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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in FV734 V 62

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT**Polymer in FV734 V 62****1. APPLICANT**

PPG Industries Australia Pty Ltd of Unit 801/20 Gerrale Street CRONULLA NSW 2230 has submitted a limited notification statement in support of their application for an assessment certificate for Polymer in FV734 V 62.

2. IDENTITY OF THE CHEMICAL

Polymer in FV734 V 62 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, molecular weight, spectral data, details of the polymer composition and specific details of use and import volume have been exempted from publication in the Full Public Report and the Summary Report.

Other names:	none
Trade name:	resin containing the polymer is FV734 V 62
Number-average molecular weight:	> 1000
Weight-average molecular weight:	> 1000
Maximum percentage of low molecular weight species (molecular weight < 1000):	< 4%
Method of detection and determination:	GPC and infrared (IR) spectroscopy

3. PHYSICAL AND CHEMICAL PROPERTIES

The notified chemical will be imported as part of the resin formulation FV734 V 62 and will never be isolated. The following data refer to the polymer unless otherwise stipulated as the formulation.

Appearance at 20°C and 101.3 kPa:	clear colourless liquid (formulation)
Melting point:	not determined
Specific gravity:	1.0
Vapour pressure:	0.93 kPa, temperature not stated (formulation)
Water solubility:	expected to be low
Partition co-efficient (n-octanol/water):	not determined
Hydrolysis as a function of pH:	not determined
Adsorption/desorption:	expected to bind to organic matter in soils
Dissociation constant:	not expected to dissociate
Flash point:	21-25°C (formulation)
Flammability limits:	L.E.L.=0.8% volume (formulation)
Autoignition temperature:	not determined
Explosive properties:	none expected
Reactivity/stability:	stable, may react with strong oxidants

Comments on Physico-Chemical Properties

The water solubility, hydrolysis, partition co-efficient, adsorption/desorption, and dissociation constant of the polymer were not determined. The water solubility of the polymer is expected to be low because of its high molecular weight and monomer composition. The other properties are difficult to determine for poorly soluble polymers of high molecular weight and complexity, although it is expected to have typical acidity due to carboxylate groups. Omission of this data is acceptable as non-ionic polymers with a number-average molecular weight (NAMW) > 1000 are of low concern (1).

4. PURITY OF THE CHEMICAL

Degree of purity:	> 90%
Toxic or hazardous impurities:	see residual monomers

Non-hazardous impurities none
(> 1% by weight):

Maximum content < 1%
of residual monomers:

All the toxic or hazardous impurities are residual monomers. All are classified as a irritant on the *Designated List of Hazardous Substances* (2). The levels of residual monomers in the notified polymer are well below these thresholds and on this basis the polymer would not be classified as hazardous according to the criteria of Worksafe Australia (3).

Additives/Adjuvants: none.

The formulation FV734 V 62 is classified as hazardous as it contains 10-25% xylene, an irritant. A hazardous classification is required at concentrations $\leq 12.5\%$ (3), The exposure standard for xylene is TWA 350 mg/m³ (4). The formulation also contains the inhalatory toxicants, isobutyl alcohol and ethylbenzene, the respective exposure standards are TWA 152 mg/m³ (4) and TWA 434 mg/m³ (4). The product information for FV734 V 62 also indicates that it is a possible skin sensitiser.

5. USE, VOLUME AND FORMULATION

FV734 V 62, the formulation containing the notified polymer, will not be manufactured in Australia. It will be imported at a rate of approximately < 1000 kg per year for the first five years. It will be imported in 1 litre and 3.5 litre containers which will be packaged into cartons containing 3 x 1 litre, 6 x 1 litre or 2 x 3.5 litre packs.

FV734 V 62 will be used as a component of an automotive refinish coating. It will be directly applied to small sections of the vehicle (ie. touch up repairs).

6. OCCUPATIONAL EXPOSURE

The notified polymer is imported into Australia as part of a formulation, FV734 V 62, it is not reformulated or repackaged. It is imported by sea in shipping containers. From the dockside these are transported by road to the notifier's warehouse. The containers of formulation are packed in cardboard boxes, palletised and plastic film wrapped. These pallets are removed from the container and dispatched direct to the notifier's customers, automotive body repair shops. Occupational exposure can occur during transport and warehousing, but this will only occur in the event of an accident. Exposure is likely to be limited due to the size of containers and method of packaging. The formulation is packaged in small volumes that are unlikely to all break in the event of an accident, spillage will therefore be limited.

