

File No PLC/803

December 2008

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

FULL PUBLIC REPORT

LEWATIT MonoPlus TP 220

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, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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**Director
NICNAS**

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FULL PUBLIC REPORT**LEWATIT MonoPlus TP 220****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Lanxess Pty Ltd (ABN: 58 071 919 116)
Unit 1, 31 Hill Road
Homebush Bay NSW 2127

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, CAS Name & Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Reactive Functional Groups, Use Details, and Import Volume

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Lewatit MonoPlus TP 220

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10⁶ Da

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains high concern functional groups. However, as an ion-exchange resin, the Number Average Molecular Weight (Mn) is > 10000 Da; will be imported and used in a solid form; is not water soluble or dispersible in water, and it will not be released to sewer or the aquatic environment. Therefore, the notified polymer meets the PLC criteria.

3. PLC CRITERIA JUSTIFICATION*Criterion*

Molecular Weight Requirements
Functional Group Equivalent Weight (FGEW) Requirements
Low Charge Density
Approved Elements Only
Stable Under Normal Conditions of Use
Not Water Absorbing
Not a Hazard Substance or Dangerous Good

Criterion met

Yes
Yes
Yes
Yes
Yes
Yes
Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Opaque odourless beads
Melting Point/Glass Transition Temp	>200°C
Density	1170 kg/m ³
Water Solubility	The notified polymer is not water soluble. During the production, the product is often washed with organic solvents and water. The finished polymer is virtually free from water soluble fractions.
Dissociation Constant	pKa = approx. 4.75.
Particle Size	Size of the resin beads range between 0.62 and 0.73 mm. With a nominal diameter of 0.68 mm.
Reactivity	Stable under normal environmental conditions. Avoid contact with strong oxidising agents as it may cause hazardous reactions.
Degradation Products	None under normal conditions of use. Formation of carbon monoxide, carbon dioxide, nitrogen oxides and other toxic gases in the event of fire or during thermal decomposition may occur.

5. 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>	300-1000	300-1000	300-1000	300-1000	300-1000

Mode of Introduction

There will be no local manufacturing or reformulation of the notified polymer.

The notified polymer will be imported in bead form, packed in 1,000 L bulker bags or 25 L plastic bags shrink-wrapped onto 1,000 L pallets. It will be transported from wharf to a warehouse and stored until required for dispatch to customers. The notified polymer will remain in its original packaging until it reaches the customer site.

Use and Operation Description

Use

The notified polymer will be used as an ion-exchange resin in the mining industry.

Operation Description

The notified polymer resin will be delivered to the site of use and stored under cover until required. When required, the sealed bags containing the notified polymer are moved by forklift to the process unit.

The resin is manually poured into a holding tank through “bottom end opening” of bags and mixed with thickened slurry of ground ore, which has. The ground ore has been previously treated with acid (and possibly an activated solvent depending on the processing path) to form a metal salt. The mixing with the slurry occurs and the resin absorbs the required metal from the salt. The resin is then separated from the ore by passing over screens, the mesh size of which is larger than the ore particles but smaller than the resin.

The collected resin is then transferred to large columns where the resin is treated with mineral acid to recover the metal and prepare the resin for re-use. The resin can be re-used until eventually it loses efficiency and would be replaced over a five to ten year period. The used resin can be disposed of to land fill or incinerated.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Occupational Health and Safety Risk Assessment

Dermal and ocular exposure may potentially occur during certain processes involving the notified polymer. Personal protective equipment (PPE), such as safety glasses, impervious gloves and coveralls, is provided to workers during these processes. During ion-exchange use in column, the potential for exposure is low as the resin beads containing the notified polymer are in sealed equipment, which is operated automatically.

Respirable sized ($< 10 \mu\text{m}$) dust of water insoluble, high molecular weight polymers ($> 10000 \text{ Da}$) have the potential to cause lung overloading. However, significant inhalation exposure is not expected from the proposed mode of use in the form of the notified polymer as introduced.

Overall, the OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers and the low intrinsic hazard of the polymer.

The level of atmospheric nuisance dust should be maintained as low as possible. The exposure standard for atmospheric dust is 10 mg/m^3 . However, under the conditions of use, it is unlikely that a significant amount of atmospheric dust would be generated.

Public Health Risk Assessment

The notified polymer is intended only for use in industry and as such public exposure to the notified chemical is not expected.

As there will be no exposure of the public to the product containing the notified polymer, the risk to the public from exposure to the notified polymer is considered to be negligible.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment. The notified polymer contains amino groups which are of high concern for aquatic toxicity, but has a $M_n > 10^6 \text{ Da}$, is not water soluble, and will be imported and used only in the solid phase as an ion-exchange resin. Thus, there is low concern for aquatic toxicity.

Environmental Risk Assessment

As the notified polymer resin is in the form of beads, any spills will be efficiently cleaned up, and empty import bags will contain little in the way of residue. Spills and bag residues will be disposed of to landfill. The notified polymer resin will be used on mining sites in filter columns to extract heavy metal cations. The filter columns are not cleaned between emptying and refilling with resin, therefore no waste cleaning stream is created. The ultimate fate of the resin, once spent, is to be buried in landfill on the mine site, where it is expected to remain immobile within soil. As the notified polymer will not be released to water when it is used in the typical manner outlined, it is not considered to pose a risk to the environment.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

Environmental risk assessment

Based on the reported use pattern, the notified polymer is not considered to pose a risk to the environment.

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.

- 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 *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

Disposal

- The notified polymer should be disposed of by landfill.

Storage

- Store in original container protected from direct sunlight in a dry, cool, well ventilated area, away from incompatible materials and food and drink.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the polymer under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified polymer, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 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 Section 64(2) of the Act; if
 - the function or use of the notified polymer has changed from use as an ion-exchange resin in the mining industry, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased or is likely to increase, significantly;
 - if the notified polymer has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

Material Safety Data Sheet

The MSDS of the product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.