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

**FULL PUBLIC REPORT**

**VUP 4628**

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

VUP 4628

### 1. APPLICANT AND NOTIFICATION DETAILS

#### APPLICANT(S)

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

#### NOTIFICATION CATEGORY

Limited: Synthetic polymer with NAMW  $\geq 1000$ .

#### EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

##### Identity of Chemical

- Chemical names
- Other names
- CAS Number
- Molecular formula
- Structural Formula
- Molecular weight
- Spectral data

##### Composition

- Purity
- Identity of toxic or hazardous impurities
- % Weight of toxic or hazardous impurities
- Non-hazardous impurities
- Identity of additives/adjuvants
- % Weight of additives/adjuvants

##### Import volume

Concentration of the notified polymer in end-use products

#### VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

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

##### Physical and Chemical Data

- Melting Point/Boiling Point
- Specific Gravity
- Vapour Pressure
- Hydrolysis as a Function of pH
- Partition Co-efficient
- Absorption/Desorption
- Dissociation Constant
- Flash Point
- Flammability Limits
- Autoignition Temperature
- Explosive Properties
- Reactivity

#### PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

#### NOTIFICATION IN OTHER COUNTRIES

None

## 2. IDENTITY OF CHEMICAL

MARKETING NAME(S)  
VUP 4628

ANALYTICAL DATA  
Reference IR spectra and GPC data were provided.

MOLECULAR WEIGHT (MW)	
Number Average Molecular Weight (Mn)	1000 < Mn < 5000
% of Low MW Species < 1000	< 15
% of Low MW Species < 500	< 5

## 3. COMPOSITION

DEGREE OF PURITY  
> 98%

DEGRADATION PRODUCTS  
None known.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES  
The residual monomers may be lost to the environment when the polymer or product containing it is in the liquid form. However, once the coated products are cured, the monomers will be trapped within the solid matrix.

## 4. PHYSICAL AND CHEMICAL PROPERTIES

The notified polymer will be imported as a finished product, Viapal® VUP 4693 E-68. The notified polymer is never isolated. Thus, unless stated otherwise, the following physicochemical properties are for the finished product.

**Appearance at 20°C and 101.3 kPa** Clear yellow liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Not expected to freeze under normal conditions.
Boiling Point	100 - 200 °C (pressure unspecified)	MSDS for product
Density	1129 kg/m <sup>3</sup> at 20 °C	Measured for product
Vapour Pressure	0.065 kPa at 20°C	Estimated based on styrene
Water Solubility	27 g/L (temperature unspecified)	Measured for product
Hydrolysis as a Function of pH		Unlikely to hydrolyse
Partition Coefficient (n-octanol/water)	Not determined	Will partition to water based on solubility data
Adsorption/Desorption	Not determined	Mobile in soil based on water solubility results
Dissociation Constant	Not determined	The polymer does not contain any groups able to dissociate.
Particle Size	Not determined.	Liquid, not relevant
Flash Point	34°C (pressure unspecified)	Measured for product
Flammability	Not determined	Not expected to be flammable. The product contains styrene solvent and is expected to be flammable.
Autoignition Temperature	Not determined	Not expected to autoignite at ambient temperature and

Explosive Properties	Not determined	pressure. Not expected to be explosive.
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## Discussion of Observed Effects

For full details of the physical-chemical properties tests please refer to Appendix A.

### *Reactivity*

The polymer is stable under normal conditions of use.

### *Dangerous Goods classification*

Based on the presence of other ingredients finished products to be imported containing VUP 4628 are classified as flammable according to the Australian Dangerous Goods classification (FORS, 1998).

## 5. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be imported in 200 L metal drums at < 35% concentration in Viapal® VUP 4693 E-68.

### 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>	< 5	< 5	< 5	3 - 10	3 - 10

### PORT OF ENTRY

The notified polymer will be imported through Sydney, by wharf.

### IDENTITY OF MANUFACTURER/RECIPIENTS

Industrial coatings formulators.

### TRANSPORTATION AND PACKAGING

The notified polymer will be imported in 200 L metal drums. The imported product will be transported by road to the formulation site and stored in a bonded warehouse before use.

### USE

The notified polymer will be used as a component in the manufacture of putty for the after-market automotive industry. The notified polymer will be imported at < 35% concentration in Viapal® VUP 4693 E-68. The concentration of the notified polymer in the end-product will be < 20%.

