

File No PLC/502

3 December 2004

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

**FULL PUBLIC REPORT**

**Polymer in Joncryl 660**

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**Director  
Chemicals Notification and Assessment**

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**FULL PUBLIC REPORT****Polymer in Joncryl 660****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

JohnsonDiversey Australia Pty Ltd (ABN 90000 065 725)

29 Chifley Street

Smithfield NSW 2164

## NOTIFICATION CATEGORY

LRCC: Polymer of Low Concern

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents and Use Details.

## 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 known.

## NOTIFICATION IN OTHER COUNTRIES

None known.

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Joncryl 660

**3. COMPOSITION**

## PLC CRITERIA JUSTIFICATION

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

The notified polymer will be imported as a water based polymer emulsion and then formulated into an ink to print corrugated boxes.

##### 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>	20	25	30	35	40

##### USE

This notified polymer will be used as a stabilizer in an ink formulation at concentrations <30 weight percent.

#### 5. PROCESS AND RELEASE INFORMATION

##### 5.1. Operation Description

The notified polymer will be imported into Australia in a 40% solids water based polymer emulsion contained in a closed head plastic drum. It will be transported from the port to a warehouse by truck where it will be formulated into ink. During formulation, the notified polymer will be weighed and then transferred to an ink mixing vessel. Once combined with other ingredients, it will be filled into 1-5L or 200 kg plastic containers. The notified polymer comprises <30 wt % of the finished wet ink formulation.

The packaged containers are shipped to a printing company who will apply the ink to paper used in the manufacture of corrugated boxes. The ink will be applied using standard printing methods in the presence of adequate ventilation.

#### 6. EXPOSURE INFORMATION

##### 6.1. Summary of Occupational Exposure

While transporting and warehousing this polymer, it is unlikely that workers will come into contact with the notified polymer, except when packaging is accidentally breached.

During ink formulation, dermal and ocular exposure may occur while manually weighing and transferring the polymer to a mixing kettle, and packaging of the final ink product. Workers are instructed to wear impermeable gloves, eye protection and protective clothing.

During application of the ink onto the paper, minimal exposure is expected as standard application method is expected to be primarily automated. Workers are also instructed to wear protective gear to minimise exposure to the ink product.

Once the ink has dried, the polymer becomes part of a dried coating and exposure is not expected

##### 6.2. Summary of Public Exposure

The notified polymer will not be available to the public. The public will come into contact with the dried form of the notified polymer when handling cardboard packaging materials printed with ink containing the notified polymer. At this stage, the polymer is not readily available for exposure.

##### 6.3. Summary of Environmental Exposure

###### 6.3.1. Environmental Release

The only mechanism for the notified polymer to reach the environment during shipping, transport, or warehousing is through an accidental spill or packaging leak. In addition, during formulation spills are minimal. In the event that a spill occurs, it will be contained by collecting the material and an absorbent material will be used to aide this cleanup. Waste from the spill will be sent to an off site waste disposal facility. There will also be wastes from empty containers and from cleaning equipment both during ink formulation and use. Levels from these are expected to be low, though some may be released to the

sewer rather than landfill. Total waste from ink manufacture and use is expected to be <4%.

Under normal ink use, the loss of the notified polymer is expected to be limited to loss during accidental spillage. Spills will be handled as noted above. Most of the notified polymer will be bound to cardboard and its fate will be dictated by paper disposal trends. The 3 main routes of paper disposal are landfill, incineration and recycling. Recent literature suggests that current paper recycling rates in Australia are 70-92% (Australian Environmental Review, 2001). Consequently, most of the cardboard containing the notified polymer could be recycled.

#### 6.3.2. Environmental Fate

The notified polymer does not readily hydrolyse under normal pH, is considered to be moderately water soluble and is expected to be ionised above pH 5.5. Paper recycling is carried out in paper mills, where at least primary sedimentation is likely to occur, and with some facilities also having biological treatment facilities. Therefore, in these facilities it is expected that the notified polymer will partially partition into sludge under the usual waste treatment pH, and eventually be disposed of in landfill with other waste sludge. The remainder (about 50%) will stay in the water column. It is anticipated that prolonged residence in an active landfill will eventually degrade the notified substance contained in sludge or in cardboard disposed of directly through normal garbage.

