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

FULL PUBLIC REPORT

Polymer in Disperbyk-106

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Director

Chemicals Notification and Assessment

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FULL PUBLIC REPORT

Polymer in Disperbyk-106

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Degussa Coatings & Colorants Pty Ltd of 30 Commercial Drive Dandenong VIC 3175 and Nuplex Industries (Aust) Pty Ltd of 49-61 Stephen Road Botany NSW 2019.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

- Chemical Name
- CAS Number
- Molecular/Structural Formula
- Molecular Weight
- Spectral Data
- Composition Details
- Manufacturing Process/Sites and Import Volume
- Polymer Identity, Weight Percentage/ Ingredients, Residual Monomers.

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

Canada

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Disperbyk-106

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL METHOD GPC and IR
TEST FACILITY BYK-Chemie

3. COMPOSITION

DEGREE OF PURITY

High

Number Average Molecular Weight (Mn)

Greater than 1000

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified polymer will be imported.

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>	1-30	1-30	1-30	1-30	1-30

USE

Polymer in Disperbyk-106 is a wetting and dispersing additive in solvent based paint products. The main applications include architectural, wood and industrial coatings. The notified polymer is used at between 0.1 and 4.0% in pigment dispersions. Its concentration in the final paint will be less than 0.1%.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY

Not stated.

IDENTITY OF MANUFACTURER/RECIPIENTS

Nuplex Industries Pty Ltd and Degussa Coatings & Colorants Pty Ltd.

TRANSPORTATION AND PACKAGING

The notified polymer is the main component of Disperbyk-106, which will be imported and transported in 25 L or 200 L closed head metal drums. Formulated pigment dispersions will be packaged in 1 L can, 20 or 200 L drums to the customers.

5.2. Operation Description

Once imported, the notified polymer will be transported to the formulation sites.

At the formulation sites, Disperbyk-106 is transferred via pump to the blending vessel or interim containment in a weighing room prior to addition to the blending vessel. The blending vessel will mechanically mix all the components together under enclosed conditions, and then pass the mixture through a horizontal bead mill where the mixture is ground in order to attain the specified strength and shade. The formulated dispersions are fed into a hopper on an automated filling line and filled into different size of containers, which are sealed and labelled after filling. The exact nature of the operation processes may vary slightly between formulators.

The methods of end use include brush painting, roller coating, dipping and spray-painting.

5.3. Occupational exposure

Number and Category of Workers

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration (hour/day)</i>	<i>Exposure Frequency (day/year)</i>
Transport and storage	12	-	200
Dispersion formulation			
• Make-up	80	4	30
• Testing	12	8	30
• Filling	40	8	30
• R & D	12	8	30
Retail sale			
• Tinting	200	0.5	240
Paint application			
• In plant tinting	100	8	200
• In plant spray painting	60	8	200
• Other painting	3000	4	75

Exposure Details

Transport and storage

Occupational exposure of the transport and storage workers to the notified polymer is expected to be negligible and could only arise if there is accidental damage to packaging resulting in leakage of paint products from the containers.

Formulation of pigment dispersions (colourants)

Most operation processes at the formulation sites are enclosed and automatic. Workers may be exposed to the notified polymer if they are required to weigh the polymer solution, or connect and disconnect the pump hoses between the containers and blending vessels. When the mixture is circulated through the bead mill, the operator has no direct contact with the mixture apart from ensuring the bead mill is operating satisfactorily and there are no leakages. The mixture once approved by the QC laboratory is filled into product containers via an automatic filling and labelling machine. Physical contact with the formulated paints will be minimal. The main route of occupational exposure will be dermal, and ocular contamination may occur from splashes, drips, and spills. Manufacturers employ local exhaust ventilation at the mixing and filling areas. Workers will wear face-shield/mask and safety glasses, impervious gloves, impervious apron and safety shoes in the liquid dispersing and pigment charging areas, wear safety glasses impervious gloves and safety shoes in the filling area. The MSDS for Disperbyk-106 recommends safety glasses, impervious gloves and long sleeved clothing for all workers.

QC chemists involved in the testing of the paint products containing the notified polymer will only handle small amounts of samples. Safety glasses, laboratory coats and disposable gloves are worn during the testing procedures.

R&D chemists could be involved in experimental work on dispersions containing the notified polymer and may have exposure to the notified polymer in the laboratory. Likewise Technical Service chemists are likely to use colourants containing the notified polymer in conducting colour matching service work for paint customers. Their exposure to the notified polymer is expected to be low.

