File No: SAPLC/84

24 April 2008

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

GENIOSIL STP-E10

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 Ageing and the Department of the Environment, Water, Heritage and the Arts 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 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

GENIOSIL STP-E10

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT
WACKER CHEMIE GmbH ABN 11 607 113 062
C/- 18/20 DUERDIN STREET, CLAYTON NORTH VICTORIA 3168

NOTIFICATION CATEGORY
Self Assessment: 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, Structural Formula, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details.

NOTIFICATION IN OTHER COUNTRIES
EU(2004)
USA(2006)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
GENIOSIL® STP-E10; GENIOSIL® STP-E30; WACKER STP 414000 VP;
SLM 414000

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (NAMW) >10000 with <5% Low MW species
<1000 Da and <2% Low MW species
<500 Da.

REACTIVE FUNCTIONAL GROUPS
Alkoxysilanes are considered reactive functional groups of high concern but NAMW >10000 so the notified polymer still meets the PLC criteria.

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
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	Colourless viscous liquid
Melting Point	< -100°C
Density	1006.9 kg/m^3 at 20°C
Water Solubility	0.01 g/L at 20°C

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	50	50	50	50	50

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported by sea at >95% in IBC-containers, steel drums, and PE bottles. Transport is via sea, road, and rail.

Reformulation/manufacture processes

The notified polymer is not manufactured in Australia.
Customers receiving the notified polymer will mix it with other components (fillers, plasticisers, additives etc.) in compounding equipment and continuous reactors to make sealants/adhesives.

The final product will be filled in pails and cartridges, depending on the use.

Use

The notified polymer will be used at <50% as a reactive binder in sealant and adhesive products. These products will be used for applications such as sealants for connection and expansion joints in the construction industry, elastic adhesives in structural and automotive engineering for moderate mechanical loads, chemically curing universal adhesives or mould-making and potting compounds.

The majority of products containing the notified polymer will be used in parquetry flooring adhesive (sold in pails) and assembly adhesives (sold in cartridges) for construction, industrial and DIY use.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

The notified polymer (>95%) will be used in the production of sealant and adhesive formulations in standard compounding equipment. Typically the notified polymer will be pumped directly from the container it is delivered in into the closed compounding equipment where it will be compounded. Exposure is unlikely during this process.

Adhesive/sealant products containing the notified polymer (<50%) will be packaged into pails/cartridges via an automated process and therefore dermal and ocular exposure will be limited to accidental spills. Workers are expected to wear gloves to minimise dermal exposure during all formulation processes.

The sealant/adhesive product containing the notified polymer (<50%) will be applied to joints on a variety of substrates using a spittle or scraper. There is potential for dermal exposure during application. However, ocular and inhalation exposure is not anticipated due to the high viscosity of the product containing the notified polymer and the rapid curing time of the adhesive/sealant product. Once cured into a cross-linked polymer matrix, the notified polymer will be unavailable for exposure.

PUBLIC EXPOSURE

Public exposure is possible during application of the adhesive/sealant products containing the notified polymer at <50% by DIY users. The potential for exposure via the dermal route is similar to that described above. Once cured, the notified polymer will be bound in the matrix of the final article, elastic joint or adhesive film.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. While, there is concern over the potential for alkoxysilanes to cause lung toxicity from inhalation of vapours or aerosols (based on data for low molecular weight alkoxysilanes), the notified polymer has an FGEW >5000 Da and therefore is not considered to be of concern.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

The notified polymer is a high molecular weight alkoxysilane. Low molecular weight alkoxysilanes, such as trimethoxysilane, are known to have the potential to cause adverse lung reactions. However, given the high molecular weight of the alkoxysilane, the hazard is assumed to be low. Further, there is low potential for inhalation exposure, therefore the overall risk to occupational health and safety is considered low.

Also, Methanol may be formed by hydrolysis of the notified polymer. Therefore contact with water should be avoided.

