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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

ALFTALAT VAN 9918

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 Human Services and Health.

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

ALFTALAT VAN 9918

1. APPLICANT

Hoechst Australia Limited of 606 St Kilda Rd, Melbourne, Victoria 3004 has submitted a limited notification for assessment of Alftalat VAN 9918.

2. IDENTITY OF THE CHEMICAL

Alftalat VAN 9918 is not considered to be hazardous based on the nature of the chemical and the data provided. Therefore the chemical name, CAS number, molecular and structural formulae, formualtion details and exact import volume have been exempted from publication in the Full Public Report and the Summary Report

Trade name: Alftalat VAN 9918

Number-average molecular weight: > 1000

Maximum percentage of low molecular weight species (molecular weight < 1000): < 20%

Method of detection and determination:

IR spectroscopy

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	light yellow flakes
Odour:	none
Melting Point:	80-90°C
Density:	1300 kg/m^3
Water Solubility:	as a solid, saturated polyester resin, expected to be water insoluble
Combustion Products:	carbon monoxide, carbon dioxide
Autoignition Temperature:	> 350°C
Explosive Properties:	dust explosion possible in the presence of air if sufficient dust accumulates
Reactivity/Stability:	stable, non-reactive under normal conditions

Comments on physico-chemical properties

No data were provided for vapour pressure on the grounds that "by analogy with similar polymers, this polymer is not volatile".

The solubility result is an analytical detection limit. Polyesters are known to be insoluble and normal tests are inadequate for determining solubilities at these low levels.

No data were provided for partition coefficient on the grounds that "the polymer is insoluble in water does not cross biological membranes". The high molecular weight of the polymer is likely to prevent it from crossing biological membranes, though some low molecular weight material may do so. This polymer contains < 20% by weight below 1000 NAMW.

No data were provided for hydrolysis on the grounds of the low solubility precluding measurement. Although the notified polymer contains ester linkages, hydrolysis is unlikely under environmentally relevant conditions.

No data were provided for adsorption/desorption on the grounds that the notified polymer is of low solubility and this group of polyester resins will be inert in contact with soils and are likely to be immobile.

4. PURITY OF THE CHEMICAL

Degree of purity: Approximately 100%

Toxic impurities: none

Non-toxic impurities: none

Maximum content of residual monomers: < 0.1%

Additives/Adjuvants: none

5. INDUSTRIAL USE

The notified polymer is to be used as a component of powder coatings for painting metal sheets in combination with blocked polyisocyanates.

6. OCCUPATIONAL EXPOSURE

The notified polymer will be imported in 25 kg multi-layer sacks with one plastic film layer. The notified polymer will be received by the notifier and shipped to a single customer for powder coating manufacture.

Exposure to the notified polymer may occur during weighing of ingredients, manufacture of powder coatings, quality control, product development, end use and maintenance. Manufacture of the powder coatings involves weighing of ingredients, compounding, milling and packaging. These operations are conducted under local exhaust ventilation

to a central baghouse which captures and removes dust. These operations will be conducted for a maximum of 12 hours/day, 36 days per year by 10 workers.

Quality control of the powder coatings involves taking samples and electrostatically applying them to test panels which are then heat cured. Four quality control personnel will be exposed maximally for 12 hours/day, 36 days per year. The electrostatic spraying of the coating is carried out in dedicated spray booths which have local extraction ducted to a central baghouse.

Two product development personnel will perform the same work as outlined above on a smaller scale, exposure being intermittent during 12 work days, 50 days per year.

Coating application is expected to involve 12 personnel in a dedicated sealed-off area with access only through airlocks. The application equipment is totally automated and overspray is reclaimed and fed back into the feedhopper. Exposure is possible during manual loading of the feed hopper and cleaning of the application equipment and room.

7. PUBLIC EXPOSURE

No public exposure to the notified chemical is expected to occur during its distribution by road or rail.

Potential public contact with formulated powder coatings is expected to be low due to the controls on dust emissions.

8. ENVIRONMENTAL EXPOSURE

. Release

The powder coating of which the notified chemical is a component is expected to be manufactured in a closed system. Releases into the factory environment during powder coating manufacture will be contained by on site bunding. Due to the non- volatile nature of the resin there would be negligible release to the atmosphere. Powder coating manufacture processes and end product packaging are carried out in well ventilated areas where atmospheric concentrations of dusts are monitored and extracted from the exhaust air.

The release of polymer into the factory during powder coating manufacture may come from accidental spillage during filling of the blender, batch testing final grinding, bag filling, and mill cleanup operations. Capture of airborne polymer dust and cleanup waste is estimated to be 0.08 kg/day at peak production. This would be disposed of to landfill according to Local and State government regulations. Areas in the plant where spills may occur are adequately bunded and cleanup materials are available on site.

The potential for release of notified chemical in the customer's application area occurs where the powder coating is first applied to the metal substrate via an electrostatic air spraying system following which the articles are heat cured. Powder coating application booths usually employ air ducting systems connected to collection devices (bags or cyclones) for collection of particle emissions which are then reused. It has been estimated (1) that, with proper recycling of powder coatings captured on filters, efficiency of use would be up to 99%. Good work practices are encouraged to minimise powder

coating spills. The user estimates that cleanup and floor sweepings from paint booths, which are disposed of in licensed landfill sites, could be up to 5% (5000 kg) of the notified product. However, this would only be likely in a worst case situation and probably during small coating application runs.

