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

FULL PUBLIC REPORT

Component in Uvecoat 3002

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT

Component in Uvecoat 3002

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT

UCB Chemicals Asia Pacific (ACN 007 415 714)
19 Potter Street
Cragieburn VIC 3064

NOTIFICATION CATEGORY

Limited: Polymer with NAMW ≥ 1000 (greater than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Identity of Chemical

Composition

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)

Early Introduction Permit, Permit No. 188, 2001

NOTIFICATION IN OTHER COUNTRIES

USA (Notice of Commencement submitted on 2001)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Component in Uvecoat 3002
Uvecoat 2200
Crylcoat E5958

3. COMPOSITION

DEGREE OF PURITY

High

DEGRADATION PRODUCTS

None.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

None.

4. INTRODUCTION AND USE INFORMATION

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

The notified polymer will not be manufactured in Australia. It will be imported as a component of a basic resin, which will be reformulated into a powder-coating product at 60-100% concentration depending on the nature of coating or substrate.

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

The import volumes specified below are for the product, Uvecoat 3002, containing 75% notified polymer.

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	1	10	50	100	200

USE

The notified polymer will be used in speciality ultraviolet powder coatings for industrial products, such as wood panels and metal surfaces, and certain types of heat sensitive plastics.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY

Not stated.

IDENTITY OF RECIPIENTS

UCB Chemicals Asia Pacific
19 Potter Street
Cragieburn VIC 3064

Dulux-Orica

Clayton South VIC 3168

TRANSPORTATION AND PACKAGING

The notified polymer will be imported by sea in 25 kg bags. Dulux-Orica will formulate the notified polymer into a powder coating product. The formulated powder coating will be packaged in 10-25 kg transparent plastic bag and transported by road to customer sites.

5.2. Operation Description

The product containing the notified polymer will be stored and distributed from the notifier's site to Dulux-Orica in Victoria for formulation into powder coatings.

The coating powders containing the notified polymer are typically produced by blending and extruding the resins, curing agents, pigments and additives using enclosed and automated systems. The resulting matrix is ground into a fine powder measuring approximately 90µm. The powder is stored in bags and sealed automatically for use as required.

Quality control personnel will collect samples of the flakes or finely milled powder. Flakes are milled into fine powder and sprayed onto test panels for curing and evaluation.

Maintenance workers are required to service the machinery periodically.

At the application facility, bags are opened and either emptied into a hopper with an automatic feeder to the production line, or the spray gun is connected directly from the bag. The coating powder is applied by automated or manual systems, with the workpiece or substrate transported through a spray zone containing a number of spray guns and into an oven via an overhead conveyor for curing. Coating application involves a pressurized spray application system with electrostatic charging, which charge the particles to obtain an effective and high-level transfer of coating onto the workpiece or substrate (CEPE, 2001). Upon curing, the polymer becomes an integral part of the article being produced.

Excess coating powder is removed by exhaust extraction and collected for re-use or disposal.

5.3. Release

RELEASE OF CHEMICAL AT SITE

Release of the notified polymer during preparation of powder coatings at the customer site is expected to be minimal because any excess powder is normally collected and recycled. Release would only occur in the event of a spill or accident. The notifier expects that any spilled material not reused would be collected for disposal.

RELEASE OF CHEMICAL FROM USE

Release of the notified polymer to the environment during application of the powder coating is not expected. In industrial applications, spraying systems are closed systems designed to minimise the amount of overspray. The application of the powder coatings to substrates is generally carried out in spray booths with exhaust extraction systems designed to trap excess dust and coating powder in collector systems. In most industrial coating operations, all excess powder is recovered and re-used. Equipment cleaning is done with dust-tight vacuum cleaners and this material is also collected for re-use or disposal.

The notifier estimates that from 1-5% of powder may be collected during application and equipment cleaning. The amount of notified substance contained in the product ranges from 60 to 99%, consequently at the maximum import volume of 200 tonnes of Uvecoat 3002, which contains 75 % of the notified polymer Uvecoat 2200, then up to 7.5 tonnes of notified substance could be generated for disposal each year from user sites if the material is not re-used.

No release of the notified polymer is expected once the coatings are applied and cured. Upon curing the polymer is incorporated into the polymer matrix where it will become inert.

5.4. Disposal

All wastes generated during application or preparation of the powder coating which are not reused are expected to be incinerated. Container residues will be incinerated along with the import containers.

6. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20°C AND 101.3 kPa	Solid pale granules or flakes
MELTING POINT/FREEZING POINT	Not determined. Glass transition temperature: T _g = 54°C
Remarks	Test report not provided.
DENSITY	1300 – 1400 kg/m ³
Remarks	Test report not provided.
VAPOUR PRESSURE	Not determined.
Remarks	The substance is a non-volatile solid.

