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

FULL PUBLIC REPORT

Polymer in Nuosperse FX 600

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Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	www.nicnas.gov.au

**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	3
1. APPLICANT AND NOTIFICATION DETAILS	3
2. IDENTITY OF CHEMICAL	3
3. COMPOSITION.....	3
4. INTRODUCTION AND USE INFORMATION	4
5. PROCESS AND RELEASE INFORMATION.....	4
5.1. Distribution, Transport and Storage.....	4
5.2. Operation Description.....	5
5.3. Occupational exposure.....	5
5.4. Release.....	6
5.5. Disposal	8
5.6. Public exposure	9
6. PHYSICAL AND CHEMICAL PROPERTIES	9
7. TOXICOLOGICAL INVESTIGATIONS	11
7.1. Acute toxicity – oral	11
7.2. Irritation – skin	11
7.3. Irritation – eye	11
8. ENVIRONMENT.....	12
8.1. Environmental fate	12
8.2. Ecotoxicological investigations.....	12
9. RISK ASSESSMENT.....	12
9.1. Environment.....	12
9.1.1. Environment – exposure assessment	12
9.1.2. Environment – effects assessment.....	13
9.1.3. Environment – risk characterisation.....	13
9.2. Human health	13
9.2.1. Occupational health and safety – exposure assessment.....	13
9.2.2. Public health – exposure assessment.....	13
9.2.3. Human health - effects assessment.....	13
9.2.4. Occupational health and safety – risk characterisation.....	14
9.2.5. Public health – risk characterisation.....	14
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS	14
10.1. Hazard classification.....	14
10.2. Environmental risk assessment.....	14
10.3. Human health risk assessment.....	14
10.3.1. Occupational health and safety.....	15
10.3.2. Public health.....	15
11. MATERIAL SAFETY DATA SHEET	15
11.1. Material Safety Data Sheet.....	15
11.2. Label	15
12. RECOMMENDATIONS.....	15
12.1. Secondary notification	16
13. BIBLIOGRAPHY	16

FULL PUBLIC REPORT

Polymer in Nuosperse FX 600

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Degussa Coatings and Colorants Pty Ltd of 30 Commercial Drive, Dandenong VIC 3175.

NOTIFICATION CATEGORY

Limited-small volume: Polymer with NAMW ≥ 1000 (1 tonne or less per year).

EXEMPT INFORMATION

Data items and details claimed exempt from publication: identity of chemical, composition, introduction and detailed use information and process and release information.

VARIATION OF DATA REQUIREMENTS

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

United States.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Nuosperse FX 600 (contains 25% of notified polymer)

NUMBER AVERAGE MOLECULAR WEIGHT (MnMW)

>1000

SPECTRAL DATA

METHOD

IR

Remarks

An IR spectrum was provided.

TEST FACILITY

Not stated.

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL
METHOD

Test procedures of HClO₄-titration, pH, tertiary amine content, water content and dry weight content were provided.

3. COMPOSITION

DEGREE OF PURITY

90-100%.

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 polymer component of NUOSPERSE FX600 is not manufactured in Australia. The commercial product NUOSPERSE FX 600, which contains 25% of the notified polymer, will be imported by Degussa Coatings & Colorants for use at its Dandenong, Victoria site.

The notifier indicated that should there ever be any problems involved in production of the colorants containing NUOSPERSE FX 600 then it may be necessary to import such colorants direct into Australia from Degussa Coatings & Colorants in the USA.

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>	<1	<1	<1	<1	<1

USE

The notified polymer is used as a dispersing agent for use in water-based paints and coatings, printing inks and pigment dispersions. Usual concentrations are as following:

- paints: 0.5-2%
- printing inks: 0.5-3%
- pigment concentrations: 1-10%.

The paint colorants manufactured in Australia are multi component products and the polymer component of the NUOSPERSE FX 600 constitutes less than 1% of the formulation.

Approximately 95% of the coloured paint would be applied by paint roller or brush with the other 5% being applied by spray.

Initially approximately 50% of the production of colorants containing the NUOSPERSE FX 600 will be exported to overseas markets but such markets are expected to progressively grow and at least double the amount of colorant required for the Australian market.