Incineration of the waste paper will destroy the compound with the generation of water vapours and oxides of carbon and nitrogen.

Except for cardboard recycling and equipment, or container washing, the polymer is not expected to enter the aquatic environment. In any case, the high molecular weight of the polymer will preclude absorption across biological membranes. Hence, the notified polymer is not expected to bioaccumulate.

### 7. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	Whitish liquid.
<b>Melting Point/Glass Transition Temp</b>	Approximately 50 °C
<b>Density</b>	1130 kg/m <sup>3</sup>
<b>Water Solubility</b>	<187 mg/L at 20°C
<b>Reactivity</b>	Stable under normal environmental conditions.
<b>Degradation Products</b>	Trace amounts of starting monomers may be produced on heating to 300C.

#### 7.1. Comments

Water solubility and hydrolytic stability of the notified polymer were conducted in accordance with OECD Test Guideline 120 and 111, respectively. The results of the water solubility test showed slight water solubility across pH range of 2-9. However, the notified polymer was found to be hydrolytically stable throughout this pH range.

### 8. HUMAN HEALTH IMPLICATIONS

#### 8.1. Toxicology

The following toxicological end-points were submitted:

<i>Endpoint</i>	<i>Result</i>	<i>Classified?</i>	<i>Effects Observed?</i>
Rat, acute oral LD50 >5000 mg/kg bw	low toxicity	no	no
Rabbit, skin irritation	non-irritating	no	no
Rabbit, eye irritation	non-irritating	no	no

All results were indicative of low hazard.

#### 8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The submitted toxicology results support the conclusion of low hazard.



## **9. ENVIRONMENTAL HAZARDS**

### **9.1. Ecotoxicology**

No ecotoxicological data were submitted.

### **9.2. Environmental Hazard Assessment**

Polymers containing multiple carboxylic acid groups may prove moderately toxic to algae (Nabholtz et al, 1993). The hypothesised mode of action is chelation of nutrient metal ions need for growth. In the presence of calcium or hard water the possible algal toxicity of the polymer is further reduced (Nabholtz et al, 1993).

## **10. RISK ASSESSMENT**

### **10.1. Environment**

Given the diffuse and widespread use of the ink product and scattering of paper recycling plants throughout Australia, it is predicted that the notified polymer is unlikely to pose an environmental risk in the aquatic environment.

It is expected that any waste generated during manufacture and use (<4% of import) will be disposed of by incineration or to landfill. In landfill, the notified polymer contained in sludge or in cardboard will degrade slowly via biotic or abiotic processes. Therefore, environmental risk from the reported use pattern of the notified polymer is likely to be low.

### **10.2. Occupational Health and Safety**

Dermal exposure will be the main route of exposure during formulation, and packaging and application of the final ink product. However, the exposure will be considered indirect and intermittent. Overall, the OHS risk presented by the notified polymer is expected to be low due to the engineering controls in place and the use of personal protective equipment when handling the polymer emulsion and the ink product containing it.

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**

The notified polymer and the ink products containing it are not sold to the public. Dermal contact with the dried form of the notified polymer is limited to handling cardboard packaging material printed with ink containing the notified polymer. Once the polymer is applied and dried, it becomes part of the paper container and hence is not bioavailable. The risk to the public health from the notified polymer is considered very 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 a stabilizer in an ink formulation.

## 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

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.
  - Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
- Service personnel should wear disposable gloves and ensure adequate ventilation is present during routine maintenance and repairs.
- 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.

#### Disposal

- The notified polymer should be disposed of to landfill or by incineration.
- Empty containers should be sent to local recycling or waste disposal facilities.

#### Emergency procedures

- Spills or release of the notified polymer should be handled by absorption with sand and placing into a suitable container for disposal.

### 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.

No additional secondary notification conditions are stipulated.

## 14. BIBLIOGRAPHY



Australian Environmental Review (2001) On track for best ever recycling rates. Australian Environmental Review **16** (1), pp. 16.

Nabholz JV, Miller P & Zeeman M (1993) Environmental risk assessment of new chemicals under the Toxic Substances Control Act (TSCA) Section Five. In: Landis WG, Hughes JS & Lewis MA ed. Environmental toxicology and risk assessment. Philadelphia, PA, American Society for Testing and Materials, ASTM STP 1179.