

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

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in SA-1020

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and the Department of the Environment, has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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**

March 2014

Part 2 – PLC Self Assessment Exempt Information

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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
SAPLC/160	Halliburton Australia Pty Ltd	Polymer in SA-1020	No	≤ 10 tonnes per annum	Component of cement additive

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.

- In the interest of occupational health and safety, the following precautions should be observed for use of the notified polymer as introduced in powder form:
 - The level of atmospheric nuisance dust should be maintained as low as possible. The Safe Work Australia exposure standard for atmospheric dust is 10 mg/m³
- Water insoluble high molecular weight polymers used in the respirable size range (< 10 µm) have the potential to cause lung overloading. Respiratory protection and local exhaust ventilation should be used to prevent inhalation exposure.
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency Procedures

- Spills/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 Component of cement additive, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
 - 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 (M)SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS**Applicants**

Halliburton Australia Pty Ltd (ABN: 73 009 000 775)
Level 17, 444 Queen Street,
BRISBANE QLD 4000

Exempt Information (Section 75 of the Act)

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

2. IDENTITY OF POLYMER**Marketing Name(s)**

Polymer in SA-1020 (notified polymer is present at 60–100%)

Molecular Weight

Number Average Molecular Weight (Mn) > 10,000 Da

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	White powder.
Melting Point/Glass Transition Temp	Decomposes before melting
Density	1232 kg/m ³ at 0 °C
Water Solubility	Insoluble. Expected to be very low as the notified polymer is highly cross-linked and has a high molecular weight.
Dissociation Constant	Not determined. The notified polymer is a salt and is expected to be ionised under normal conditions.
Particle Size	10% ≤ 1.83 µm 50% ≤ 8.94 µm 90% ≤ 22.6 µm
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>
Tonnes	1–10	1–10	1–10	1–10	1–10

Use

The notified polymer will not be manufactured or reformulated in Australia. The notified polymer will be imported as a powder (in SA-1020) contained in a 50 lb. (22.7 kg) sack at up to 100% concentration. It will be imported into ports of Australia (such as Adelaide, Melbourne, Perth, Brisbane, Darwin) and stored at the notifier's warehouse before being transported by truck (on-shore) or ship (off-shore) to well site field locations.

The notified polymer will be used as part of a suspending agent (SA-1020) in cement blends for use in oil and gas well casings. SA-1020 is blended on site with cement and other cement additives, which is then mixed with water and pumped downhole.

6. HUMAN HEALTH RISK ASSESSMENT

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

The particle size of the notified polymer indicates that a portion will be respirable (< 10 µm). The notified polymer is water insoluble and therefore, if inhaled it may not be readily cleared from the upper respiratory tract and may pose a lung overloading risk. The expected use of personal protective equipment such as dust masks and largely automated processes when handling the powdered notified

polymer by reformulation workers should reduce inhalation exposure levels and hence lower the risk of lung overloading.

7. ENVIRONMENTAL RISK ASSESSMENT

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer will not be manufactured in Australia. Under specific formation conditions, the product containing the notified polymer will be introduced at oil and/or gas wells into the target formation (i.e. the oil and gas-producing stratigraphic unit). The product containing the notified polymer will be blended with cement and other cement additives on site for use in oil and gas well casings. No significant release is expected from transportation and the blending/reformulation process. Any spills at the well site will be contained using standard control measures. Also, release to the environment could only occur through accidental spills or leaks of the storage containers during shipping, transport and warehousing. Empty storage containers containing notified polymer residues will be disposed of in accordance with all applicable laws.

The notified polymer will be used in the cement casing and, therefore, it is expected to be bound up in the cement matrix after use. Consequently, there will be no significant amount of the notified polymer, introduced into the target formation, being released to the environment.

ENVIRONMENTAL FATE

The vast majority of the notified polymer will be bound in the concrete matrix and will not be released to the environment in any significant quantity. Concrete from demolition operations is expected to be eventually disposed of to landfill. In landfill, leaching of the notified polymer is not expected given it is trapped in the concrete matrix. The notified polymer is not intended to absorb water, and is designed with a high crosslink density to minimise water absorption under ambient conditions. Under normal use conditions, no degradation of the notified polymer occurs. Based on its low water solubility, anionic characteristics and high molecular weight, the notified polymer is expected to have very low mobility in soils and sediments. The notified polymer has a relatively high molecular weight and will be trapped in concrete solids after application, which will preclude absorption across biological membranes and thus it is unlikely to bioaccumulate. With time, the notified polymer is expected to be degraded via abiotic or biotic pathways into water, oxides of carbon, nitrogen and sulphur, and inorganic salts.

Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This does not apply to the notified polymer. The toxicity to algae is likely to be reduced due to the presence of calcium ions in water, which will bind to the functional groups. Anionic polymers are generally of low hazard to fish and aquatic invertebrates.

Environmental Risk Assessment

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

Level of Concern for the Environment

The polymer is not considered to pose an unreasonable risk to the environment based on its assessed use pattern.