Within Australia, the colorants containing NUOSPERSE FX 600 will be sold to paint companies who use these products at Point of Sale (POS) retail paint stores for tinting their paints for sale to both professional painters and the public. Such paints are marketed as architectural colours for both interior and exterior application. The paints will not be used for marine application.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY

Melbourne.

IDENTITY OF FORMULATOR

Degussa Coatings and Colorants Pty Ltd, Dandenong, Victoria

TRANSPORTATION AND PACKAGING

NUOSPERSE FX 600 will be received in either 50 kg or 200 kg High Density Polythene containers. It will only be stored at the notifier's site in an indoor storage facility. This product will be delivered from the docks to this site by commercial road transport carrier.

The notified polymer is not a Dangerous Good for Transport under the Australian Dangerous Goods Code nor is it classified as a Dangerous Good for air or sea transportation.

5.2. Operation Description

Manufacture of the pigment colorants containing NUOSPERSE FX 600 involves no chemical reactions apart from simple pH adjustment and basically consists of a blending/mixing operation. Components consist of inorganic pigment, water, glycol, NUOSPERSE FX 600, talc, defoaming agent, surfactant/dispersing agents and biocide.

The component blend is uniformly mixed in an open pot under high speed stirring and then circulated through a horizontal bead mill to grind the pigment to the correct particle size, colour strength and shade. The product is checked by the QC Laboratory, and if approved, filled into 1 litre cans on an automatic filling line which fills, labels and packs 6 x 1 litre cans of paint colorant into cardboard cartons before transferring to store ready for dispatch.

5.3. Occupational exposure

Number and Category of Workers

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Process workers involved in formulation of the pigment colorants	6	15 minutes per day	125 days per year
Process workers involved in filling 1 Litre cans and wash up	4	15 minutes per day	125 days per year
Quality control chemists involved in testing colorant	4	1 hour per day	125 days per year
R&D and technical service chemists	4	2 hour per day	250 days per year
Workers at the point of sale stores	3000	15 minutes per day	250 days per year

Exposure Details

Storeman

The NUOSPERSE FX 600 will be received into store in either 50 kg or 200 kg high density polyethylene containers whilst the formulated liquid pigment colorant is contained in sealed cartons each containing 6 x 1 litre metal cans of colorant. Export orders for overseas markets are dispatched on shrink-wrapped pallets containing the cartons. Under these conditions, exposure of the storemen to the notified polymer is expected to be negligible.

Process workers involved in formulation of the pigment colorants-

The formulation involves weighing out the individual component into a mixing vessel then blending them together by mechanical agitation.

The principal occasion the process worker would have direct contact with the NUOSPERSE FX 600 is when weighing out the required amount of the product into stainless steel buckets or polyethylene containers then adding to the mixing vessel. Typical amounts involved would vary from 30 to 35 kg NUOSPERSE FX 600 per batch of colorant. Typically the process worker would wear protective gloves, PVC apron and safety glasses with side shields. The MSDS for Nuosperse FX 600 recommends PVC or neoprene as the most suitable glove material.

The process workers may be exposed to the notified polymer contained in the NUOSPERSE FX 600 during the above operation on average for 15 minutes per day, 2.5 times a working week amounting to 35 hours exposure per year.

Indirect exposure to the notified polymer once it has been blended into the colorant is likely to be low as the colorant mix is circulated through the bead mill and the operator has no direct contact with the colorant apart from ensuring the bead mill is operating satisfactorily and there are no leakages.

During the mixing and bead milling operations, indirect exposure on average would amount to 6 hours per day, 2.5 times a week over a 50 week working year.

Process workers involved in filling 1 Litre cans and wash up

The pigment colorant once approved by the QC laboratory is filled into 1 Litre cans on an automatic filling and labelling machine and packs 6 x 1 litre cans into cardboard cartons. Physical contact with the liquid colorant is minimal but indirect exposure through filling line supervision is estimated to be 2 hours per day, 2.5 times a week over a 50 week working year.