In-plant tinting

Workers will fill up canisters on the dispensing machine with the colourants then volumetrically dispensing the colourants into the required paint base. The resultant paint is then mixed by shaking. These operators would be exposed to either the colourants or the paints containing <0.1% notified polymer.

Retail sale

Operations at the point of sale sites include opening cans of colourants and adding a predetermined amount into the paint base. The tinted paint is then uniformly mixed in a suitable shaker machine before supply to the customer. Operators will only handle the colourants containing less than 4% notified polymer and the tinting process is required intermittently at the point of sale. Usually, workers at the point of sale are advised to wear uniforms and protective gloves when handling the cans of colourants.

Paint application

Application of the final paint is estimated to be 80% by brush or roller and 20% by spray application.

Potential exposure of workers performing brush or roller applications would be predominantly via skin contact, some ocular exposure may occur due to splashes and spillages. The paint products contain less than 1% notified polymer, and the workers are expected to wear safety glasses, gloves and industrial protective clothing.

The spray painters who will be exposed to the notified polymer will be fully trained. Typically the spray painter will measure the appropriate amounts of the different components required in a particular formulation into an open container, stir the colourants, and pour this mixture into a spray gun. The spraying of the automobile will be carried out in a laminar flow downdraft spray booth which is designed to rapidly remove aerosol particles and solvent vapour from the atmosphere. Several possible booth designs may be used. In a dry floor booth, the overspray will be collected in filters contained in the floor of the booth; any unremoved particulates will reach the exhaust stack with the solvent vapours. In a wet floor booth, overspray will collect in a pool of water below the grill floor or in a wet scrubber in the exhaust and will be removed with a filter. The residual solids will be disposed of to

secure landfill. The spray booths are subject to AS/NZS/4114.1:1995 *Spray Painting Booths – Design, Construction and Testing* and AS/NZS/4114.1:1995 *Spray Painting Booths – Selection, Installation and Maintenance*. After application of the paint, the automobile parts are heated to cure the coating.

Residual paint mixture is likely to be washed from the equipment manually, using recycled paint solvent, and the washings disposed of by solvent recyclers.

Once the final paint mixture has dried, the notified polymer will be irreversibly bound within the cured matrix and not separately available for exposure to workers.

Spray painters will wear appropriate personal protective equipment at all times; impervious gloves and anti-static flame retardant overalls while mixing the paint, and, in addition, a full face shield and respirator conforming to AS/NZS1715 and AS/1716 while inside the spray booth.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The notified polymer will be imported into Australia and formulated into solvent-based colourants and paints. During coatings production up to 600 kg per annum of waste containing the notified polymer will be generated from minor spills, the cleaning of formulation equipment and the disposal of import drums.

RELEASE OF CHEMICAL FROM USE

It is estimated by the notifier that up to 3000 kg waste containing the notified polymer will be generated as a consequence of use.

Wastes containing the notified polymer resulting from industrial application and empty product drums will be disposed of to landfill. Given that a proportion of the paints that the notified polymer has been incorporated will be used by 'Do-it-Yourself' enthusiasts, there is the 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 resulting in the release of most of the notified polymer to the environment.

5.5. Disposal

Wastes containing the notified polymer will be disposed of to landfill.

5.6. Public exposure

Members of the public are unlikely to experience exposure unless in the event of an accidental spill during transport of the drums containing Disperbyk-106.

Labels of colourants containing the notified polymer indicate that they are used by industry only. However, the tinted paints containing less than 0.1% notified polymer may be sold to the public. The notifier estimates that about 5000 customers may buy these paints and apply them by brush or roller. The exposure would be predominantly via skin contact, however, some ocular exposure may also occur. Some DIY customers may wear glasses, gloves and protective clothing, however, not all DIY customers are expected to wear personal protective equipment.

Once the paint is dried, the notified polymer is trapped within an inert film and not bioavailable.

6. PHYSICAL AND CHEMICAL PROPERTIES

Physical and chemical property data presented below are generated from Disperbyk-106 containing greater than 60% notified polymer in an organic liquid.

