**FULL PUBLIC REPORT****Polymer in Gelva GME AX 3312-22 Adhesives****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Cytec Australia Holdings Pty Ltd (ABN 45 081 148 629)  
 Suite 1, Level 1 Norwest Quay  
 21 Solent Circuit  
 Norwest Business Park  
 Baulkham Hills NSW 2153

## NOTIFICATION CATEGORY

Polymer of Low Concern

## 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 Concentration of notified polymer in imported products.

## 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

**2. IDENTITY OF CHEMICAL**

## OTHER NAME(S)

Acrylic polymer

## MARKETING NAME(S)

Polymer in Gelva GME AX 3312-22 Adhesives (<60% notified polymer in aqueous emulsion)

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10,000

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
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**

White viscous emulsion (Gelva GME AX 3312-22 Adhesives)

**Melting Point/Glass Transition Temp**

Cannot be determined, the notifier has stated that the notified polymer is not isolated.

**Density**

Cannot be determined, the notifier has stated that the notified polymer is not isolated.

**Water Solubility**

0.5-5 ppm (Gelva GME AX 3312-21)

The water solubility was measured using a semi-quantitative method using 1:10 serial dilutions of 10 mL in 990 mL water until a clear solution was obtained.

**Dissociation Constant**

Not determined. The notified polymer contains carboxylate groups with typical pKa ~ 3-5.

**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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	≤100	100-250	200-250	≤250	≤250

USE AND MODE OF INTRODUCTION AND DISPOSAL

**Mode of Introduction**

The notified polymer will be imported as an aqueous emulsion at a concentration of <60% in 1000 kg totes and/or isotankers and in 205 L drums. The imported product will be transported from the wharf to the warehouse of Cytac Australia Holdings by truck, where it will be stored before being distributed to end-users.

**Reformulation/manufacture processes**

The notified polymer will not be manufactured or reformulated in Australia.

**Use**

The notified polymer will be used as an emulsion adhesive for clear filmic labels.

Transport containers are moved from the on-site bunded storage facility to the vicinity of the application machinery. The containers are opened and pumping equipment is connected from the container to the application machinery via a hose. Adhesive containing the notified polymer (<60%) is applied to the reverse side of clear films to produce the labels. This may be done using the curtain coating or reverse gravure method. The machinery required for these processes is enclosed and automated.

The gravure method utilises rollers to coat the adhesive onto the film and a blade to remove any excess adhesive. For curtain coating, the coating streams downwards and coats the film passing below the stream on a conveyor. During both processes, excess adhesive is captured and recirculated. Once the thin layer of adhesive is applied to the film, the film is collected on a roll and no adhesive should

remain on the outer surface of the film. Workers will remove the rolls of labels from the machinery.

Maintenance workers may be required to access the internal sections of the machinery. The machinery is flushed with water to remove any adhesive residues prior to accessing.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### OCCUPATIONAL EXPOSURE

<i>Number and Category of Workers</i>		<i>Exposure Duration Hours/Day</i>	<i>Exposure Frequency</i>
<i>Category of Worker</i>	<i>Number</i>		
Storage warehousing and transport	6	1	48 weeks/year
<i>At end-user site</i>			
Operators	6	8	48 weeks/year
Maintenance	2	1	48 weeks/year

Exposure to significant amounts of the notified polymer is limited by the enclosed and automated nature of the application processes. However, dermal and ocular exposure of workers to the notified polymer may occur as a result of spills and leakages during the connecting and disconnecting of pumping equipment to the application machinery. Exposure should be minimised by wearing personal protective equipment such as PVC gloves, goggles, safety footwear and overalls.

Dermal exposure to the notified polymer should be minimal when handling rolls of labels, as the labels are not expected to contain adhesive on the outer surface.

Dermal and ocular exposure to the notified polymer may occur during maintenance work and cleaning of pump and transfer lines. However, exposure is expected to be minimal, given that such work is undertaken rarely, lines are flushed prior to maintenance work, and workers are professionally trained and wear personal protective equipment such as gloves, overalls, safety glasses, and a respiratory if necessary.

#### PUBLIC EXPOSURE

The adhesive product containing the notified polymer will not be available to the public. The public will come into contact with the labels, however, contact with the adhesive containing the notified polymer is unlikely as the adhesive should only be present on the inner (unexposed) side of the label.

### 6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

### 6.3. Human Health Risk Assessment

#### OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers and the low intrinsic hazard of the polymer.

#### PUBLIC HEALTH

The notified polymer will not be available to the public. Members of the public may make dermal contact with the labels, however, contact with the adhesive is unlikely, as the adhesive should only be present on the inner (unexposed) side of the label. Therefore, together with the low hazard of the notified polymer, the risk to public health should be negligible.

## 7. ENVIRONMENTAL IMPLICATIONS

## 7.1. Exposure Assessment

### ENVIRONMENTAL RELEASE

There will be no local manufacturer or reformulation of the notified polymer.

During transport and warehousing environmental release of the polymer is only expected in the event of accidental damage to the transport containers. Spills are collected with inert adsorbent materials and disposed of through a licensed waste disposal contractor.

During the end use, adhesive containing the notified polymer is applied using either the gravure or curtain coating method. Both processes allow excess adhesive to be captured and recirculated, thereby eliminating waste. These methods are generally accepted as being very efficient. It is estimated in the worst-case scenario that up to 10% of the notified polymer will be wasted from application procedures and residues left in empty containers. This equates to an annual release of 25 tonnes of polymer. Most of this would be disposed of to landfill. However, there is potential for some low level release to the sewer where the small amount of notified polymer remaining in the solution will be adsorbed to the sludge, which in turn would also be disposed of to landfill. Empty containers will be rinsed with water and the residues disposed of to landfill. The empty IBCs and isotankers will be reused.

### ENVIRONMENTAL FATE

The notified polymer has a very high molecular weight and will not volatilise from water to any appreciable extent. In soil, percolation to ground water will be negligible. Due to high molecular weight of the polymer, it is not expected to bioconcentrate in exposed organisms. The notified polymer that is applied to the labels will be strongly adhered and sandwiched between the label and container. Thus the notified polymer will have same fate as the container/label, which will be disposed of to landfill, where it will slowly degrade to oxides of carbon and hydrogen.

## 7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrients elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of polymer backbones. This would not apply to the notified polymer. Further, the toxicity to algae is likely to be reduced due to the presence of calcium ions, which would bind to the functional groups.

## 7.3. Environmental Risk Assessment

The release of the notified polymer during application is expected to be minimal. The polymer also has a very high NAMW of >10,000 and it is unlikely to cross biological membranes and bioaccumulate. Based on the exposure levels and use pattern, the notified polymer is unlikely to pose an unacceptable risk to the environment.

## 8. CONCLUSIONS

### 8.1. Level of Concern for Occupational Health and Safety

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

### 8.2. Level of Concern for Public Health

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

### 8.3. Level of Concern for the Environment

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

## 9. MATERIAL SAFETY DATA SHEET

### 9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

## 10. 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 polymer 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 polymer should be disposed of by recycling, recovering and reuse of the materials, where permitted. It is recommended that the waste generated be disposed by thermal treatment or incineration at approved facilities. All local and national regulations should be followed.

#### Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by covering the spill with an absorbent material; sweeping and placing in a waste disposal container. The spill area should be flushed with water.

### 10.1. 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
  - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

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.