One operator is involved in wash up procedures whereby the mixing pots and filling line machine hoses are hosed out using water, which is retained and subsequently treated in an onsite water treatment plant before discharge to sewer. The operator is only exposed to diluted liquid colorant for 15 minutes per day, 2.5 times a week over a 50 week working year.

Quality control chemists involved in testing colorant

QC chemists involved in the testing of the colorants containing the notified polymer in the NUOSPERSE FX 600 will only be handling small amounts of colorant, amounting to no more than 500 grams per batch. Safety glasses, laboratory coats and disposable gloves are worn during the testing procedures.

On average, the amount of notified polymer in the 500 gram colorant test sample would equate to approximately 2 grams and the chemists would be exposed to this amount for approximately 1 hour each day, 2.5 times per week over a 50 week working year.

Research and Development (R&D) and technical service chemists

R&D chemists could be involved in experimental work on colorants containing NUOSPERSE FX 600 and may have exposure to the notified polymer in the laboratory. Likewise Technical Service chemists are likely to use colorants containing NUOSPERSE FX 600 in conducting colour matching service work for paint customers. It is estimated that R&D chemists would be exposed at twice the rate estimated for use by the QC Laboratory, ie 2 hours a day, 5 times a week, 50 weeks a year.

Nature of work done by paint company sites

The colorants containing the notified polymer in the NUOSPERSE FX 600 would only be shipped in and out of the paint companies' stores without any of the 1 litre cans being opened. Thus exposure to the notified polymer is expected to be negligible and could only arise if there was accidental damage to packing resulting in leakage of colorant from the cans.

Nature of work done at the point of sale (POS) stores

Operations at the POS sites include opening the 1 litre cans of paint colorant and filling / cleaning the dispenser tube on the volumetric dispensing machine, which adds a predetermined amount of colorant to the paint. The tinted paint is then uniformly mixed in a suitable shaker machine before supply to the customer. Operators are advised to wear protective gloves when handling the cans of colorant and when cleaning out the dispenser tubes. Estimated exposure time to the colorants containing the notified polymer is 15 minutes per day, 5 days per week over a 50 week working year.

Nature of work done by tradesmen

Paints containing the notified polymer will be obtainable from POS retail stores by professional painters and the general public. Application of the paint is estimated to be 95% by brush or roller and 5% by spray application.

User numbers could be expected to number thousands and it is estimated professional painters could be exposed for up to 4 hours per day, 5 times per week over a 200 day per year working period.

Tradesman would also be exposed to the dry painted surfaces containing the notified polymer, although at this stage the notified polymer would be entrapped within the dry paint polymer film.

In all cases, exposure to the notified polymer in the wet paint is considered to be low as concentration of the notified polymer within the paint would be low with a maximum of 250 ppm.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The amount of notified polymer used in the production of pigment colorants will progressively

increase from a relatively small amount in the first year to an amount approaching one tonne by year 5.

Taking a worse case scenario of the total year 5 production requirement being completed over a 5-day week (25 working days) period then the following estimates are provided for possible release of polymer at each of the release points. However, in reality the year's production would be split over a 25-50 week working period such that the estimates provided below are 5-10 times greater than those expected.

It is estimated a total of 40 kg of the notified polymer contained in NUOSPERSE FX 600 will be utilised per day in the manufacture of the pigment colorants. Five aliquots (8 kg) would be required for the daily production and would be weighed directly from the NUOSPERSE FX 600 container into buckets and then added to the mixing vessel containing the other components of the colorant formulation. Accidental spillage of the NUOSPERSE FX 600 is a possibility during these operations but total loss of an 8 kg notified polymer aliquot (equating to 32 kg of NUOSPERSE FX 600) would be the worst case scenario.

In such instance, the spill would be contained with a liquid binding material, collected in a suitable container and in due course sent to an authorised landfill site. Any notified polymer entering the factory wastewater drainage system would eventually be treated through our onsite water treatment plant before treated wastewater is discharged to sewer.

To avoid manual handling of NUOSPERSE FX 600, longer term a metering pump system of delivering the NUOSPERSE FX 600 direct from the container to the mixing vessel may be considered.

