

File No PLC/697

20 April 2007

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

**FULL PUBLIC REPORT**

**Crylcoat 9246-0 and Crylcoat S 04040**

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****Crylcoat 9246-0 and Crylcoat S 04040****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, Import Volume, and Concentration of Polymer in Imported Product

## 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**

## MARKETING NAME(S)

Crylcoat 9246-0  
 Crylcoat S 04040

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1000

## 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

<b>Appearance at 20°C and 101.3 kPa</b>	Colourless to light yellow flakes
<b>Melting Point/Glass Transition Temp</b>	80°C
<b>Density</b>	1200 kg/m <sup>3</sup>
<b>Water Solubility</b>	0.5 g/L at 20°C
<b>Dissociation Constant</b>	Does not contain any groups that can undergo dissociation.
<b>Particle Size</b>	>10 mm      0% 5-10 mm      4.2% 1-5 mm      81.6% 0.15 – 1 mm   13.2% <0.15 mm      1%
<b>Reactivity</b>	Stable under normal environmental conditions. Contains hydrolysable groups but this is unlikely to occur under ambient environmental conditions due to low water solubility.
<b>Degradation Products</b>	None under normal conditions of use

#### Comments

Accumulation of fine dust may entail the risk of a dust explosion in the presence of air. No hazardous reactions are likely to occur when stored and handled according to prescribed instructions.

#### 5. INTRODUCTION AND USE INFORMATION

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

Year	1	2	3	4	5
Tonnes	30-40	40-50	60-70	70-80	90-100

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

#### Mode of Introduction

The product containing the notified polymer will be imported in flake form in 20 kg bags contained in boxes with PVC liners at concentrations >98%. The imported product will be stored and distributed by road from the notifier's site to PVC manufacturing industries Australia-wide.

#### Reformulation/manufacture processes

##### Formulation of masterbatch

The notified polymer will be manually weighed and added to a hopper, which feeds into a mixer. The mixer is sealed during mixing. After mixing, the mixer opens directly into an extruder below through a sealed tube. In the extruder, the raw materials are melted and mixed. The melted mixture is extruded through die holes in long spaghetti-like strings and passes through a cooling water bath into a pelletiser and classifier, which cut the strings into pellets (approximately 5 mm width). It is then graded and conveyed to a hopper for storage prior to bagging. This is a continuous process (200-300 kg/hour) and operates at 200°C. The final pellets contain the notified polymer at a concentration of <5%.

A quality control technician scoops a portion of the pellets into a sample container for testing. Following quality control testing, a packaging operator will bag the pellets into a 25 kg capacity woven laminated PVC bags, ready for distribution to customers by road.

##### Manufacture of PVC products

The pellets are either transferred by vacuum or manually tipped into the feeding hopper on an injection-moulding machine. The pellets are then fed into the barrel of the machine by gravity. Once

heated, the melted pellets are moulded to form the shape of the PVC article, and then cooled within the closed mould, prior to ejection into a suitable receptacle. The compounded product is removed from moulds either manually or is automatically ejected. The injection-moulded PVC articles will contain <5% notified polymer.

### Use

The notified polymer will be used as a tackifier in the manufacture of PVC products for various industries such as the building industry.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### OCCUPATIONAL EXPOSURE

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Transport and storage	2-5	1-10 hours/day	20 days/year
<i>Formulation of master batch</i>			
Production Process Operators	4-8	8 hours/day	75 days/year
Laboratory technicians	2	8 hours/day	75 days/year
Cleaning of equipment	5	8 hours/day	10 days/year
<i>Manufacturing of PVC article</i>			
Production Process Operators	12	8 hours/day	50 days/year
End-users	> 1000	6-8 hours/day	300 days/year

#### *Transport and storage*

Transport and warehouse workers will be exposed to the notified polymer only in the event of a spill or if packaging is accidentally breached.

#### *Formulation of masterbatch*

Dermal, ocular and inhalation exposure to the notified polymer may occur during production of pellets, particularly when workers manually weigh and transfer the notified polymer into the hopper. The maximum concentration at which the notified polymer will be present during these processes is > 98%. Exposure should be minimised by the local exhaust ventilation in place in the extruder loading areas, and personal protective equipment including safety glasses, gloves, dust mask and overalls.

#### *Manufacture of PVC articles*

Dermal and inhalation exposure of workers to the notified polymer may occur during manufacture of PVC articles (concentration <5%), particularly if the pellets are manually transferred into the injection-moulding machine. Many of the production processes such as delivery, mixing and dispensing are automated and are performed in purpose built facilities fitted with vacuum extraction equipment, such that worker exposure to the notified polymer during such operations should be minimised. Exposure should also be further reduced by the use of personal protective equipment, including eye protection, chemical impermeable gloves, protective clothing and particulate respirators.