. Fate

The notified substance contained in the formulated powder coating will be incorporated as a stable mass when disposed of to landfill and will, at most, be only slightly subject to environmental breakdown. The notified chemical should not be mobile even in the powder coating formulation. Incineration will produce oxides of carbon.

The polymer resin in the powder coating formulation when applied and heat cured is in a form that is not susceptible to breakdown in the environment. The use of the coated products would be subject to "wear and tear" in everyday use but chips and dusts of the coating would be widely but diffusely dispersed in the environment and being inert would be of little concern. The products coated with the powder coating containing the notified polymer are either eventually disposed of in landfill or recycled by smelting resulting in substance incineration. The insoluble nature of the product will ensure any hydrolysis or breakdown occurs at an extremely low rate.

9. EVALUATION OF TOXICOLOGICAL DATA

No toxicological data were provided for the notified polymer, which is acceptable for a synthetic polymer with number-average molecular weight (NAMW) > 1000 under the *Industrial Chemicals (Notification and Assessment) Act 1989*.

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 powder coating and applied to the end use product.

The polymer is also unlikely to present a hazard to aquatic organisms due to the end use application. The polymer's neutral form and high molecular weight would ensure it does not cross or react with biological membranes.

The main environmental exposure arises from landfill disposal of a maximum of 5000 kg per annum of recovered waste resin, although this represents a worst case situation. Of this, 10kg from the formulation plant would be likely to go to one landfill site and the remainder from the application at the use site to their local landfill. However, since the notified substance is inert and of high molecular weight, the environmental hazard is expected to be low.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

The notified polymer has a NAMW above 1000, should not be able to be absorbed across biological membranes and should not, therefore, present a health hazard. The levels of residual monomers (< 0.1%) would not be expected to render the polymer hazardous nor would the levels of low molecular weight species (< 20% with a NAMW < 1000).

During manufacture of powder coatings containing the notified polymer, local exhaust ventilation is expected to reduce dust in the workplace to low levels. Personal and fixed point monitoring is used to maintain these low levels.

During powder coating application, exposure to dust is possible when loading the feed hopper and cleaning the application equipment and the room. For these operations personal protective equipment is relied upon to minimise exposure. Cleaning operations are carried out with an industrial vacuum cleaner to minimise dust clouds which would be generated by sweeping.

It can be concluded that the risk to worker's health due to the polymer content of the dust would be limited to the effects of nuisance dust which is expected to be maintained below the Worksafe Australia exposure standard (2) as a result of personal and fixed point atmospheric monitoring.

The risk of adverse effects on public health is expected to be minimal given the low hazard of the notified chemical and the likely lack of exposure of the public.

13. RECOMMENDATIONS

To minimise occupational exposure to Alftalat VAN 9918 the following guidelines and precautions should be observed:

. if engineering controls and work practices are insufficient to reduce exposure to a safe level, then personal protective devices which conform to and are used in accordance with Australian Standards (AS) for eye protection (AS 1336, AS 1337) (3,4), impermeable gloves (AS 2161) (5), respiratory protection (AS 1715, AS 1716) (6,7), protective clothing (AS 2919) (8) and footwear (AS 2210) (9) should be worn;

. the Worksafe Australia exposure standard (2) for nuisance dusts of 10 mg/m^3 should be adhered to where powder coatings are formulated and used;

. spills of dust should be cleaned up using an industrial vacuum cleaner and disposed of according to Local and State government regulations;

. a copy of the Material Safety Data Sheet (MSDS) should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The attached Material Safety Data Sheet (MSDS) for Alftalat VAN 9918 was provided in Worksafe Australia format (10).

This MSDS was provided by Hoechst Australia Limited as part of their notification statement and is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of Hoechst Australia Limited.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of Alftalat VAN 9918 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. Randall P M, 1992, ' Pollution prevention methods in the surface coating industry' , *Journal of Hazardous Materials*, **29**, 275-295.

2. National Occupational Health and Safety Commission, 1991, *Exposure Standards for Atmospheric Contaminants in the Occupational Environment*, Australian Government Publishing Service Publ., Canberra.

3. Standards Australia, 1994, Australian Standard 1336-1994, ' Recommended Practices for Eye Protection in the Industrial Environment' , Standards Association of Australia Publ., Sydney, Australia.

4. Standards Australia, 1992, Australian Standard 1337-1992, ' Eye Protectors for Industrial Applications' , Standards Association of Australia Publ., Sydney, Australia.

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

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

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

8. Standards Australia, 1987, Australian Standard 2919 - 1987 ' Industrial Clothing' , Standards Association of Australia Publ., Sydney, Australia.

9. Standards Australia, 1994, Australian Standard 2210 - 1994 ' Occupational Protective Footwear, Part 1: Guide to Selection, Care and Use. Part 2: Specifications' , Standards Association of Australia Publ., Sydney, Australia.

10. National Occupational Health and Safety Commission, 1990. *, Guidance Note for the Completion of a Material Safety Data Sheet*, 2nd. edition, AGPS, Canberra , Australia.[1]

[1] This Guidance Note, to which an MSDS must conform in accordance with the *Act,* has been superseded by Worksafe Australia's National Code of Practice for the Preparation of Material Safety Data Sheets (March 1994) published by the Australian Government Publishing Service.