Loss of 1% of the daily requirement of the 40 kg of the notified polymer may result from inadequate drainage of the NUOSPERSE FX 600 from the buckets into which it has been preweighed prior to mixing and during washing clean up operations. This would equate to a loss of 0.4 kg per day of the notified polymer discharged to the water waste drainage system, which would be treated in the water treatment plant.

Loss of the notified polymer present in NUOSPERSE FX 600 during the pigment colorant mixing/milling/filling operations would be miniscule as in most cases any spills at these stages of operation can be contained and reclaimed. An estimated 2% production loss of pigment colorant containing the notified polymer may be allowed for the above operations and those involved in washing out the filling line tube pipes, the bead mill and the mixing pots. On a daily basis this would amount to a loss of 0.8 kg of the notified polymer (which at that stage of loss would be present in the pigment colorant at concentration less than 1%). This loss would also be discharged to the water waste system and ultimately be treated in the water treatment plant.

Residual NUOSPERSE FX 600 remaining in the supplier's containers for disposal after use could result in a loss of 1% of the contents. If 200 kg containers were being used this would account for a loss of 2 kg of NUOSPERSE FX 600 per container which equates for 0.5 kg of notified polymer. Thus over the worst case scenario of the 5 week stock of 4000 kg NUOSPERSE FX 600, this would amount to a loss of 10 kg NUOSPERSE FX 600 equating to 2.5 kg of the notified polymer. The empty containers are likely to be crushed and sent to landfill for disposal so any retained NUOSPERSE FX 600 is likely to leach into the soil.

RELEASE OF CHEMICAL FROM USE

By year 5, the amount of notified polymer used in manufacture of pigment colorants is expected to be close to one tonne. Of this amount of pigment colorant, approximately 30% is expected to be used in the domestic Australian market which equates to 300 kg of notified polymer.

Colorants containing the notified polymer will be supplied in 1 litre steel cans to numerous paint companies throughout Australia which in turn will supply to their retail paint store outlets throughout Australia.

Release of notified polymer to the environment at paint customer sites is not expected as the 1 litre cans of colorant would only be stored at these sites. The only release to the environment would be due to accidental mishap resulting to damage to the cans and subsequent spillage of the colorant. In such cases the spilt colorant is likely to be contained with absorbent then swept up and disposed of in an authorised landfill site.

It is not possible to predict how much pigment colorant containing the NUOSPERSE FX 600 would

be stored on prime customer sites but allowing for an average of 20 customers offtaking the expected 30% colorant production for the domestic market, then each customer on average would store pigment colorant containing a total amount of 15 kg of the notified polymer during year 5 of the notification.

The paint companies are likely to distribute the 1 litre cans of pigment colorant containing the notified polymer to over 1500 point of sale retail outlets throughout Australia where the colorants will be used for tinting their base paints to a multitude of colour hues for retail sales to professional painters and the general public. This is expected to account for the use of 300 kg of the notified polymer throughout the year 5 period.

Approximately 80% of the tinted paint will be water based paint and the other 20 % will be alkyd or modified alkyd enamel paint. Colorant is dispensed to the paint by volumetric measure from a carousel-dispensing machine with the small reserve tanks on the carousel being filled directly from the can.

Up to 1% of the notified polymer could be lost to the environment due to periodic cleaning of the carousel dispenser tubes, which for the 5 year period would amount to 3 kg of the notified polymer being lost over the 1500 sites. The tubes would most likely be washed out in water and discharged to the domestic water waste system.

Another 1-2% loss of the notified polymer over the year 5 period is likely to result from residual amounts of pigment colorant not being drained from the 1 litre cans. This could result in a loss of 3-6 kg of the notified polymer over the 1500 sites.

It should be noted that at these stages of loss, the notified polymer is a component of the pigment colorant and is present in the pigment colorant at a concentration less than 1%.

Unless the retail paint store has some form of recycling program the empty 1 litre cans would most likely be trashed and sent to an authorised landfill site for disposal.

Tinted paint containing the notified polymer will be used by professional painters as well as the general public. Of the 300 kg of the notified polymer contained within paint to be used in the Australian market, 95% is expected to be used by roller or brush applications with the other 5% being spray painted.

Brushes, rollers, pain trays and spray equipment used for painting with enamel type paints would require cleaning with mineral turpentine or paint thinners whilst water based paints would be washed with water.