Exposure to the notified polymer is unlikely to occur following manufacture of the PVC articles since the notified polymer is encapsulated within the finished PVC articles. In this form, the notified polymer is not bioavailable, hence exposure to workers is expected to be negligible.

#### PUBLIC EXPOSURE

The notified polymer is not available for sale to the general public but will be used as a tackifier in compounded PVC components that may be publicly available, such as building materials. Public exposure to the notified polymer is likely to be negligible because the notified polymer will be physically contained within the PVC matrix and is unlikely to be bioavailable.

## 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

Although inhalation exposure to the notified polymer at concentrations >98% could occur during manual weighing and transfer into the hopper, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer. The level of atmospheric nuisance dust should be maintained as low as possible. The NOHSC exposure standard for atmospheric dust is 10 mg/m<sup>3</sup>.

### PUBLIC HEALTH

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is of low hazard, is present at relatively low concentrations in the final products (<5%), and is unlikely to be bioavailable as it will be bound within the PVC matrix.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Exposure Assessment

#### ENVIRONMENTAL RELEASE

##### RELEASE OF CHEMICAL AT SITE

The notified polymer will not be manufactured or repackaged in Australia. Local operation will include transport and storage, and manufacture of masterbatches for use in the PVC manufacturing industry.

Crylcoat 9246-0 will be transported to Australia by ship in flake form in 20 kg bags contained in boxes with PVC liners at concentrations >98%. It will be transported directly to the PVC manufacturer's warehouse for housing before being formulated into masterbatches.

Release to the environment may occur at the PVC manufacturer's site in the unlikely event of an accident during transport or if the packaging is damaged. It is anticipated that 0.5% loss of notified polymer may result from spills (up to a total of 500 kg per annum). It is estimated that the loss of the notified polymer as residue in empty import bags to be up to 0.2% (up to a total of 200 kg per annum).

Some of the Crylcoat 9246-0 will be released from equipment cleaning. This waste will be collected and sent to landfill. There is also potential for some release of the notified polymer from pipes and ducts in the extrusion equipment during routine maintenance of equipment. However, most of this is expected to be in an inert solid state with the notified polymer bound within the polymer matrix. It is expected that this material will be placed into landfill for disposal. It is expected that approximately 1% of the notified polymer will be lost as waste during production, which equates to up to 1000 kg/annum at maximum import volume.

There will be no release to sewer.

##### RELEASE OF CHEMICAL FROM USE

The master batch containing the notified polymer will be used to manufacture PVC articles.

Very little release of the notified polymer is anticipated during use of the formulated pellets in the preparation of the moulded PVC products. Residues remaining in bag (~0.1%) are expected to be minimal (~100 kg per annum).

Spilled material, being solid and in pellet form, will typically be collected with a broom and bagged, and may be melted and reprocessed or disposed of to landfill as normal industrial waste via a waste contractor.

There is potential for some release of the notified polymer from pipes and ducts in the extrusion equipment during routine maintenance of equipment. However, most of this is expected to be in an inert solid state with the notified polymer bound within the polymer matrix. It is expected to be placed into landfill for disposal. It is estimated that approximately 1% of the notified polymer will be lost as waste during production, which equates to up to 1000 kg/annum at maximum import volume.

Pellets containing the notified polymer are to be used in the manufacture of PVC articles with wide distribution throughout the community. Long-term release of the notified polymer as a result of discarding old consumer products would be very diffuse.

Some release of the notified polymer is possible as a result of "blooming" from the manufactured articles during day-to-day use. This process is the slow diffusion of the polymer from the interior of the PVC article to the surface. It may be removed through cleaning processes and released in waste water, presumably mainly to sewer. However, the blooming of the notified polymer from the PVC articles is unlikely due to the high molecular weight of the substance.

While recycling of the PVC in discarded articles is theoretically possible, this is not anticipated to take place on a large scale. Consequently, the majority of the imported polymer will be discarded with old PVC articles at the end of their useful lives, and these are likely to be placed into landfill.

#### ENVIRONMENTAL FATE

No ecotoxicological data were provided. No release of the notified polymer into the aquatic environment is expected either during manufacture of masterbatch and manufacture of PVC articles. Should the notified polymer enter the aquatic environment through accidental spills, it is not expected to cross biological membranes due to its high molecular weight, and is therefore not expected to bioaccumulate.

### 7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

### 7.3. Environmental Risk Assessment

The notified polymer is not expected to pose a significant hazard to the environment. The usage patterns indicate that the levels of release of the polymer to the environment will be low. Under normal usage there will be no release into the aquatic or soil environments. The majority of the notified polymer will be physically contained within the PVC matrix and is unlikely to be bioavailable.

## 8. CONCLUSIONS

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

There is Low 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

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer:
  - Local exhaust ventilation at sites where masterbatch formulation takes place.
- 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 can be used without reconditioning or may be disposed of with domestic refuse according to local regulations.

#### Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by sweeping or shovelling up.

### 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.