Appearance at 20°C and 101.3 kPa	Amber liquid
Boiling Point	> 200°C

Remarks	Decomposition occurred above 200°C.
Density	980 kg/m ³
METHOD	OECD TG 109 Density of Liquids and Solids.
Vapour Pressure	<0.1 kPa at 20°C
Remarks	The method by which the vapour pressure of the notified polymer was not determined provided in the submission. The notifier has indicated that figure provided is a calculated value.
Water Solubility	Not determined
Remarks	Although the notified polymer is a salt, the notifier indicates that it is not soluble in water due to the length of hydrophobic polymeric chains attached.
Hydrolysis as a Function of pH	Not determined
Remarks	The notified polymer does not contain any groups capable of hydrolysis in the environmental pH range of 4-9.
Partition Coefficient	Not determined
Remarks	The notified polymer's low expected water solubility and likely hydrophobic nature are indicative of partitioning into the octanol phase.
Adsorption/Desorption	Not determined
Remarks	The notified polymer is expected to have a high affinity for soil and sediment and be immobile in the environment due to its low expected water solubility.
Particle Size	Not applicable for a liquid product.
Flash Point	> 100°C
Flammability Limits	The notified polymer does not form flammable vapours and thus this property has not been tested. The polymer is combustible.
Autoignition Temperature	Not applicable for a liquid product.
Explosive Properties	Not explosive based on the structure and flash point.
Reactivity	The notified polymer is stable.

7. TOXICOLOGICAL INVESTIGATIONS

Toxicological data presented below are generated from Disperbyk-106 containing greater than 60% notified polymer.

<i>Endpoint and Result</i>	<i>Assessment Conclusion</i>
Rat, acute oral	LD50 >2000 mg/kg bw, low toxicity

7.1. Acute toxicity – oral

TEST SUBSTANCE Disperbyk-106 (polymer solution containing > 60% of the notified polymer)

METHOD OECD TG 423 Acute Oral Toxicity – Acute Toxic Class Method.
Species/Strain Rats/Wistar
Vehicle None
Remarks - Method Oral gavage

RESULTS

<i>Group</i>	<i>Number and Sex of Animals</i>	<i>Dose mg/kg bw</i>	<i>Mortality</i>
1	3(F)	2000	None
2	3(M)	2000	None

LD50 >2000 mg/kg bw
Signs of Toxicity The females had hunched posture and/or chromodacryorrhoea between days 1 and 2.

Effects in Organs No abnormal clinical signs were noted in males.
Remarks - Results None.
LD₅₀ value was established to exceed 2000mg/kg body weight.

CONCLUSION Disperbyk-106 is of low toxicity via the oral route.

TEST FACILITY NOTOX B.V., The Netherlands (2001).

8. ENVIRONMENT

8.1. Environmental fate and toxicity

No environmental fate or toxicity data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Exposure

The majority of the notified polymer will be incorporated into architectural paints and, once applied and dried, poses little risk to the environment. During coatings production up to 600 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 will be exported.

Wastes containing the notified polymer resulting from formulation and application and empty import drums will be disposed of to landfill. Given that this product will be used by ‘Do-It-Yourself’ enthusiasts, there is potential for a portion of equipment cleaning wastes to be discarded into the sewer. Of the volume used domestically, approximately 80% or up to 5 tonnes will be applied by brush and roller by both DIY enthusiasts and professional applicators. It is estimated that approximately 5% or up to 240 kg will be disposed of to sewer as a consequence of improper disposal by DIY enthusiasts, i.e. through the washing of brushes/rollers with water. Release to sewer is expected to be low and diffuse due to the low content of the polymer in paint. At the end of their useful lives, buildings to which the paint has been applied will also be disposed to landfill.

A further 20% (or up to 1.2 tonnes) will be applied by spraying. Assuming up to 40% overspray, close to 500 kg of the notified polymer will be wasted. This will be captured by

engineering controls, dried and disposed of to landfill.

Fate

The notified polymer is not expected to be soluble in water and as such is likely to be immobile in both aquatic and terrestrial compartments. In landfill as a consequence of its low water solubility, it is expected to associate with soil slowly degraded through biotic and abiotic processes to water and oxides of carbon and nitrogen and phosphorous salts. 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 molecular weight (>1000 MW), 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 and nitrogen and phosphorous salts. Accidental or intentional release to sewer is a possibility, however, as a consequence of its low expected water solubility, the notified polymer will 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 likely risk to the environment is expected to be low.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Workers at the pigment dispersion formulation sites will handle the polymer solution containing >60% notified polymer. Dermal or ocular exposure may occur when workers weighing the polymer solution, connecting and disconnecting the pump hoses and when cleaning plant equipment. However, exhaust ventilation systems at the formulation facilities will reduce the exposure. In addition, eye/skin exposure will be limited when using impervious gloves, coveralls and goggles during these processes

Workers involved in tinting and industrial paint application will be exposed by skin contact to the colourants containing <4% notified polymer. During spray painting, full personal protective measure including a respirator is used to reduce the occupational exposure. Skin/eye exposure is considered to be low when applying the painting by brush painting, rolling painting and dipping. Workers will also wear personal protective equipment for these applications.