Waste generated from these clean up operations, including residual paint remaining in the cans is also estimated to account for loss to the environment of 1-2% of the notified polymer present in the paint. In this case the 3-6 kg loss of the notified polymer in the domestic market for the year 5 period would be spread throughout Australia.

Liquid waste generated from the above cleaning operations is most likely discharged to the domestic waste water systems or storm water system although professional painters using enamel based paints may have solvent retention containers where solvent wash up liquid can be disposed of in an authorised manner. In most cases empty paint cans containing dried paint residues would probably be disposed of to landfill via household garbage.

When lost to the environment at this stage, the notified polymer is in a very dilute concentration with the tinted paint not expected to contain any more than 250 ppm of this chemical.

Of the 15 kg (5% of 300 kg) of the notified polymer contained within paint destined for spray painting application, approximately half of this amount could be lost to the environment due to overspray conditions. Such loss could be to land or water depending upon prevailing weather and site conditions at the time of spraying. This loss would not be localised loss but would be represented from all spray painting sites across Australia, thus giving a potential loss of 7.5 kg of the notified polymer.

5.5. Disposal

Disposal of NUOSPERSE FX 600 containers

NUOSPERSE FX 600 contains 25% of the modified polymer and will be received in either 50 kg or 200 kg high density polyethylene containers. After emptying, these containers are likely to be crushed and sent to landfill for disposal. It is estimated 1% of NUOSPERSE FX 600 could be retained in these empty containers, thus, for the maximum volume of 1000 kg per year, a 1% loss would equate to 10 kg

of the notified polymer.

Disposal of colorant cans containing the notified polymer

During the 5th year of notification, approximately 300 kg of the notified polymer will be contained in the 1 litre cans of 802-1811 Yellow Oxide and the 802-2009 Raw Umber colorants expected to be sold to the Australian market with the remaining 700 kg of the notified polymer being exported in colorants. When emptied, the cans will be inverted to allow residual colorant to drain into a suitable receptacle for reuse in the tinting system before discarding the drained cans with other non hazardous trash to landfill. Alternatively the emptied cans could be rinsed with water and the rinsed cans sent for recycling. It is estimated 1-2% colorant could remain in the drained cans indicating 3-6 kg of the notified polymer would be lost to landfill or to sewer. This amount would be the total amount across Australia from all point-of-sale paint stores using these colorants.

Disposal of paint cans containing the notified polymer

The general recommendation for disposal of empty paint cans is to first leave the can in a well ventilated area to dry before disposing of with the household garbage to landfill or sending for recycling as part of a steel can recycling program. Empty paint cans could retain 1-2% paint that means that of the 300 kg of the notified polymer used within paints across Australia, 3-6 kg could be lost to landfill.

No hazards to the environment are expected from the disposal of the notified polymer. Paints containing the notified polymer will be used for interior and exterior architectural paints and the ultimate end release to the environment will be the fate of the substrate to which the paint has been applied. Such substrates are expected to have a life span of 10-50 years. Demolition or redecorating could release the notified polymer to the environment due to incineration or landfill.

5.6. Public exposure

Paints containing <250 ppm notified polymer will be sold to the public. Dermal contamination is expected to be main route of public exposure during application. The general public who purchase the tinted paint are estimated to be exposed to the notified polymer during the painting operation for a period of 4 hours per day, 2 days a year.

The public would also be exposed to the dry painted surfaces containing the notified polymer, although at this stage the notified polymer would be entrapped within the dry paint polymer film.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa Slight hazy to clear yellowish viscous fluid.

Melting Point/Freezing Point ~2°C

METHOD	DGF-C-IV-3A
Remarks	Information from the MSDS of Nuosperse FX 600 containing 25% notified polymer in water.

Boiling Point >100°C

Remarks	Information from the MSDS of Nuosperse FX 600 containing 25% notified polymer in water.
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Density 1045 kg/m³ at 20°C

METHOD	DIN 53217/36
Remarks	Determined on Nuosperse FX 600 containing 25% notified polymer in water.
TEST FACILITY	Sasol Servo BV (overseas supplier internal laboratory).