WATER SOLUBILITY		< 1 mg/L at 20°C
METHOD	OECD TG 105 Water Solubility.	
Remarks	The notified polymer is not soluble in water. A GPC column elution method was used to determine the water solubility of the notified polymer. This involved comparing the solubility of the notified substance with that of 3 known polyester standards using RI detection.	
TEST FACILITY	Not reported.	
HYDROLYSIS AS A FUNCTION OF pH		Not determined.
Remarks	The polymer contains ester groups, which are amenable to hydrolysis, but is not soluble in water and should not hydrolyse in the environmental pH range (4-9).	
PARTITION COEFFICIENT (n-octanol/water)		Not determined.
Remarks	The notified polymer is not soluble in water or n-octanol.	
ADSORPTION/DESORPTION		Not determined.
Remarks	The polymer is a water insoluble solid and is not expected to adsorb to organic matter.	
DISSOCIATION CONSTANT		Not determined.
Remarks	The polymer does not contain any groups able to dissociate.	
PARTICLE SIZE		
Remarks	The notified polymer are flakes measuring about 0.5 to 2 cm in diameter. The fraction of powder <75 µm is <0.5% w/w.	
FLASH POINT		>200 °C (Cleveland open cup)
Remarks	Test report not provided. Information obtained from MSDS.	
FLAMMABILITY LIMITS		Not determined
AUTOIGNITION TEMPERATURE		Not determined
EXPLOSIVE PROPERTIES		Minimal explosion limit: 20 g/m ³ Maximum explosion pressure: 8.7 bar
Remarks	The reported explosion characteristics were obtained from a sample, which is an analogue of the product containing the notified polymer.	
REACTIVITY		Not determined
Remarks	The polymer itself is stable under normal conditions of use.	

7. TOXICOLOGICAL INVESTIGATIONS

No toxicity data for the notified polymer were submitted. Toxicological endpoints obtained from polymers, which are chemically related to the notified polymer were provided for the assessment of the potential health effects of the notified polymer. By analogy, the notified polymer has low acute oral toxicity (LD_{50} rat >2000 mg/kg). There was no evidence of skin and eye irritation reported in rabbits.

8. ENVIRONMENT

8.1. Environmental fate

No environmental fate data were submitted.

8.2. Ecotoxicological investigations

No ecotoxicity data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

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, incinerated or placed into landfill.

Some of the notified polymer in waste from spills and equipment cleaning may need to be destroyed by incineration. As a worse case scenario, up to 7.5 tonnes of notified substance could be generated for disposal each year in waste from spills and equipment cleaning. However, in most industrial coating operations, it is expected that all excess powder will be recovered and re-used.

Incineration will destroy the polymer and convert it to water vapour and oxides of carbon. The polymer is not water soluble and not volatile, hence, if placed in landfill, the polymer is expected to be immobile and to only slowly degrade along with the substrates onto which it is deposited.

9.1.2. Environment – effects assessment

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.

9.1.3. Environment – risk characterisation

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 combined with other coating components to form a very high molecular weight and stable coating which will be inert.

9.2. Human health

9.2.1. Occupational health and safety

9.2.1.1 OCCUPATIONAL EXPOSURE ASSESSMENT

Transport and Storage

Transport and storage workers will handle sealed bags containing the notified polymer. Workers are unlikely to be exposed to the notified chemical except when packaging is accidentally breached.

Coating formulation

There is potential for inhalation, dermal and ocular exposure to the notified polymer during extrusion process, when milling and packaging of coating powder, and on disposal of empty bags. There are 2 workers per production line who are likely to be exposed to the notified polymer during these activities. The above operations are conducted in a contained area with local exhaust ventilation and workers will wear anti-static overalls, non-insulating gloves, anti-static footwear and dust respirators or air fed respiratory equipment.

Intermittent exposure to the notified polymer is possible during quality testing and product evaluation. All testing activities will be performed within a controlled laboratory fitted with extraction system. Laboratory personnel will wear laboratory coat, gloves, safety glasses and dust mask, as required.

Maintenance workers may be exposed to dusts containing the notified polymer left on the machinery they are required to service. Maintenance workers will wear gloves and disposable masks when cleaning and servicing machinery.