Occupational exposure will be greatest during application of the formulation containing the notified polymer in motor vehicle body repair shops. The formulation containing the polymer also contains 10-25% xylene and is classified as an irritant. The personal protective equipment used by employees to minimise exposure to the xylene- respiratory protection, gloves, overalls and goggles, will also reduce

exposure to the notified polymer. Additionally, spray application of the formulation will usually be undertaken in spray booths with exhaust ventilation; these often incorporate filters. The polymer is effectively bound in the paint film after application to motor vehicles; however occupational exposure could still occur during refinishing/preparation. Dust containing the notified polymer is generated and inhalatory exposure is possible. The notifier is unable to specify the numbers of employees in automotive body repair shops who may potentially be exposed to the notified polymer as this is in part dependent on market penetration of the product. The number of employees/site will be in the range of 1-4.

7. PUBLIC EXPOSURE

FV734 V 62 will be imported in 1 and 3.5L steel containers and transported by road to the PPG warehousing facility. It will then be distributed by road to automotive repair shops. No public exposure to the notified polymer is expected to occur during its distribution.

At automotive repair shops the product is applied as a spray in booths. Although up to 70% of the notified polymer is expected to be lost in the form of overspray during spraying procedures, local exhaust ventilation will be used to vent emissions, and as such no public exposure is expected to occur. Any waste FV734 V 62 should be disposed of in accordance with Federal, State and Local regulations. Empty steel containers will be recycled or disposed of to landfill. Disposal of any waste notified polymer is not expected to lead to any public exposure.

When cured no leaching of the notified polymer from the sprayed surface is expected to occur. In addition, given the high NAMW of the notified polymer, should dermal contact occur, absorption is unlikely.

8. ENVIRONMENTAL EXPOSURE

Release

FV734 V 62 has the potential to enter the environment during transport and handling, application and disposal.

Release to the environment during transport and handling would only occur during the unlikely event of an accident. As the notified chemical is being distributed in very small containers (1 litre and 3.5 litre), large spills in such an accident would be highly unlikely.

The majority of the release of the notified substance will occur during spray painting application. It is estimated that up to 70% of the notified substance may be released in the form of overspray. This overspray will be caught on masking materials such as kraft and newspaper, and in paint filters in the spray booths. Empty paint containers will be either recycled or sent for disposal. All waste material should be disposed of in accordance to Federal, State and Local regulations.

The painted vehicles are cured, fixing the polymer into a paint film. The cured polymer is expected to share the fate of the metal substrate, and be disposed of with the vehicles.

Fate

Leaching from landfill sites is not expected as FV734 V 62 is a polymer with a predicted low water solubility. Upon drying, the polymer will become tacky and adsorb to soil and sediments. Incineration of the notified substance is expected to produce oxides of carbon and oxygen.

The majority of the notified polymer is not expected to be released to the environment until it has been fully cured into a solid polymer matrix. The resultant matrix structure should limit the hydrolysis or biodegradation of the polymer. Bioaccumulation of the polymer is unlikely due to its high molecular weight (>1000).

9. EVALUATION OF TOXICOLOGICAL DATA

For a synthetic polymer with NAMW > 1000, toxicology data are not required under the Act. None were provided by the notifier.

The notified polymer has a NAMW of > 1000 and is therefore not expected to traverse biological membranes and constitute a toxicological hazard. Although the notified polymer contains low levels of a number of residual monomers (in total < 1%) and low levels of low molecular weight species (< 4% with NAMW < 1000), they are unlikely to present a toxicological hazard. No toxicological data on tests involving the notified polymer are available to confirm this. The notified polymer is insoluble in water and has a very low vapour pressure, and is not expected to lose constituents by volatilisation, exudation or leaching.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

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

Due to its high molecular weight, the polymer is not expected to cross biological membranes (1,5).

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The polymer is unlikely to present a hazard to the environment at any stage of its use or disposal. Of the original quantity of polymer imported it is expected that most will not be released from the processing/application sites until it has been cured either on the car body or on overspray catching material. Leaching of the cured polymer from landfill is not expected due to the chemical and physical bonding which occurs during the surface coating process. Any cured polymer that is released, ie. accidents, when vehicles are repaired etc., will be inert and spread over a wide area.

Any uncured waste containing the polymer generated during formulation/application will be disposed of by landfill or incineration. This uncured polymer is not expected to pose an environmental hazard because on drying will become tacky and adsorb to soil and sediment.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

While public contact with surfaces painted with the notified polymer may occur, the high NAMW of the polymer suggests that should dermal contact occur, absorption is unlikely, and therefore, no public exposure is expected to occur.

Occupational exposure to the notified polymer prior to its end use in motor vehicle body repair shops will be minimal, and will only occur if the tins in which it is imported, stored and transported are ruptured accidentally. The formulation is classified as Class 3 dangerous goods and it is stored and transported in accordance with this classification (7).