Vapour Pressure 2.3 kPa at 20°C (water)

Remarks	Information from the MSDS of Nuosperse FX 600 containing 25% notified polymer in water. The vapour pressure presented above should be attributed to the solvent (water) in which the test was conducted. The notified polymer is not expected to be volatile based on the monomeric composition.
Water Solubility	Not determined
Remarks	The notified polymer is classified as soluble in water according to the MSDS provided. This is consistent with its structure which contains greater than 20% ionized carboxylic acid functionality and it is imported as a 25% aqueous solution.
Hydrolysis as a Function of pH	Not determined
Remarks	The notified polymer contains ester linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.
Partition Coefficient (n-octanol/water)	< -2
Remarks	A test report for partition coefficient was not provided. The MSDS included in the submission states that the notified polymer has a log Pow of less than -2. This is consistent with the notified polymer's structure and water solubility and is indicative of partitioning into the aqueous phase.
Adsorption/Desorption	Not determined
Remarks	The notified polymer's high expected water solubility and low partition coefficient indicate that it is expected to be mobile in both terrestrial and aquatic compartments. However as a consequence of its polyanionic character, mobility is expected to be retarded through association with cations on the surface of soil and sediment.
Dissociation Constant	Not determined
Remarks	The notified polymer contains fully dissociated carboxylic acid functionality which is expected to remain so except at the acidic end of the environmental pH range of 4 to 9.
Particle Size	Not applicable as Nuosperse FX 600 is a liquid.
Flash Point	Not determined.
Remarks	NUOSPERSE FX 600 is being imported as an aqueous polymer solution.
Flammability Limits	Not determined.
Remarks	NUOSPERSE FX 600 is being imported as an aqueous polymer solution.
Autoignition Temperature	>400°C
Remarks	Information from the MSDS of Nuosperse FX 600 containing 25% notified polymer in water.
Explosive Properties	Product does not present an explosion hazard.
Remarks	Information from the MSDS of Nuosperse FX 600 containing 25% notified polymer in water.
Reactivity	The polymer is not expected to be reactive.

7. TOXICOLOGICAL INVESTIGATIONS

The toxicological studies were performed on SER-AD FX 600, an aqueous solution containing 25% notified polymer.

<i>Endpoint and Result</i>	<i>Assessment Conclusion</i>
Rabbit, skin irritation	slightly irritating
Rabbit, eye irritation	slightly irritating

7.1. Acute toxicity – oral

REMARKS: The MSDS of Nuosperse FX 600 states LD50>2000 mg/kg in rats for the acute oral toxicity. The notifier indicated that the result for the product quoted in the manufacturer's MSDS was based on experience with similar polymers.

7.2. Irritation – skin

TEST SUBSTANCE SER-AD FX 600

METHOD OECD TG 404 Acute Dermal Irritation/Corrosion.
EC Directive 92/69/EEC B.4 Acute Toxicity (Skin Irritation).
Species/Strain Rabbit/New Zealand White
Number of Animals 3
Vehicle None.
Observation Period 72 hour
Type of Dressing Semi-occlusive.
Remarks – Method GLP & QA.

RESULTS

<i>Lesion</i>	<i>Mean Score* Animal No.</i>			<i>Maximum Value</i>	<i>Maximum Duration of Any Effect</i>	<i>Maximum Value at End of Observation Period</i>
	1	2	3			
<i>Erythema/Eschar</i>	1	0	0.6	2	48 hours	0
<i>Oedema</i>	0.3	0	0	1	24 hours	0

*Calculated on the basis of the scores at 24, 48, and 72 hours for EACH animal.

CONCLUSION SER-AD FX 600 is a slight irritant.

TEST FACILITY Safepharm Laboratories Limited, Derby, UK (1996a).