9.2.2. Public health – exposure assessment

Final paint products containing < 0.1% notified polymer may be available for public use. Dermal/ocular exposure may occur during applications but is expected to be low.

Once the paint is dried, the notified polymer presents only at less than 0.1% in the final dry paint matrix. The notified polymer is contained within an inert film and does not available for exposure to the public.

Members of the public will only experience exposure to the notified polymer in concentrated form in the event of an accidental spill during transportation of the drums containing Disperbyk-106. Decomposition products such as carbon monoxide, carbon dioxide, nitrogen oxides and oxides of phosphorus will occur if Disperbyk-106 was involved in a fire.

9.2.3. Human health - effects assessment

The polymer solution containing >60% notified polymer was of low acute oral toxicity in rats.

Some existing toxicological data are available for the quaternary ammonium portion of the polymer. The quaternary ammonium portion is harmful via acute oral (LD50 = 1070 mg/kg) or acute dermal (LD50 = 1680 mg/kg) routes. It is a severe eye and skin irritant. Therefore, the notified polymer is expected to be a skin and eye irritant, and is classified as a hazardous substance with the risk phrases R36/38 - Irritating to skin and eyes (NOHSC, 1999a).

The pigment dispersions (colourants) containing the notified polymer at <4% are hazardous substances and dangerous goods, however, this is due to other ingredients in the dispersions rather than the notified polymer.

9.2.4. Occupational health and safety – risk characterisation

The notified polymer is a skin and eye irritant, and the workers will handle the polymer solution containing high concentration of the notified polymer at the formulation sites. However, as industrial control measures are fitted at the colourant formulation sites and personal protective equipment is used by the workers, the health risk presented by the notified polymer at the sites is expected to be low.

The health risk due to the notified polymer for the tinters and painters is expected to be low since they only handle colourants and paints with low concentration of the notified polymer. However, as the colourants are hazardous substances and dangerous goods, precautions must be taken by workers, including those at point of sale, in handling colourants containing the notified polymer.

9.2.5. Public health – risk characterisation

Paint products containing the notified polymer may be available to DIY enthusiasts, who could have dermal contact with the paints. However, the risk to public health will be low because the notified polymer is present at very low concentrations (< 0.1%)

Following application, the notified polymer will become trapped within a film and will not be bioavailable. Therefore, the risk to public from exposure to the notified polymer is considered negligible.

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

10.1. Hazard classification

Based on the available data the notified polymer is classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*. The classification and labelling details are:

R36/38: Irritating to eyes and skin.

10.2. Environmental risk assessment

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

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There is Low Concern to occupational health and safety for workers handling the notified polymer under the conditions of the occupational settings described.

10.3.2. Public health

There is Low Concern to public health based on reported use pattern of the notified polymer.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS for Disperbyk-106 and the Uni-Cal 66 colourants provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 Disperbyk-106 and the Uni-Cal 66 colourants 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

REGULATORY CONTROLS

Hazard Classification and Labelling

- Use the following risk phrases for products/mixtures containing the notified polymer:
 - $\geq 20\%$: R36/38 (Irritating to eyes and skin)

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer during formulation:
 - Use of local exhaust ventilation
 - Use of enclosed equipment
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
 - Impervious gloves, eg PVC
 - Goggles, and
 - Protective clothing

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- NOHSC National Guidance Material for Spray Painting (NOHSC, 1999b) should be followed when spray painting is used.
- 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:
 1. 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 (i.e. Collect spilled material with an inert absorbent) and the resulting waste disposed of to an authorised landfill.

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
 - any additional data on toxicological or ecotoxicological studies become availableor
- (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.

13. BIBLIOGRAPHY

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets. [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, AusInfo

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1999a) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

NOHSC (1999b) National Guidance Material for Spray Painting. National Occupational Health and Safety Commission, Canberra, AusInfo.

NOTOX (2001) Assessment of acute oral toxicity with BYK-LP N 7093 in the rat, NOTOX B.V. The Netherlands (provided by the notifier).