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

FULL PUBLIC REPORT

EFKA-3288

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT**EFKA-3288****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Ciba Specialty Chemicals Pty Limited, (ABN 97 005 061 469) of 235 Settlement Rd, Thomastown, VIC 3074

and

Multichem Pty Ltd, (ABN 47 006 115 886) of Suite 6, 400 High Street, Kew, VIC 3101

NOTIFICATION CATEGORY

Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical identity

Use Details

Import Volume

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)

None

NOTIFICATION IN OTHER COUNTRIES

None (Polymer is listed in USA (TSCA) and DSL (Canada) in the public sections).

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

EFKA-3288 (as > 80% solution in propylene glycol 600)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1000

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes
The notified polymer meets the PLC criteria.	

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
Imported as < 90% solution in propylene glycol.

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>	<3	<3	<3	<3	<3

USE

EFKA-3288 is used as an additive in paints.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will not be manufactured in Australia, but will be imported as a <90 % solution in propylene glycol in 25 kg metal pails and 200 kg steel drums. EFKA-3288 will be transported from the wharf to Multichem Pty Ltd for warehousing before it is sent to paint manufacturers for formulation into paint products. Truck drivers will transport the sealed EFKA 3288 containers by road from the wharf to the Multichem warehouse and then as needed to the customer warehouse. Two incoming goods receiving personnel will unload the containers of EFKA 3288 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 polymer solution will be reformulated into paint products at the paint manufacturing site. Formulation of the notified polymer into paint products will involve transfer to a mixing tank by metered dosing and mixing polymer solution and other ingredients in a high speed mixer. This process is carried out in a closed system. Each batch is quality checked and adjustments are made as required. The resultant paint is filtered prior to being dispensed into 1 L, 4 L and 10 L steel paint cans and pails and 200 L drums using automated filling machine. The resultant paint contains < 1% of the notified polymer. Paint products containing the notified polymer will be warehoused at the notifier's site prior to distribution to customer sites. Customers of EFKA 3288 are the automotive industry and wood coating industry.

Automotive industry

At the end users' site the paint containing the notified polymer will be used in the automotive industry. At the end users' site the paint will be mixed, stirred and diluted then placed in a spray gun. The object to be primed with the paint will be sprayed then heat cured, resulting in the painted article.

Wood coating industry

At the end users' site the paint containing the notified polymer is applied to wood boards by curtain coating. The curtain method involves a continuous film of paint which falls over the board as it passes on the conveyor. The board passes through the curtain of paint and emerges on the other side with its new coating. The curtain is created by pumping the paint through a wide trough which has a narrow opening in the bottom. Excess paint is collected and returned to the paint reservoir. The application is a no contact method and gives a very smooth, even distribution of coating across the whole board.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
<i>Transport and Storage</i>			
Transporting from dock to Multichem for warehousing before supplying to paint manufacturers for reformulation	2	2-3 hours/day	10-15 days/year

(loading/unloading trucks)			
<i>Paint formulation</i>			
Paint make up	3	8 hours/day	30 days/year
QC testing	1	8 hours/day	30 days/year
Filling into drums	3	8 hours/day	30 days/year
Maintenance workers	2	8 hours/day	30 days/year
<i>End Use</i>			
Wood Coating Industry Applied to wood boards using curtain coating machine (Possibly 1-5 sites)	50	8 hours/day	220 days/year
<i>Automotive industry</i> (Many sites Australia-wide)	> 1000	4-6 hours/day	220 days/year

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 pails or drums. No controls are required. Gloves, coveralls and goggles are available if required.

Paint formulation:

Paint 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 laboratory coats, goggles and impervious gloves to minimise exposure.

Filling into drums: Dermal exposure may be possible due to drips and spills when connecting filling lines. The paint is filled into drums under local exhaust ventilation and workers wear overalls, goggles and impervious gloves. Therefore exposure is minimal.

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

Exposure in the Automotive Industry

Workers exposed to the reformulated product will mostly consist of spray painters applying the special paint coatings to surfaces (e.g. automotive parts). Given that the final concentration of the notified polymer in paints will be up to 1%, worker exposure is expected to be low. Dermal exposure is possible during preparation of paint. Aerosols may be formed during spray application and therefore inhalation exposure may be possible. To minimise exposure during end use, the paint is diluted and applied in a well ventilated, down draft spray booth with an effective fume extraction system. Workers also wear anti-static flame retardant overalls, anti-static footwear, impervious gloves, eye protection and an air fed breathing mask or respirator if local exhaust ventilation is inadequate.

Worker exposure to the notified polymer in dried paints is likely to be minimal, as the polymer will be encapsulated as part of the cured paint film.

Exposure during Wood Coating

Paint will be applied using curtain coating machine and as mentioned above the application is a no contact method. The potential for worker exposure is very low, as the notified polymer is present at < 1% in the finished paint product. The notified polymer is stable under normal working conditions and has a high molecular weight and therefore not volatile and won't be taken up through the skin or by inhalation.

