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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

UCAR SOLUTION VINYL RESIN VERP

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act 1989,* and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Department of the Environment, Sport, and Territories and the assessment of public health is conducted by the Department of Health, Housing, Local Government and Community Services.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the hours of 10.00 a.m. and 12.00 noon and 2.00 p.m. and 4.00 p.m. each week day except on public holidays.

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT

UCAR SOLUTION VINYL RESIN VERP

1. APPLICANT

Union Carbide Chemicals (Australia) Pty Ltd of 1002 High Street, Armadale, Victoria 3143.

2. IDENTITY OF THE CHEMICAL

Based on the nature of the chemical and the data provided, Ucar solution vinyl resin verp is not considered to be hazardous. Therefore, the details of chemical name, other names, molecular formula, structural formula, spectral data, weight percentage and ingredients, number-average molecular weight, residual monomers and other reactants, impurities and identity of additives/adjuvants have been exempted from publication in the Full Public Report.

Trade name Ucar solution vinyl resin verp

Method of detection and determination:

The polymer can be identified by infrared spectroscopy.

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa: White, powder

Odour: Mild

Melting Point: Not determined

Density: 1300 kg/m^3 at 20°C

Vapour Pressure: < 0.0133 kPa at 25°C

Water Solubility: Not soluble

Fat Solubility:	Not determined
Partition Co-efficient (n-octanol/water) log $P_{O/W}$:	Not applicable
Hydrolysis as a function of pH:	
Adsorption/Desorption:	Not Applicable
Dissociation Constant pKa:	Not applicable
Flash Point:	Not determined
Flammability Limits:	Not determined
Combustion Products:	Not determined
Pyrolysis Products:	Hydrogen chloride, carbon monoxide and/or carbon dioxide
Decomposition Temperature:	Not determined
Decomposition Products:	Not determined
Autoignition Temperature:	Not determined
Explosive Properties:	Not explosive
Reactivity/Stability:	Stable under normal use conditions
Particle size distribution:	range - 200-300 µm mean - Not determined

Comments on Physico-Chemical Properties

With regard to the lack of data on hydrolysis the company maintains that hydrolytic stability is an obvious functional requirement of the polymer as a coating for the inside of drink containers.

Because of lack of solubility the ability to provide meaningful data for the partition coefficient, adsorption/desorption and dissociation constant is not possible.

The polymer in the uncured state would be expected to sorb strongly to soil particles. Its high molecular weight would

preclude uptake by biota. It contains no readily dissociable groups.

These arguments are acceptable for this class of vinyl polymer which is known for its lack of reactivity.

4. PURITY OF THE CHEMICAL

Degree of purity : 97%

5. INDUSTRIAL USE

The notified polymer in combination with other solvents will be used for coating rolls of aluminium sheeting which will be used to maintain beverage containers. The formulation used will contain 17% of the notified substance. The remainder will consist of existing polymers and solvents.

The projected imported volume of the notified polymer is 50 tonnes in the first year, 150 tonnes in the second year and 250 tonnes per annum in the following three years. Two formulations of the polymer may be imported, a dry powder containing greater than 97% and a liquid containing 40% of the notified substance.

6. OCCUPATIONAL EXPOSURE

The notified polymer is supplied in 23 kg paper bags and added to a mixing tank by a fully automated process. The aluminium sheets are coated with the formulated product containing the notified polymer in an enclosed area, with exhaust ventilation.

Two workers will be exposed to the notified polymer, during mixing and coating operations.

If leaks or spills occur inhalation exposure to the notified polymer is possible during transfer through forklifts from storage areas to mixing tanks.

7. PUBLIC EXPOSURE

Public exposure to the notified polymer during its distribution, processing or disposal by landfill or incineration is not expected to occur.

Public exposure resulting from contact with treated products is expected to be minimal, due to the stability of the crosslinked coating formed by the polymer on the aluminium sheets.

8. ENVIRONMENTAL EXPOSURE

. Release

Releases into the factory environment during coating formulation will be contained by processes in place to control and isolate spillages. Due to the non volatile nature of the resin there would be negligible release to the atmosphere. Coating manufacture processes are carried out in well ventilated areas where atmospheric concentrations of vapours from the solvents are monitored and extracted from the exhaust air.