7.3. Irritation – eye

TEST SUBSTANCE SER-AD FX 600

METHOD OECD TG 405 Acute Eye Irritation/Corrosion.
EC Directive 92/69/EEC B.5 Acute Toxicity (Eye Irritation).
Species/Strain Rabbit/New Zealand White
Number of Animals 3
Observation Period 7 day

RESULTS

<i>Lesion</i>	<i>Mean Score*</i> <i>Animal No.</i>			<i>Maximum Value</i>	<i>Maximum Duration of Any Effect</i>	<i>Maximum Value at End of Observation Period</i>
	1	2	3			
<i>Conjunctiva: redness</i>	1.7	1.7	0.7	2	72 hours	0
<i>Conjunctiva: chemosis</i>	1	1	0.3	2	48 hours	0
<i>Conjunctiva: discharge</i>	0	0.7	0	2	24 hours	0
<i>Corneal opacity</i>	0.7	0.7	0	1	48 hours	0
<i>Iridial inflammation</i>	0	0	0	1	1 hour	0

*Calculated on the basis of the scores at 24, 48, and 72 hours for EACH animal.

Remarks – Results

Dulling of the normal lustre of the cornea was observed at one hour in all animals. Non classifiable, but ocular responses present.

CONCLUSION

SER-AD FX 600 is a slight irritant to the eye.

TEST FACILITY

Safepharm Laboratories Limited, Derby, UK (1996b).

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***Exposure*

During coatings production up to 40 kg per annum of waste containing the notified polymer will be generated from cleaning up minor spills, during the cleaning of formulation equipment and the disposal of import drums. The majority of the paint containing the notified polymer manufactured will be exported. By year 5, approximately 30% of the pigment containing the notified polymer will be used in Australia. Of that up to 23 kg per annum of the notified polymer will be disposed during use. This will be derived from:

Cleaning of paint tinting machines:	≤ 3 kg/annum
Residues in the colourant containers:	≤ 6 kg/annum
Equipment cleaning:	≤ 6 kg/annum
Spray Painting:	≤ 7.5 kg/annum

Wastes containing the notified polymer resulting from formulation and application and empty import drums will be disposed to landfill. Given that this product will be used by 'Do-it-Yourself' enthusiasts, there is also potential for a portion of equipment cleaning wastes to be discarded into the sewer. At the end of their useful lives, buildings to which the paint has been applied will also be disposed to landfill.

Fate

The notified polymer is expected to be soluble in water and as such is likely to be mobile in

both aquatic and terrestrial compartments. However, in landfill, as a consequence of its polyanionic character, it is expected to associate with soil and slowly degrade through biotic and abiotic processes to water and oxides of carbon. When introduced into the sewer the notified polymer is expected to be removed from the aquatic compartment and degrade slowly via the processes described above.

Due to its high NAMW (>1000), the notified polymer is not expected to bioaccumulate.

9.1.2. Environment – effects assessment

No ecotoxicological data were submitted.

9.1.3. Environment – risk characterisation

The majority of the notified polymer will be incorporated at a low level into architectural paints and, once applied and dried, poses little risk to the environment. Wastes will be disposed of to landfill where the notified polymer is expected to associate with soil and sediment and slowly degrade through biotic and abiotic processes to water and oxides of carbon. Accidental or intentional release to sewer is a possibility, however, despite its high expected water solubility, the notified polymer will eventually associate with sediment and degrade through the processes described above.

Based on low environmental exposure resulting from its low import volume and widespread use, the risk to the environment is expected to be low.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

At the formulation site, the formulators will handle NUOSPERSE FX 600 containing 25% notified polymer, and the filling line operators will handle the product containing <1% notified polymer. Inhalation exposure is unlikely due to the expected low vapour pressure. Dermal and ocular exposure may occur during certain formulation processes. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers.

At the point of sale stores, workers will handle both the formulated products containing <1% notified polymer and the tinted paint with maximum 250 ppm notified polymer. Dermal and ocular exposure may occur during tinting and cleaning processes. However, considering the low concentrations of the notified polymer in these products, short duration, and the use of personal protective equipment, the occupational exposure at tinting points is expected to be low.

The painters will only handle paints with maximum 250 ppm notified polymer. Dermal and ocular contacts are the main route of exposure. Inhalation exposure is also considered to be possible during spray application. The exposure in painters is expected to be low due to the very low concentrations of the notified polymer and the use of personal protective equipment.