6.2. Summary of Public Exposure

The public will not come into contact with the EFKA-3288, nor will it come into contact with the products containing it. The only scenario where the public would have any direct exposure to the EFKA-3288 would be in the event of a spill from a container that had been imported or if containers of product were to be spilt. Such a spill could only occur during transport from the wharf to the customer site and during transport of finished product from the customer site to the end-user sites.

Once the paint containing the notified polymer is applied to the substrate in the automotive industry or in the wood coating industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

The notified polymer will not be manufactured in Australia. Local operations will include transport and storage, reformulation, filling and packaging and application by end users' in the automotive and wood coating industry.

Release of chemical at site

The notified polymer will be transported to Australia by ship in 25 kg metal pails or 200 kg steel drums and will be transported directly to Multichem's site for warehousing before supplying paint manufacturers for reformulation and packaging.

Release at Multichem's warehouse to the environment 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 (30 kg per year of notified polymer) would be lost during spillage. Spills are contained and soaked up with inert absorbent material (sand, diatomite, acid binders, universal binders or sawdust) and placed in a sealable container and disposed of to landfill.

Release of chemicals from use

The paint formulation operations will take place at the paint manufacturer's site. It is anticipated that there will be minimal release of the notified polymer during transfer from the storage containers to high speed mixers and during filling of paint into containers. Blending occurs in fully enclosed automated systems. Blending tanks or mixers are cleaned with solvents. The high speed mixers will be cleaned with solvents which will be collected and added to subsequent batches. Any spills incurred in the paint formulation operations will be contained by bunding and disposed of to a liquid waste treatment facility by licensed waste disposal contractors. There will be no release of the notified polymer to sewer.

The empty containers (25 kg and 200 kg) will be rinsed with solvent. The residue and the empty containers will be collected by licensed waste contractors. The containers will be disposed of to landfill. The total residues in the containers are expected to account for up to 55 kg/year of the notified polymer based on < 3000 kg/year imported volume.

Release in the Automotive and Wood Coating Industry

Release of the notified polymer to the environment as a result of its use in car manufacturing and wood coating industry is expected to be minimal, unless an accidental spillage occurs.

Accidental spills

If accidental spillage occurs during normal operating procedures, it will be contained and soaked up with inert absorbent material (sand) and placed in a sealable container for disposal. Waste material is disposed of to landfill.

Residues in empty containers

The finished paint products will be packaged in 1 L, 4 L and 10 L steel cans and 200 L drums. The steel cans will be disposed of to landfill. The residues in the containers are expected to account for up to 150 kg per fifth year of the notified polymer.

Overspray

A loss of 30% of the ready-for-use material is achieved by the use of HVLP spray guns and slightly higher loss with the more outdated high-pressure guns. The engineering controls for over-spray are typically spray booth filters and water scrubbers. The spray booth filters are usually renewed every 2-4 months. The filters are disposed of to landfill.

Based on 30% (worst case) overspray losses during application procedures and an annual import volume of 3000 kg, it is expected that 900 kg of notified polymer per annum would be lost via overspray. The small amount of waste generated in the application of the coating will be disposed to landfill.

Cleaning of equipment

Based on 5% losses from cleaning of spray equipment after application procedures, a level of up to 1% notified polymer in paint mixtures and an annual import volume of 3000 kg it is expected that 1.5 kg of notified polymer per annum would be lost via cleaning of equipment. The equipment is cleaned using water or suitable solvent. The solvents are sent offsite for disposal.

For spray equipment, the resultant water based effluent will be treated prior to release to sewer with the resulting solid residue disposed of to landfill. Water from washing brushes and rollers is likely to be disposed of to the sewer or spilled onto the ground.

Release in the Wood Coating Industry

The residues in the drums are expected to account for up to 2.5 % of the import volume (75 kg/year). The drums are rinsed with solvents before collection by waste disposal contractors.

The coating is applied to the wood boards at the end users' site using the curtain method and any excess paint is collected and returned to the paint reservoir. The equipment is used continuously, but may be shut down from maintenance from time to time. The equipment is cleaned with a suitable solvent which is collected and sent off site to a liquid waste treatment facility. It is estimated that 1% of the import volume (30 kg/year) may be lost from cleaning of equipment.

There will be no release to sewer during end use of the products containing the notified polymer.

6.3.2. Environmental Fate

The notified polymer is not expected to dissociate. It is expected to partition to organic matter or soil or sludge in the sewer. The high molecular weight of the substance suggests that it will not cross biological membranes, and will therefore be of low toxicity and will not bioaccumulate. No biodegradation data are available however, based on information on polydimethylsiloxanes (PDMS) from ECETOC 1994, it is not biodegradable in activated sewage sludge and leaves WWTP mainly sorbed to sludge. In sewage sludge deposited on landfills, biological degradation of PDMS is not expected. ECETOC also reports that bioconcentration of PDMS in fresh water and marine species is very low.

