

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

### POLYMER OF LOW CONCERN PUBLIC REPORT

#### Lewatit S 8227

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This 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**

November 2011

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## SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1031	Lanxess Pty Ltd	Lewatit S 8227	No	≤60 tonnes per annum	Ion exchange resin in water purification systems

## CONCLUSIONS AND REGULATORY OBLIGATIONS

### Human Health Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

### Environmental Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

### Health and Safety Recommendations

- 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.
- Use of the notified polymer in household water purification systems should be in accordance with the relevant State or Territory regulations.

### Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

### Disposal

- The notified polymer should be disposed to landfill.

### Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
  - Store in a segregated and approved area.

- Store in original container protected from direct sunlight in a dry, cool and well ventilated area, away from incompatible materials (oxidising substances, strong acids, strong bases).

### **Emergency Procedures**

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

### **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 an ion exchange resin in water purification systems, or is likely to change significantly;
  - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
  - 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 notified polymer 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 notified polymer containing the notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

## ASSESSMENT DETAILS

### 1. APPLICANT AND NOTIFICATION DETAILS

#### Applicants

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

#### Exempt Information (Section 75 of the Act)

Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities and use details.

### 2. IDENTITY OF POLYMER

#### Marketing Name(s)

Lewatit S 8227  
Lewatit CNP P  
Lewatit CNP C  
Lewatit CNP SF 1

#### Reactive Functional Groups

The notified polymer contains only low concern functional groups.

### 3. PLC CRITERIA JUSTIFICATION

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

The notified polymer meets the PLC criteria.

### 4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Solid light yellow/opaque beads
Melting Point/Glass Transition Temp	Not determined. Decomposition expected prior to melting (at >100 °C)
Density	1180 kg/m <sup>3</sup> at 20 °C
Water Solubility	Not determined. The notified polymer is expected to be insoluble in water due to the crosslinked structure.
Dissociation Constant	A pKa value of about 4 is expected due to the presence of functional groups that can dissociate in water.
Particle Size	Bead size 0.4 – 1.6 mm. The amount of fine particulates present will be minimised by washing the beads as part of their production process
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

## 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>	60	60	60	60	60

#### Use

The notified polymer will not be manufactured in Australia.

The notified polymer will be imported into Australia at 100% concentration and will be repackaged into stainless steel housing units for use as an ion exchange resin in household water purification systems (for the decarbonisation and softening of drinking water).

## 6. HUMAN HEALTH RISK ASSESSMENT

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

While workers will handle the solid polymer at 100% concentration during repackaging processes, inhalation exposure to the notified chemical is not expected, based on the size of the polymer beads and the prior removal of fine particulates. In addition, the packaging processes are expected to occur under exhaust ventilation and workers will be wearing appropriate PPE (including dust mask).

The polymer exchange resin is intended for use in domestic water purification systems. The filtration units will be installed and changed (as necessary) by trained workers. The notified polymer is not water soluble, thus direct exposure of the public to the notified polymer (through drinking water or other) is not expected.

Therefore, the risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

## 7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Insoluble polymers are not expected to be toxic unless the material is in the form of finely divided particles. Most often, the toxicity of these polymer particles does not depend on a specific reactive structural feature, but occurs from occlusion of respiratory organs such as gills. For these polymers, toxicity typically occurs only at high concentration; acute toxicity values are generally >100 mg/L and chronic toxicity values are generally >10 mg/L (low toxicity).

The notified polymer will be imported as final product in form of crosslinked solid beads, and will be repackaged locally into water filtration units. In the case of any spills, the beads are expected to be collected either by manual sweeping or by vacuuming for disposal to landfill. Empty import containers are also expected to be disposed of to landfill. At the end of the useful life of the resin, the filtration housing unit will be returned to the manufacturer. The unit will be opened, and the resin will be removed for disposal to landfill. The empty housing will be cleaned and reused.

In conclusion, most of the notified polymer will be end up in landfill in forms of residues, collected spills or used resin. The notified polymer is not expected to be readily biodegradable. It is also not expected to cross biological membranes due to its high molecular weight and low water solubility and is therefore not expected to bioaccumulate. In landfill, the notified polymer is expected to eventually degrade via abiotic and biotic pathways to form water and oxides of carbon. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.