### OPERATION DESCRIPTION

The notified polymer will be imported in 200 L stainless steel drums at < 35% active material. It will be transported from the wharf to Cytex for warehousing before being supplied to putty formulators. Truck drivers will transport the sealed containers by road from the wharf to the formulator's warehouse. Two incoming goods receiving personnel will unload the containers and store them in designated storage areas. The only chance of exposure for these workers will be in the case of damaged and leaking containers.

The imported product containing the notified polymer will be reformulated into putty at the formulation site. Formulation of the notified polymer into putty will involve transfer of notified polymer by metered dosing to a 1000 kg stainless steel mixing vessel and mixing the notified polymer and other ingredients in a sealed vessel fitted with a high-speed mixer and local ventilation system. Each batch is to be quality checked and adjustments made as required. The resultant putty is dispensed into 20 L cans under exhaust ventilation for supply to customers. The final concentration of the notified polymer in the final product will be < 20%. Putty containing the notified polymer will be warehoused at the formulation site and distributed to end-users.

The packaged containers are then warehoused for storage prior to distribution to spray painting and

smash repair companies who will use the finished product to repair smashed automobiles. The end product containing the notified polymer will be applied to motor vehicles in a spray booth by professional painters using a putty gun.

#### *Putty application*

At the end-user site the product is applied directly from the can with a putty knife or similar tool. Many applications may be made from a single can. The binder adheres to the substrate and then it is cured by air-drying.

#### *Spraying application*

The product is gravity fed into a putty spray gun and then applied to substrate. Any excess material is wiped away with cloth. The substrate is then cured by air drying.

Once the coating containing the notified polymer cures, the polymer will become bound within a matrix and will be unavailable for exposure.

## **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</i>	<i>Exposure Frequency</i>
<i>Transport and Storage</i>			
Transporting from dock for warehousing at CYTEC before supplying to putty manufacturers for reformulation (loading/unloading trucks)	2	2-3 hours/day	4 days/year
<i>Coating formulation</i>			
Process workers connecting pumping equipment and operating mixer and filling machinery	3	8 hours/day	4 days/year
Quality control/chemists and technical service	1	8 hour/day	4 days/year
Cleaning operations and maintenance	2	8 hour/day	4 days/year
<i>End use</i>			
Spray painting and smash repair workshops	> 1000	8 hours/day	30 days/year

##### *Exposure Details*

##### *Transport and storage*

Exposure is unlikely to the polymer during transportation and storage. Exposure may result in case of an accidental spill or leak in the container.

##### *Putty formulation*

*Putty make up* – Workers may be exposed to polymer via dermal and ocular exposure due to drips, spills and splashes during charging of mixer and blending. Workers will wear coveralls, goggles and impervious gloves. Aerosols may be released during blending, but inhalation exposure is low due to exhaust ventilation system.

*QC testing:* Dermal and ocular exposure is possible from drips, spills and splashes during batch adjustment and when taking and testing samples. Workers wear coveralls, goggles and impervious gloves to minimise exposure.

*Filling into cans:* Dermal exposure may be possible due to drips and spills when connecting filling

lines. The binder is filled into cans under local exhaust ventilation and workers wear overalls, goggles and impervious gloves to minimise exposure.

*Maintenance workers:* There is possible of skin contact during equipment maintenance. Workers wear coveralls, goggles and gloves to minimise exposure.

#### *End use*

Workers may be accidentally exposed to the notified polymer while opening cans and application to substrate. Handling dried substrate is not expected to result in exposure to the notified polymer. Spraying operations will be carried out in a spray booth. Operators are expected to wear safety glasses, impervious gloves, coveralls and safety boots when handling putty to minimise exposure. The notified polymer is stable under normal working conditions and has a relatively high molecular weight and low vapour pressure and is therefore not volatile and won't be absorbed through the skin or by inhalation.

### **6.1.2. Public exposure**

The imported product containing the notified polymer will not be sold to the general public, and will only be used by industry customers. The public may come into contact with the notified polymer only after it has been applied to substrate and is not bioavailable.

## **6.2. Human health effects assessment**

No toxicity data were submitted.

The high molecular weight of the notified polymer should preclude absorption across biological membranes and systemic toxicity is not expected. As no toxicological data have been submitted the notified polymer cannot be classified under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

However, the notified polymer contains a significant amount of low MW species and it contains a high concern functional group, which is reactive and of concern to human health because of its potential for skin sensitising properties.

## **6.3. Human health risk characterisation**

### **6.3.1. Occupational health and safety**

The health effects of the notified polymer have not been characterised. Its absorption into the body is expected to be low because of its high molecular weight. Skin sensitising potential is indicated by a significant level of low molecular weight species and a reactive functional group (RFG) of high concern due to its sensitising potential. The potential for skin sensitisation is mitigated by the fact that the level of species with molecular weight < 500 is < 5% and not all molecules would contain the RFG. In addition the notified polymer is introduced at < 35%. Taking these considerations into account, the potential for sensitisation is considered to be low solely on the basis of intrinsic hazard.