After application and once dried, the paint containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

9.2.2. Public health – exposure assessment

The public will handle paints with maximum 250 ppm notified polymer. Similar to the professional painters, skin and eye contact is the main route of exposure during brush and roller painting. Inhalation exposure is unlikely because spray application is not the usual method of painting by the public. The exposure in public is expected to be low due to the very low concentrations of the notified polymer in the paints. After application and once dried, the paint containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

9.2.3. Human health - effects assessment

No toxicological studies on the notified polymer were provided. The notifier provided two

irritation studies on SER-AD FX 600 containing 25% notified polymer in water. SER-AD FX 600 was a skin and eye irritant in rabbits. In particular, the eye irritation study resulted in corneal and conjunctival effects in all animals. Test results from similar polymers showed that the notified polymer would be of low acute oral toxicity. Based on the available data, SER-AD FX 600 is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999a). However, when extrapolating the test data to the neat polymer, the notified polymer may be a hazardous substance due to its irritancy, in particular, eye irritation effects. It is known that the amino salt monomer in the polymer is a classified skin and eye irritant.

9.2.4. Occupational health and safety – risk characterisation

The notified polymer may be a hazardous substance due to its irritation effects. However, the notified polymer will be imported as a component in a product. The product, Nuosperse FX 600, is a slight eye and skin irritant but is not classified as a hazardous substance according to NOHSC *Approved Criteria* (NOHSC, 1999a).

Dermal contamination is considered to be the main route of occupational exposure. Ocular exposure is possible if any splash or spill occurs. Inhalation exposure is only possible during the spray application. The exposure is considered to be of short duration and intermittent for formulators, filling line operators and tinting workers. The painters may handle the painting for several hours per day. The concentrations of the notified polymer in Nuosperse FX 600, formulated products and painting are 25%, <1% and <250 ppm, respectively. Due to the risk of skin and eye irritancy, workers, particularly those who handle high concentration formulations of the notified polymer, should use personal protective equipment such as overalls, gloves and eye protections to avoid dermal and ocular exposure. The formulation site should implement engineering controls such as ventilation equipment to minimise occupational exposure to the notified polymer. The application of spray painting should follow the NOHSC *National Guideline Material for Spray Painting* (NOHSC, 1999b). The health risk for workers at the formulation site, point of sale stores and painting application is considered to be low with the uses of personal protective equipment and engineering controls.

The health risk for importation and distribution workers is expected to be low except in the event that the packaging is breached.

9.2.5. Public health – risk characterisation

As there will be low exposure of the painting products containing the notified polymer to the DIY painters, the health risk to the public from exposure to the notified polymer is considered low.

Members of the public may make dermal contact with dried paintings containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is present at low concentrations, bound within a matrix and unlikely to be bioavailable.

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

10.1. Hazard classification

Based on the available data, SER-AD FX 600 containing 25% notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

The notified polymer may be a hazardous substance due to its irritancy, in particular, eye irritation effects.

10.2. Environmental risk assessment

The notified polymer is not likely to present a risk to the environment when it is stored, transported and used in the proposed manner.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

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

10.3.2. Public health

There is No Significant Concern to public health under the conditions of the occupational settings described.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the [products containing the notified polymer](#) provided by the notifier [were](#) in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the [products containing the notified polymer](#) provided by the notifier [were](#) in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer:
 - Exhaust ventilation at the formulation site.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
 - The application of spray painting should follow the NOHSC National Guideline Material for Spray Painting.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
 - Protective clothing
 - Gloves
 - Eye protection

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 end users to minimise environmental exposure during use of the notified polymer:
 - i. Unwanted paint should be brushed out on newspaper, allowed to dry and then disposed of via domestic waste collections. Empty paint containers should be left open in a well ventilated area to dry out. When dry, recycle steel containers via steel can recycling programs. Disposal of empty paint containers via domestic recycling programs may differ between local authorities. Check with your local council first.

Disposal

- Once dry, solid waste containing the notified polymer should be disposed of in landfill or by incineration.

Emergency procedures

- Spills/release of the notified polymer should be contained as described in the MSDS (ie. Collect spilled material with an inert absorbent) and the resulting waste disposed to an authorised landfill.

12.1. Secondary notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

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