End-use

The potential for inhalation, dermal and ocular exposure to the notified polymer exists when opening the bags containing the notified polymer, loading of powder coating into a hopper and application of powder coating and disposal of empty containers. All spraying is performed in a spray booth fitted with local exhaust and dust extraction system to prevent dust build-up. Where manual application is in use, the direction of airflow comes from behind the operator.. Application plant operators will wear similar protective equipment to those required during formulation of powder coatings.

Upon curing, the notified polymer is incorporated into the polymer matrix and becomes inaccessible for exposure.

9.2.2. Public health

There are no consumer uses for the notified polymer and therefore, it is not available to the public. The notified polymer becomes inaccessible on the surface of the coated article. Therefore, the distribution of such articles is not expected to cause adverse health effects to the public. Members of the public are unlikely to be in contact with the notified polymer and the potential for public exposure is minimal.

9.2.3. Human health - effects assessment

The notified polymer has high molecular weight, which indicates that it would be unlikely to cross biological membranes readily. Based on the limited toxicological endpoints provided, and considering the high molecular weight and low levels of residual monomers present, the notified polymer is unlikely to be a hazardous substance according to the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

9.2.4. Human health – risk characterisation

9.2.4.1 OCCUPATIONAL HEALTH AND SAFETY

Transport and storage

Except in the event of accident, the risk of adverse health effects during transport and storage is limited, since workers are only expected to handle sealed bags containing the notified polymer.

Coating formulation

Coating formulation will be carried out predominantly in closed and automated systems. Therefore, inhalation, dermal and ocular exposure to the notified polymer is limited during extrusion process, and when milling and packaging of coating powder. Similarly, intermittent exposure to dust is possible during quality testing, cleaning and maintenance of equipment. The low intrinsic hazard of the notified polymer, largely enclosed and automated operations involved, and the use of personal protective equipment would ensure low occupational risk.

Coating application

Applicators will potentially be exposed to the notified polymer in the coating product when manually loading the hoppers, which automatically feed the spray gun, on disposal of empty bags and when collecting oversprayed coating. However, exhaust ventilation is used in the loading area, and oversprayed powder is collected using dust-tight vacuum cleaners. All coating application is carried in spray booths with exhaust extraction system. The use of personal protective equipment and ventilation systems to maintain exposure levels below the relevant occupational exposure standards, are adequate to prevent the risk of adverse health effects to workers.

9.2.4.2 PUBLIC HEALTH

There are no consumer uses for the notified polymer and it is not available to the public. The spray operation ensures that the sprayed-on powder layer becomes an integral part of the coated article. After curing, the notified polymer becomes inaccessible to human contact. The likelihood of public exposure and the risk of adverse health effects are negligible.

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

10.1. Environment

On the basis of the low environmental exposure and low environmental hazard, the notified polymer is not considered to pose a risk to the environment based on its reported use pattern.

10.2. Health hazard

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

10.3. Human health

10.3.1. Human health – Occupational health and safety

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

10.3.2. Human health – public

There is Negligible Concern to public health when used as a component of spray-on powder resins.

11. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer when used in powder coatings:
 - Local exhaust ventilation during spraying, filling of hoppers, reclaiming powder and clean-up.
 - Enclosed and automated spray application.
 - Spray painting booths and equipment should be in accordance with Australian Standard AS3754-1990, *Safe Application of Powder Coatings by Electrostatic Spraying*.
- Employers should implement the following safe work practices to minimise occupational exposure to the notified polymer when used in powder coatings:
 - Avoid generating dusts, when opening powder coating packages, loading hoppers, reclaiming powder and cleaning equipment.
 - Precautions must be taken to avoid sources of ignition, e.g. use of earthing leads.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer when used in powder coatings:
 - anti-static overalls
 - non-insulating gloves
 - anti-static footwear
 - dust respirators or air fed respiratory equipment

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.

Disposal

- The notified polymer should be disposed of by controlled incineration in accordance with local and national regulations.

Storage

- Store and handle in accordance with recommendation in the MSDS.

Emergency procedures

- Spills/release of the notified polymer should be contained and placed in suitable containers for disposal.

11.1. 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 Section 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.

No additional secondary notification conditions are stipulated.

12. MATERIAL SAFETY DATA SHEET

The MSDS for the notified polymer was provided in a format consistent with the *National Code of Practice for the Preparation of Material Safety Data Sheets*.

This MSDS was provided by the applicant as part of the notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of the applicant.

13. BIBLIOGRAPHY

Counsell European de Industrie des Peintures des Encres (2001) Safe Powder Coating Guideline 5th Edition. CEPE.

National Occupational Health and Safety Commission (1994) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. Australian Government Publishing Service, Canberra.

National Occupational Health and Safety Commission (1999) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]. Australian Government Publishing Service, Canberra.