

File No: NA/524

Date: August 1997

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**Polymer in Sika Primer 210T/35**

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act* 1989 (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 Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Department of the Environment, Sport, and Territories and the assessment of public health is conducted by the Department of Health and Family Services.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the following hours:

Monday - Wednesday	8.30 am - 5.00 pm
Thursday	8.30 am - 8.00 pm
Friday	8.30 am - 5.00 pm

For Enquiries please contact the Administration Coordinator at:

*Street Address:* 92 Parramatta Rd Camperdown, NSW 2050, AUSTRALIA

*Postal Address:* GPO Box 58, Sydney 2001, AUSTRALIA

*Telephone:* (61) (02) 9577-9466 *FAX* (61) (02) 9577-9465

Director  
Chemicals Notification and Assessment

**FULL PUBLIC REPORT****Polymer in Sika Primer 210T/35****1. APPLICANT**

Sika Australia Pty Ltd of 55 WETHERILL PARK NSW 2164 has submitted a limited notification statement in support of their application for an assessment certificate for 'Polymer in Sika Primer 210T/35'.

**2. IDENTITY OF THE CHEMICAL**

Polymer in Sika Primer 210T/35 is not considered to be hazardous based on the nature of the chemical and the data provided. Therefore the chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data, details of the polymer composition and details of exact import volume and customers have been exempted from publication in the Full Public Report and the Summary Report.

**Other Names:**

Polyurethane prepolymer IS 95(180).

Modified polyurethane resin

**Trade Name:**

Primer 210T/35 (containing 58% of the notified polymer)

**Number-Average**

**Molecular Weight (NAMW):** > 1 000

**Maximum Percentage of Low Molecular Weight Species**

**Molecular Weight < 500:** < 5%

**Molecular Weight < 1 000:** < 10%

**Method of Detection and Determination:**

gel permeation chromatography (GPC) was provided by the notifier to confirm the NAMW and a gas chromatogram for low molecular weight species

### 3. PHYSICAL AND CHEMICAL PROPERTIES

Physico-chemical data were provided for the formulated product Primer 210T/35 unless otherwise stated.

<b>Appearance at 20°C and 101.3 kPa:</b>	clear semi-viscous liquid
<b>Boiling Point:</b>	approximately 65°C
<b>Specific Gravity:</b>	0.92
<b>Vapour Pressure:</b>	128 mbar at 25°C
<b>Water Solubility:</b>	not determined (see below)
<b>Partition Co-efficient (n-octanol/water):</b>	not determined (see below)
<b>Hydrolysis as a Function of pH:</b>	not determined (see below)
<b>Adsorption/Desorption:</b>	not determined (see below)
<b>Dissociation Constant:</b>	not determined (see below)
<b>Flash Point:</b>	-4°C
<b>Flammability Limits:</b>	> 1%
<b>Autoignition Temperature:</b>	425 - 525°C
<b>Explosive Properties:</b>	non-explosive
<b>Reactivity/Stability:</b>	the notified polymer will slowly crosslink on contact with moisture in the atmosphere; the polymer is not compatible with oxidising or reducing agents, acid or alkaline materials

#### Comments on Physico-Chemical Properties

No solubility data for the polymer was provided, and the presence of the hydrolysable methoxysilyl groups would preclude meaningful solubility measurements. However, the high molecular weight and absence of polar side groups indicates that the material would have very low water solubility.

Although the polymer contains many potentially hydrolysable ester and carbamate (urethane) linkages, under normal environmental conditions where pH is between 4

and 9 the low water solubility will preclude significant hydrolysis.

No dissociation constant data was provided. However, since the polymer contains no inherently acidic or basic groups, this is acceptable.

No partition coefficient or adsorption data were provided by the notifier. However, the essentially hydrophobic nature of the polymer indicates that the material is unlikely to be mobile, and would tend to be assimilated by the organic components of soils and sediments. The hydrolysable methoxysilyl groups could also cause binding of the polymer to sand and clay particles.