During putty formulation, exposure will be controlled by engineering controls such as enclosed tanks and local exhaust ventilation to extract aerosols. Some exposure to spillage during transfer of the polymer dispersion to the mixing vessel and during packing off of the paint into drums. This exposure is expected to be intermittent and controlled by adequate PPE. Exposure during quality control testing, cleaning and maintenance of machinery should be lower than for process work. Taken together, the low intrinsic hazard of the notified polymer coupled with adequate exposure controls suggests the risk of adverse health effects resulting from putty formulation processes will be low.

In end use, especially spraying, both engineering controls such as spray booths and full personal protective equipment are expected to be used to control exposure. Any health risks would be further reduced by spraying being carried out according to the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999).

Overall the health risks to workers involved in formulation and end use of putty containing the notified polymer are considered to be low given the low intrinsic hazard of the notified

polymer, the engineering controls in place to control exposure and the use of PPE..

### **6.3.2. Public health**

Once the putty containing the notified polymer is applied to the substrate in the automotive industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable. Therefore no significant exposure to the public is expected.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Environmental Exposure & Fate Assessment**

#### **7.1.1 Environmental Exposure**

##### **RELEASE OF CHEMICAL AT SITE**

The notified polymer will not be manufactured in Australia. Local operations will include transport and storage, formulation, filling and packaging.

The notified polymer will be transported to Australia by ship in 200 L stainless steel drums as a < 35% aqueous dispersion. It will be transported directly to paint formulator's site for warehousing and paint formulation. The finished products will be drummed into 20 L cans.

Release to the environment at a formulation site may occur in the unlikely event of an accident during transport or an accidental leak. It is estimated that a maximum of 1% of the notified polymer (~ 100 kg per year) would be lost through spillage. Spills are contained and soaked up with inert absorbent material (sand, diatomite, acid binders, universal binders or sawdust), placed in a sealable container and disposed of to landfill.

The empty drums will be collected by a licensed waste contractor for disposal to landfill. Residues in drums are expected to be approximately 50 kg per annum based on annual import volumes. There will be no release of the notified polymer to sewer during formulation.

##### **RELEASE OF CHEMICAL FROM USE**

Under normal use, losses of the notified polymer through overspray, mixing of chemicals and cleaning of plant equipment as well as losses from residues in containers have been estimated to be a maximum of 30%, which equates to a maximum of 3 tonnes per annum. Wastes from application will be collected, hardened and disposed of to landfill.

No environmental exposure of the notified polymer is expected under normal usage as the polymer is not expected to enter soil or aquatic compartments. Most of the polymer will be incorporated into the polymer matrix of coatings, which upon curing become inert. Once incorporated into the coating formulation, the notified polymer is expected to be immobile in the environment. At the end of their useful life, the substrates coated with the polymer are likely to be recycled or placed into landfill.

##### **RELEASE OF CHEMICAL FROM DISPOSAL**

All wastes generated during application, which are not reused, are expected to be disposed of to landfill. Container residues will be disposed to landfill.

#### **7.1.2 Environmental fate**

No environmental fate data were submitted

### **7.2. Environmental effects assessment**

No ecotoxicity data were submitted. Non-ionic polymers of  $MW_n > 1000$  are of low concern to the aquatic environment

### **7.3. Environmental risk assessment**

There will be limited environmental release during transport and formulation. The main release, up to 30%, will be from overspray which will be landfilled.



Most of the polymer will be incorporated into the polymer matrix of coatings, which upon curing become inert. Once incorporated into the coating formulation, the notified polymer is expected to be immobile in the environment. At the end of their useful life, the substrates coated with the polymer are likely to be recycled or placed into landfill.

The product containing the notified polymer is water soluble (27 g/L); hence, if placed in landfill, the polymer may be mobile and could only slowly degrade along with the substrates onto which it is deposited.

No ecotoxicological data were provided. No release of the notified polymer into the aquatic environment is expected either during formulation or application. 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.

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. The majority of the notified polymer will be combined with other coating components to form a very high molecular weight and stable coating which will be inert.

## **8. CONCLUSIONS – SUMMARY OF RISK ASSESSMENT FOR THE ENVIRONMENT AND HUMAN HEALTH**

### **8.1. Hazard classification**

Based on the available data the notified polymer cannot be classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

### **8.3. Human health risk assessment**

#### **8.3.1. Occupational health and safety**

Under the conditions of the occupational settings described, the risk to workers is considered to be [acceptable](#).