Following application and curing, the notified polymer will be within an inert matrix and be unavailable to organisms.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear liquid
Melting Point/Glass Transition Temp	Not determined
Density	1020 kg/m ³ at 20°C
Water Solubility	Not miscible with water
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

7.1. Comments

Silicones are noted for being extremely hydrophobic (Hamelink, J.L (1992)).

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were submitted.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS**9.1. Ecotoxicology**

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Nonionic polymers of NAMW>1000 are of low concern.

10. RISK ASSESSMENT**10.1. Environment**

Exposure will only occur due to use of the notified polymer, as it will not be manufactured in Australia. It will be reformulated into paints that will be used across Australia by professional trades people in the automotive and wood coating industries, i.e. will not be available for general consumer use. The proposed use pattern and waste management poses a low potential for environmental release of the notified polymer. Solid wastes resulting from the paint manufacture and paint use will be collected and sent to landfill or incineration.

Liquid effluents produced from paint formulation and use will be sent to liquid waste plants, including solvent recovery, where the notified polymer will end up in any resultant sludge, which will be disposed of to landfill. A small amount of the notified polymer may be present in effluent discharged to sewer, which is expected to undergo further treatment prior to eventual discharge to the aquatic environment.

The rinsed import containers, 25 kg pails and 200 kg steel drums, and steel end-user paint cans, containing any residual notified polymer, will be disposed of to landfill as industrial waste. At the paint manufacturing plants effluent generated during container rinsing and equipment cleaning effluent will be collected and reused where possible. Otherwise it will be disposed of to a liquid waste facility by a licensed contractor (eg for solvent recovery). Liquid waste from cleaning of paint application equipment will go to liquid waste contractors. There will be no release to sewer.

Any spilt material will be disposed of to landfill. The spray booth filters are replaced every 2 to 4 months and the used filters will be disposed of to landfill. Any effluent from wet scrubbers, if used, will go to licensed liquid waste facilities.

In the wood coating industry, the paint products containing the notified polymer will be supplied to professional curtain coaters. Any waste material will be captured and disposed of to landfill as will paint residues in empty drums. Equipment residues will be washed with solvent and sent for solvent recycling and disposal of solid residues to landfill. There will be no release of the notified polymer to sewer. Thus, aquatic species will not be exposed to the notified polymer.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

In spray painting both engineering controls such as spray booths and full personal protective

equipment are needed to reduce the exposure to a low level. The risk of possible systemic effects resulting from exposure would be further reduced by spray painting being carried out according to the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999).

10.3. Public Health

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is present at bound within a matrix and unlikely to be bioavailable. Therefore, the risk to public from exposure to the notified polymer is considered low.

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

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following isolation and engineering controls to minimise occupational exposure to the imported notified polymer and the paint:
 - Closed tanks and lines for formulation and filling of paint containing the notified polymer;
 - Use of engineering controls in spray painting to minimise exposure of workers.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the imported notified polymer and the paint;
 - Avoid splashing, spills and generation of aerosols during formulation and filling processes;
 - Spray application of paint containing the notified polymer should be in accordance with the NOHSC National Guidance Material for Spray Painting;
 - Workers using spray products containing the notified polymer should be instructed in their proper handling and use, including information about the additional risks posed by spray application.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the imported notified polymer and paint:

- Protective gloves
 - Safety glasses or goggles
 - Industrial clothing
 - Respiratory protection during spray painting, or if aerosols are formed
 - Full body protection during spray painting
- 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

- The following control measures should be implemented by paint manufacturers and warehouse sites to minimise environmental exposure during paint formulation and storage of the notified polymer:
 - All process equipment and storage areas should be bunded.

Disposal

- The notified polymer should be disposed of to landfill for solids and to licensed waste contractors for liquids.

Emergency procedures

- Spills/release of the notified polymer should be contained by soaking up with inert absorbent material and dispose of as special waste in compliance with local and State regulations as recommended in the MSDS.
- Use detergent in cleaning up.
- Prevent product from entering drains.

13.1. 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 subsection 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.
- or
- (2) Under subsection 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.

14. REFERENCES

- ECETOC (1994) Joint Assessment of Commodity Chemicals No.26, Linear Polydimethylsiloxanes. Avenue E. Van Nieuwenhuysse 4, (Bte. 6) B-1160 Brussels, Belgium.
- Hamelink, J.L “*The Handbook of Environmental Chemistry, Vol 3 Part F*”, Ed O.Hutzinger, Springer-Verlag Berlin, Heidelberg 1992.
- NOHSC (1999) National Guidance Material for Spray Painting. National Occupational Health and Safety Commission, Canberra, AusInfo.