#### **4. PURITY OF THE CHEMICAL**

**Degree of Purity:** > 90%

**Toxic or Hazardous Impurities:** <10%

**Non-hazardous Impurities (> 1% by weight):** none

**Additives/Adjuvants:** none

#### **5. USE, VOLUME AND FORMULATION**

The notified polymer will be imported as a component (<60%) of Sika Primer 210T/35 which will be used to treat and activate some metal and plastic surfaces prior to the application of polyurethane adhesives. The primer will be used in general assembly or repair operations involving motor vehicles, buses, trucks, rolling stock, boats etc.

The annual import volume of the notified polymer is expected to be up to 1 tonne per annum.

#### **6. OCCUPATIONAL EXPOSURE**

The notified polymer as Sika Primer 210T/35 will be imported in sealed 250 mL or 1 L tins. These tins are packed in fibreboard boxes which are placed on pallets and transported by road in the shipping containers. Waterside and transport workers are likely to come into contact with the notified polymer only during an accidental spill.

Warehouse workers will unload and store the notified polymer in the shipping containers in purpose built storage units at Sika sites around Australia until required. Once again the likelihood of these workers being exposed to the notified polymer under normal working conditions is minimal.

Sika Primer 210T/35, containing the notified polymer, will be manually applied to a

range of vehicles using a brush to form a thin film. The notifier anticipates this will require applicators working for 30 minutes per day for 200 days of the year. The primer will be opened and used in well ventilated areas. If ventilation is poor, or if the work is conducted in a confined space the applicators will wear half-face respirators and other protective equipment as detailed in the Material Safety Data Sheet (MSDS) to protect against potentially hazardous solvents in the Sika Primer 210T/35 (See section 12).

## **7. PUBLIC EXPOSURE**

Minimal public exposure may occur if the primer is accidentally exposed due to damage to the overlaying surface of the objects to which it is applied. In such instances the notified polymer, which has a NAMW of greater than 1 000, will be immobilised in the hardened primer and should pose negligible hazard to the public.

Minor public exposure may result from disposal of unused primer, or accidental spillage of the notified polymer during transport and storage. However, adequate measures are described by the notifier to minimise the risk of public exposure during formulation, disposal, or in the event of accidental spillage.

## **8. ENVIRONMENTAL EXPOSURE**

### **• Release**

Since this product will be used in relatively small quantities by a large number of vehicle repair facilities throughout Australia, the release of material resulting from discard of residuals and cleaning solvents has the potential to be appreciable. However, the notifier has indicated the primer is an expensive item and, although used by a large number of operatives, the notifier estimates that only around 30 kg per year will be lost through incidental spillage and discard of residuals. Since a large number of widely distributed end users are involved, this release will be diffuse.

Once released as a consequence of spills or discard of residuals in tins, the material is expected to crosslink as a result of exposure to atmospheric moisture.

In most cases it is likely that residual primer remaining in tins, and used brushes etc. will be disposed of to landfill. The solvents employed in cleaning the brushes used for applying the primer are expected to evaporate leaving residual polymer in the bottom of the containers. This will crosslink and be finally disposed of to landfill or possibly be incinerated.

### **• Fate**

The eventual fate of the majority of the polymer will be that of the vehicle panels in which it is incorporated as an adhesive sealant. This is expected to be either deposition into landfill or, if the metal panels are recycled for metal recovery, destruction in a blast furnace.

Since the notified material will be a constituent of a semi solid highly crosslinked polymer matrix, when old panels are disposed of into landfill, there is little possibility of significant leaching. In the long term slow biodegradation of the polymer in the landfill would be expected, with production of the usual landfill gases, including methane and ammonia.

Residuals left in tins and resulting from clean-up of brushes etc. will be placed into landfill, or incinerated.

When incinerated the polymer will be destroyed producing oxides of carbon and nitrogen together with water vapour.

## **9. EVALUATION OF TOXICOLOGICAL DATA**

No toxicological data were provided which is acceptable for polymers with NAMW of greater than 1 000, according to the Act.

## **10. ASSESSMENT OF ENVIRONMENTAL EFFECTS**

No ecotoxicological data were provided which is acceptable for polymers with NAMW of greater than 1 000, according to the Act.

## **11. ASSESSMENT OF ENVIRONMENTAL HAZARD**

The environmental hazard from the notified polymer is estimated to be small. The material is not water soluble and in the event of escape into the environment in non crosslinked form, will tend to adsorb onto and become associated with the organic component of soils and sediments.