PUBLIC HEALTH

Members of the public may make dermal contact with adhesive/sealant products containing the notified polymer at <50% during application. However, the risk to public health is expected to be negligible because the notified polymer is assumed to be of low hazard via the dermal route, and will be unavailable for exposure once the product containing the notified polymer has cured as it will be bound within a matrix.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer will be reformulated mainly in closed and automated systems. The import containers (Packages) will be cleaned with solvent and then recycled or incinerated. The solvent will be recycled or sent for incineration.

The notified polymer will be blended with other components in mixing equipment (extruders). These will be cleaned with solvent; then recycled or sent for incineration. The blended product is a paste which cures in contact with air moisture to form a crosslinked high molecular weight elastomer and small amounts of methanol. None to negligible amounts of the notified polymer will be released to the environment during these processes.

Sealants/adhesives containing the notified polymer will be applied predominantly by professional applicators. The losses from parquetry flooring spray applications are likely to be < 5% through splashing etc. The overspray may fall on and will adhere to the adjacent surfaces such as walls, ground, etc. Use as assembly adhesives is likely to be lower, with a similar outcome. In both cases curing will occur. It is estimated that up to 2% of the notified polymer contained in sealant/adhesive products would remain as residue in the steel containers after emptying. This will ultimately be disposed of to landfill along with the containers. As there will only be 10% 'do-it-yourself' use, losses to the sewer from washing of brushes and rollers will be <1%.

ENVIRONMENTAL FATE

The notified polymer is expected to be stable under normal environmental conditions. Due to its low water solubility, the notified polymer and especially its final products in solid wastes are expected to remain bound within the soils and sediments of landfills and eventually degrade through biotic and abiotic processes. If spilt on land, the notified polymer is expected to bind to soil and become immobilised in the soil layer. If spilt to water, it is not expected to dissolve but rather disperse, hydrolyse to form silanols, methanol, and crosslinked, high moleculare weight polymers, which will settle to sediment. It is not expected to be readily biodegradable but due to its high molecular weight, it is not expected to bioaccumulate. Incineration of the notified polymer will result in the formation of water vapour, carbon dioxide and Silicone oxide.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

7.3. Environmental Risk Assessment

The notified polymer is expected to hydrolyse rapidly in the aquatic environment to form methanol, silanols and crosslinked higher molecular weight polymers. The notified polymer is not expected to be toxic to aquatic organisms or to bioaccumulate in the environment.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety and Public Health

When used in the proposed manner, and under the conditions of the occupational settings the notified polymer is not considered to pose an unacceptable risk to workers and public health.

8.2. Level of Concern for the Environment

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

9. 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.

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

- Prevent material from entering surface waters, drains or sewers and soil.
- Contain any fluid that runs out using suitable material (e.g. earth).
- Retain contaminated water/extinguishing water.
- Dispose of in prescribed marked containers.

Disposal

- The notified polymer should be disposed of by incineration in a special waste incinerator.
- Completely discharge containers (no tear drops, scraped carefully). Containers may be recycled or re-used.

Storage

- Keep away from incompatible substances (i.e. water or protic substances, will form methanol (in small amounts)).
- Protect against moisture. Store in original container only. Keep container tightly closed and store in a cool, well-ventilated place.

Emergency procedures

- Do not flush away with water.
- For small amounts: Absorb with a liquid binding material such as diatomaceous earth and dispose of according to local/state/federal regulations.

- Contain larger amounts and pump into suitable containers.
- Clean any slippery coating that remains using a detergent / soap solution or another biodegradable cleaner.
- Use exhaust ventilation to remove vapours.

10.1. 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 chemical 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 chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical 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 polymer has changed from a binding agent used in adhesives and sealants;
- the amount of polymer being introduced has increased from 50 tonnes per annum, or is likely to increase, significantly;
- if the polymer has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the 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.

10.2. 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.