#### **8.3.2. Public health**

When used in the proposed manner the risk to the public is considered to be [acceptable](#).

#### **8.3.3. Environment**

Based on the use pattern the notified polymer is not expected to pose an unacceptable risk to the environment.

## **9. MATERIAL SAFETY DATA SHEET**

The MSDS of products containing the notified polymer provided by the notifier were reviewed by NICNAS and are published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant. The MSDS were found to be in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 2003).

## **10. RECOMMENDATIONS**

### **REGULATORY CONTROLS**

#### **Health Surveillance**

- As the notified polymer could be a potential skin sensitiser, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of sensitisation.

## CONTROL MEASURES

### Occupational Health and Safety

- Appropriate engineering controls, work practices and personal protective equipment should be used to prevent dermal contact of workers to the notified polymer as introduced and in formulated products.

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 landfill.

#### Storage

- The following precautions should be taken regarding storage of the notified polymer:  
Store in a cool dry place and keep container tightly closed. Keep away from heat source and direct sunlight.

### Emergency procedures

- Spills or accidental release of the notified polymer should be handled by covering the spill with inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water. Remove source of ignition.

## 11. REGULATORY OBLIGATIONS

This risk assessment is based on the information available at the time of notification. If the circumstances under which the notified polymer was assessed change a reassessment may be needed. Under the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified polymer, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply whether or not the notified polymer has been listed on the Australian Inventory of Chemical Substances (AICS).

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

- (1) Under Section 64(2) of the Act; if
  - the function or use of the polymer as a component in the manufacture of putty for the after-market automotive industry has changed, or is likely to change significantly;
  - the amount of polymer being introduced (up to 10 tonnes per annum) has increased, 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.

No additional secondary notification conditions are stipulated.

## **12. BIBLIOGRAPHY**

Cytec Surface Specialties (2007) VUP 4693 E/68: Analytical Report (water solubility, flash point, density), Final report January 2007, Study No. 63240. Surface Specialties Austria GmbH Analytical Dept. Cytec Surface Specialties, Graz, Austria (unpublished report provided by notifier).

FORS (Federal Office of Road Safety) (1998) Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG code), 6th Edition, Canberra, Australian Government Publishing Service

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. Australian Government. National Occupational Health and Safety Commission, 1999. Accessed at <http://www.nohsc.gov.au/ohslegalobligations/nationalstandards/spraypainting> 12 April 2007.

NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3<sup>rd</sup> edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

NOHSC (2003) National Code of Practice for the Preparation of Material Safety Data Sheets, 2<sup>nd</sup> edition [NOHSC:2011(2003)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

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.

## **Appendix A: Physico-Chemical Properties**

<b>Density</b>	1129 kg/m <sup>3</sup> at 20 °C
METHOD	DIN EN ISO 2811-2 (Determination of density-Part 2: Immersed body (plummet) method.
Remarks	A beaker was filled with the notified polymer and placed on an analytical balance. A body of known volume was immersed in the sample. The density of the notified polymer was determined by dividing the gain in weight due to immersion of the body by the known volume of the body.
TEST FACILITY	Cytec Surface Specialties (2007)
<b>Water Solubility</b>	27 g/L at (temperature unspecified) for imported product
METHOD	OECD TG 105 Water Solubility. EC Directive 92/69/EEC A.6 Water Solubility.
Remarks	The water solubility was determined by adding 50 mL of the product to 500 mL of demineralised water. The mixture was allowed to stir for 1 hour and then was transferred to a separating funnel. The aqueous phase was separated and water was removed using a rotary evaporator to obtain the weight of the dissolved product.
TEST FACILITY	Cytec Surface Specialties (2007)
<b>Hydrolysis as a Function of pH</b>	Not determined
Remarks	The polymer contains ester groups, which are amenable to hydrolysis under extreme conditions, however this is not likely to occur at the normal environmental pH range (4-9).
<b>Partition Coefficient (n-octanol/water)</b>	Not determined
Remarks	The product containing the notified polymer is soluble in water and hence would be expected to partition to the aqueous phase.
<b>Adsorption/Desorption</b>	Not determined
Remarks	As the product containing the notified polymer is highly soluble in water, it is expected that the notified polymer would be mobile in soil and sediments.
<b>Flash Point</b>	34°C
METHOD	DIN EN ISO 1523 (Closed cup equilibrium method).
Remarks	Measured for notified polymer.
TEST FACILITY	Cytec Surface Specialties (2007)