

File No PLC/405

17 May 2004

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

FULL PUBLIC REPORT

Polymer in KK7-20

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment and Heritage.

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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.....	4
1. APPLICANT AND NOTIFICATION DETAILS	4
2. IDENTITY OF CHEMICAL.....	4
3. COMPOSITION	4
4. INTRODUCTION AND USE INFORMATION	5
5. PROCESS AND RELEASE INFORMATION	5
6. EXPOSURE INFORMATION.....	5
7. PHYSICAL AND CHEMICAL PROPERTIES	6
8. HUMAN HEALTH IMPLICATIONS	6
9. ENVIRONMENTAL HAZARDS	7
10. RISK ASSESSMENT.....	7
11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	7
12. MATERIAL SAFETY DATA SHEET	7
13. RECOMMENDATIONS.....	8

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FULL PUBLIC REPORT**Polymer in KK7-20****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

The Valspar (Australia) Corporation Pty Limited (ABN 82 000 039 396)
 203 Power St
 GLENDENNING NSW 2761

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name
 Molecular formula
 Structural formula
 Polymer constituents
 Manufacture 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.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

KK7-20 (the notified polymer is manufactured in 30 - < 60% aromatic solvent 150).

CAS NUMBER

Not assigned.

MOLECULAR WEIGHT

Number Average Molecular Weight (Mn)	3141
Weight Average Molecular Weight (Mw)	12007
Polydispersity Index (Mw/Mn)	3.82
% of Low MW Species < 1000	6.7
% of Low MW Species < 500	3.1

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Functional Group	Category	Equivalent Weight (FGEW)
-OH	Low Concern	Not applicable

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Hazard Substance or Dangerous Good	Yes

4. INTRODUCTION AND USE INFORMATION

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>	< 1000	< 1000	< 1000	< 1000	< 1000

USE

Paint resin for application to metal substrates by industrial customers.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

Monomers are loaded to the reactor from 25 kg bags, 1000 kg bulk bags and 200 L drums. The reactor contents heated and mixed and the resin solution drummed off to 200 L drums on pallets. During the reaction, samples are taken and analysed.

The resin solution will be loaded to the mixer together with pigments, mixed and passed through a horizontal bead mill where the pigments are ground to the required dispersion. The resin/pigment mixture flows to a makeup tank where further resins, solvents and additives are added to produce the finished paint formulation which is then drummed off to 200 L drums.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

The polymer will be manufactured at one site in an enclosed system. The potential for environmental release during manufacture is minimal. Control technology includes an in-line incinerator, which would emit CO, CO₂ and water.

There is water generated through distillation and condensation during the resin manufacture at a rate of about 8% of the manufacture volume. Due to the means of water generation and the insolubility of the polymer, it is unlikely that there will be significant amounts of the polymer in the water generated. This water is not released to sewer, but held in a waste water tank and then transported to the Lidcombe plant of Waster Service, NSW.

The manufacturing vessels will not be cleaned. The batch sequence is designed so that any residual resin can be used in the subsequent batch.

Drums (200 L) are filled by gravity feed and the viscous nature of the polymer is expected to limit spills. Releases through vapour emissions are expected to be negligible.

The paint formulation comprises resin, pigments and other additives. These are blended, passed through a grinder and filled into 200 L drums. Spills will be minimal. The paint production equipment will not be cleaned after every batch. The equipment will be washed with a caustic solution, which is held in a tank and disposed of to the Lidcombe plant of Waste Service, NSW, when the tank is full.

Any of the notified polymer that is in the cleaning solution will end up in the sludge at the bottom of the tank, which is also disposed of to Lidcombe, it accounts for approximately 800 kg of the polymer annually. The paint production is carried out at the same site as the resin manufacture.

The paint is used for industrial applications only, so any wastes generated (eg spills or cleaning wastes) will be collected and disposed of to landfill.

The paint will be applied via roller coating at various sites. Roller application is very efficient so there will be at most 10% loss of the polymer. This lost paint will be disposed of to landfill.

Release to water is expected to be negligible, and releases on land are likely to be restricted in landfill, and in a fairly dispersed manner throughout the life of the products coated with the paint containing the polymer.

The notified polymer is not expected to cross biological membranes due to its molecular weight and low water solubility and is therefore not expected to bioaccumulate.

6.2. Summary of Occupational Exposure

Dermal and ocular exposure can occur during certain manufacture and formulation processes. However, exposure to significant amounts of the notified polymer is limited because of the automated nature of the processes, engineering controls and personal protective equipment worn by workers. Similarly, application of the paint is in a dedicated enclosed plant and worker exposure is limited. In addition limited exposure may occur during cleaning of tanks and lines and during QC testing.

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

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

6.3. Summary of Public Exposure

The notified polymer will not be available to the public in either form of the manufactured resin solution or the paint. Public exposure should not occur during resin manufacture, paint formulation or paint application. Once the paint has been applied to the substrate and cured, the notified polymer will not be bioavailable.

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

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Yellow solvent solution (as manufactured)
Melting Point/Glass Transition Temp	Manufactured as resin solution
Density	1100 kg/m ³ (resin solution)
Water Solubility	< 10 mg/L at 20°C (< 10%)
Reactivity	Stable under normal environmental conditions
Degradation Products	None

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. Low water solubility and likely hydrophobic nature are indicative of the polymer partitioning into the octanol phase and immobility in soil. There may be some residual carboxylic acids, which are expected to have typical acidity.

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

No ecotoxicity data were provided for the notified polymer. There are no suitable structural activity relationships available to model ecotoxicity of this polymer.

10. RISK ASSESSMENT**10.1. Environment**

While no toxicity data are available, based on exposure and use pattern, the notified polymer is unlikely to pose an unacceptable risk to the environment.

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.

10.3. Public health

As there will be no exposure of the public to the notified polymer [or products containing the notified polymer](#) the risk to the public from exposure to the notified polymer is considered low. 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 [bound within a matrix](#) and unlikely to be bioavailable.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS**11.2. Environmental risk assessment**

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

11.3. Human health risk assessment**11.3.1. Occupational health and safety**

There is No Concern to occupational health and safety under the conditions of the occupational settings described.

11.3.2. Public health

There is Negligible Concern to public health when used as described.

12. MATERIAL SAFETY DATA SHEET**12.1. Material Safety Data Sheet**

The notifier has provided MSDS in accordance with the schedule item B 12 of the *ICNA Act*. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- 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 the manufacturers to minimise environmental exposure during manufacture and use of the notified polymer and paint containing it:
 - Do not release the resin or paint products to sewer. Do not allow resin, paint products or containers to contaminate drains or waterways.

Disposal

The notified polymer should be disposed of by incineration or to landfill.

Emergency procedures

- Spills/release of the notified polymer should be contained by absorbent material (eg sand), manually collected (along with absorbent material) and placed in a sealable, labelled container for disposal to landfill.

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.