Only small quantities of the notified polymer will be released to the environment and this will be contained within a crosslinked polymer mass. Due to an anticipated large number of end users, the material will be released in a very diffuse manner.

Although the polymer is hydrophobic and may have a tendency to partition into the oil phase, the high molecular weight precludes bioaccumulation.

## **12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS**

The notified polymer will be imported as a component of primer formulations and therefore limited exposure to the notified polymer is likely to occur. The notified polymer has a high NAMW which will preclude transmission across biological membranes. There are however low molecular weight species (molecular weight below 1 000, < 10%; molecular weight below 500, < 5%) and residual monomers (< 10%) with the potential to lead to systemic toxicity. As these potentially hazardous components are at low percentages, or are rendered inactive by the solvents, in the

imported product they are considered to be of low toxicological significance.

The occupational health risk posed to waterside, warehouse and transport workers is negligible, as exposure to the notified polymer will only occur in the event of an accident or leaking packaging.

There is low occupational health risk posed to workers who may be handling the notified polymer to treat and activate metal and plastic surfaces during general assembly or repair operations. This work involves application of the primer, containing less than 60% of the notified polymer, by brush. Therefore, the most likely route of exposure is dermal. Ocular exposure would only be likely in the case of accidental splashing. Inhalation exposure to the notified polymer will be reduced by the use of local exhaust ventilation.

The primer product contains organic solvents eg. methanol, ethyl acetate and xylene with the potential to cause a range of adverse effects such as skin, eye and mucous membrane irritation, harmful by ingestion, and the potential for sensitisation following repeated application to the skin. On the basis of these known effects and the high percentages of the solvents in the final product the notifier has been classified Sika Primer 210T/35 as hazardous according to the *Worksafe Approved Criteria for Classifying Hazardous Substances* (1). Therefore, appropriate engineering controls and work practices should be adhered to including exposure standards as described in the *Worksafe Exposure Standards for Atmospheric Contaminants in the Occupational Environment* (2). Additional recommendations for personal protective equipment as detailed in the MSDS should be employed as appropriate to reduce exposure.

Based on the above information, it is unlikely that the polymer in Sika Primer 210T/35 will pose a significant hazard to health when used in the proposed manner.

### 13. RECOMMENDATIONS

To minimise occupational exposure to Polymer in Sika Primer 210T/35 the following guidelines and precautions should be observed:

- It is good work practice to wear industrial clothing which conforms to the specifications detailed in Australian Standard (AS) 2919 (3) and occupational footwear which conforms to Australian and New Zealand Standard (AS/NZS) 2210 (4) to minimise exposure when handling any industrial chemical;
- Spillage of the notified chemical should be avoided, spillages should be cleaned up promptly and put into containers for disposal;
- Good personal hygiene should be practised to minimise the potential for ingestion;
- A copy of the MSDS should be easily accessible to employees.

In addition, as the end-use product contains hazardous organic solvents, If ventilation and work practices are insufficient to reduce inhalational exposure to a safe level, as may occur during manual application it is advisable for the appropriate respiratory device to be used as noted in the product MSDS.

#### **14. MATERIAL SAFETY DATA SHEET**

The MSDS for the product containing the notified chemical was provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (5).

This MSDS was provided by the applicant as part of the notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of the applicant.

#### **15. REQUIREMENTS FOR SECONDARY NOTIFICATION**

Under the Act, secondary notification of the notified chemical shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

#### **16. REFERENCES**

1. National Occupational Health and Safety Commission 1994, *Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)]*, Australian Government Publishing Service, Canberra.
2. National Occupational Health and Safety Commission 1995, 'Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment, [NOHSC:1003(1995)]', in *Exposure Standards for Atmospheric Contaminants in the Occupational Environment: Guidance Note and National Exposure Standards*, Australian Government Publishing Service, Canberra.
3. Standards Australia 1987, *Australian Standard 2919-1987, Industrial Clothing*, Standards Association of Australia, Sydney.
4. Standards Australia/Standards New Zealand 1994, *Australian/New Zealand Standard 2210-1994, Occupational Protective Footwear*, Standards Association of Australia/Standards Association of New Zealand, Sydney/Wellington.
5. National Occupational Health and Safety Commission 1994, *National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]*, Australian Government Publishing Service, Canberra.