Occupational exposure during the end use of the formulation, in motor vehicle repair shops, could be significant. The formulation contains hazardous solvents and as such it should be used in vehicle spray booths with exhaust ventilation to minimise exposure. If these precautions are taken then exposure to the notified polymer will also be reduced. The main occupational exposure pathways will be via dermal and ocular contact and through inhalation of paint mist during the spray process. The use of industrial safety equipment including goggles or face shields, clothing, gloves and respiratory protective devices will minimise this exposure.

The high NAMW of the polymer would limit transport across biological membranes and the low level of residual monomers would further limit harmful biological effects. The polymer, on the basis of an assessment of the information provided by the notifier, would not be classified as hazardous, however no toxicological data are available to confirm this. The polymer is not isolated or manufactured in Australia, only the formulation FV734 V 62 is imported. Due to the solvent type and concentration in the formulation, it is classified as hazardous according to the criteria of Worksafe Australia.

13. RECOMMENDATIONS

To minimise occupational exposure to the polymer in FV734 V 62 the following guidelines and precautions should be observed. The precautions for the use of the notified polymer should recognise the presence of the carrier solvents in the formulations:

- Local exhaust ventilation should be used during mixing.
- Application should take place in spray booths with appropriate engineering controls to reduce exposure to employees.
- When using the notified chemical (as the imported formulation) the following protective equipment should be worn:
 - impervious gloves conforming to Australian Standard (AS) AS 2161 (8),
 - protective eye goggles conforming to AS 1336 (9), and AS/NZS 1337 (10)
 - protective clothing conforming to AS 3765.2 (11), and
 - protective footwear conforming to AS/NZS 2210 (12).
- If engineering controls are not sufficient to control exposure, the following protective equipment should also be worn:
 - respiratory protection conforming to AS/NZS 1715 (13) and AS/NZS 1716 (14).
- Good personal hygiene practices should be observed.
- A copy of the Material Safety Data Sheet (MSDS) should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The MSDS for the formulation containing the notified chemical was provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (15).

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.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the Act, secondary notification of the notified chemical 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. J.V. Nabholz, P. Miller and M. Zeeman, "Environmental Risk Assessment of New Chemical Under Toxic Substances Control Act TSCA Section Five", in *Environmental Toxicology and Risk Assessment*, W. G. Landis, J. S. Hughes and M. A. Lewis (Eds), pp 40-55.
2. National Occupational Health and Safety Commission, 1994. *List of Designated Hazardous Substances* [NOHSC:10005(1994)], AGPS, Canberra, 1994
3. National Occupational Health and Safety Commission 1994, *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(1994)], Australian Government Publishing Service, Canberra.
4. National Occupational Health and Safety Commission 1995, *Exposure Standards for Atmospheric Contaminants in the Occupational Environment* [NOHSC:3008 (1995), 1003(1995)], Australian Government Publishing Service, Canberra.
5. Gobas et al. 1986. *Environmental Toxicology and Chemistry*, 5, 637-646
6. Anliker et al. 1988 *Chemosphere*, 17, 1631-1644
7. Federal Office of Road Safety, 1992, *Australian Code of Practice for the Transport of Dangerous Goods by Road and Rail (ADG Code)*, Australian Government Publishing Service, Canberra.
8. Standards Australia, 1978. *Australian Standard 2161-1978, Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)*, Standards Association of Australia Publ., Sydney, Australia.
9. Standards Australia, 1994. *Australian Standard 1336-1994, Recommended Practices for Eye Protection in the Industrial Environment*, Standards Association of Australia Publ., Sydney, Australia
10. Standards Australia, Standards New Zealand 1992. *Australian/ New Zealand Standard 1337-1992, Eye Protectors for Industrial Applications*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ. Wellington, New Zealand.
11. Standards Australia, 1990 Australian Standard 3765 - 1990. *Clothing for Protection Against Chemical Hazards, Part 1, Protection against General or*

Specific Chemicals; Part 2, Limited Protection Against Specific Chemicals, Standards Australia Publ., Sydney, Australia.

12. Standards Australia, Standards New Zealand 1994. *Australian/ New Zealand Standard 2210 - 1994 Occupational Protective Footwear, Part 1: Guide to Selection, Care and Use. Part 2: Specifications*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ. Wellington, New Zealand.
13. Standards Australia, Standards New Zealand, 1994. *Australian/New Zealand Standard 1715 - 1994 Selection, Use and Maintenance of Respiratory Protective Devices*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ., Wellington, New Zealand.
14. Standards Australia, Standards New Zealand, 1991. *Australian/ New Zealand Standard 1716 - 1991 Respiratory Protective Devices*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ., Wellington, New Zealand.
15. National Occupational Health and Safety Commission, 1994. *National Code of Practice for the Preparation of Material Safety Data Sheets*, [NOHSC:2011(1994)], AGPS, Canberra.