The potential for release of polymer in the customer's factory occurs where the coating is first thinned then applied to the aluminium substrate which is heat cured. The plant utilises an air ducting system connected to an incinerator for control of solvent vapour emissions and good work practices are encouraged to minimise paint spills.

The coated rolls are then transported to a can forming plant where they are moulded into shape for filling with liquid.

. Fate

The manufacturer states that the resin in the paint formulation when applied and heat cured is in a form that is not susceptible to breakdown in the environment. This is consistent with its required stability when in contact with food. The used drink containers internally coated with the formulation containing the notified polymer are either eventually disposed of in landfill or recycled by smelting the aluminium can resulting in substance incineration.

Waste polymer from the formulation of the coating and spillages at th application site is collected and disposed of to landfill.

Scrap aluminium coated with the cured polymer (from the application process or the can moulding process) is either disposed of to landfil or recycled as scrap for resmelting.

9. EVALUATION OF TOXICOLOGICAL DATA

No toxicology data have been provided for Ucar solution vinyl resin verp which is acceptable under the Act for a polymer with number average molecular weight >1000.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

No ecotoxicological data were provided, which is acceptable for polymers of NAMW > 1000 according to the *Act*.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The polymer is unlikely to present a hazard to the environment when it is incorporated into the paint and applied to the aluminium sheeting to be used for drink can manufacture.

The polymer is also unlikely to be hazardous to aquatic organisms due to the end-use application and the polymer's high molecular weight.

The main environmental exposure arises from landfill disposal of recovered waste resin from formulation and application sites. However, since the polymer is non degradable and immobile in soils, environmental hazard is expected to be low.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

There is no information on human health effects of the notified polymer. No toxicology data were submitted which is acceptable for polymers with NAMW >1000.

The notified polymer is non explosive and stable. It does not contain any species with NAMW <1000 and has very low levels of residual monomers and hazardous impurities.

During mixing the most likely route of exposure to the notified polymer is by inhalation of dust particles and the dermal route. However, the relatively large particle size indicate that respiratory effects will be minimal.

The engineering controls use will ensure exposure is minimised.

While public contact with the notified polymer may be significant, exposure levels will be low and as the notified chemical has a high molecular weight absorption is unlikely to occur. If residues of any hazardous impurities were present in end-use products, public exposure levels will be very low, and therefore should present minimal health risks.

Under normal use conditions and given the low hazard and low exposure, the risk of adverse health effects with the use of the notified polymer is low.

13. RECOMMENDATIONS

To minimise occupational exposure to Ucar solution vinyl resin verp the following guidelines and precautions should be observed:

. local exhaust ventilation should be used during mixing;

. good work practices to avoid generation of dust;

. airborne dust levels should be kept below 10 mg/m^3 (nuisance dust);

. if engineering controls and work practices are insufficient to reduce exposure to a safe level, the following personal protective equipment which comply with Australian Standards should be worn such as dust mask (AS 1715-1991 (1), AS 1716-1992 (2)), safety glasses (AS 1336-1982 (3), AS 1337-1982 (4)) and PVC gloves (AS 2161-1978 (5));

. good personal hygiene should be practiced; and

. a copy of the Material Safety Data Sheet (MSDS) for Ucar solution vinyl resin verp should be readily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The Material Safety Data Sheet (MSDS) for Ucar solution vinyl resin verp containing the notified polymer (Attachment 1) was provided in Worksafe Australia format (6). This MSDS was provided by Union Carbide Chemicals (Australia) Pty Ltd as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of Union Carbide Chemicals (Australia) Pty Ltd.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of Ucar solution vinyl resin verp shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

16. REFERENCES

1. Australian Standard 1715-1991, "Selection, Use and Maintenance of Respiratory Protective Devices" Standards Association of Australia Publ., Sydney 1991.

2. Australian Standard 1716-1991, "Respiratory Protective Devices" Standards Association of Australia Publ., Sydney 1991.

3. Australian Standard 1336-1982, "Recommended Practice for Eye Protection in the Industrial Environment", Standards Association of Australia Publ., Sydney, 1982.

4. Australian Standard 1337-1984, "Eye Protectors for Industrial Applications", Standards Association of Australia Publ., Sydney, 1984.

5. Australian Standard 2161-1978, "Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)", Standards Association of Australia Publ., Sydney, 1978.

6. National Occupational Health and Safety Commission, *Guidance Note for the Completion of a Material Safety Data Sheet,* 2nd. edition, AGPS, Canberra, 1990.