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

**FULL PUBLIC REPORT**

**Transparent Sag Control Agent**

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  
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**FULL PUBLIC REPORT****Transparent Sag Control Agent****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Nuplex Industries (Aust) Pty Ltd (ABN 25 000 045 572)  
49-61 Stephen Road  
BOTANY NSW 2019

## NOTIFICATION CATEGORY

Limited-small volume: Chemical other than polymer (1 tonne or less per year).

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: Chemical name, Other names, CAS number, Molecular formula, Structural formula, Molecular weight, Spectral data, Introduction volume, Composition, Use details.

## 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

Canada, USA

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Setalux 81198-SS-55 (contains 1-6% notified chemical)

## OTHER NAME(S)

Transparent SCA

## MOLECULAR WEIGHT

> 500 Da

## ANALYTICAL DATA

Reference IR and HPLC-MS spectra were provided.

**3. COMPOSITION**

DEGREE OF PURITY > 99%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS None

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (>1% by weight) None

ADDITIVES/ADJUVANTS None

**4. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE AT 20°C AND 101.3 kPa: White to off-white solid

Property	Value	Data Source/Justification
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Melting Point/Freezing Point	131-157°C	Measured
Boiling Point	Decomposes above 175°C	Measured
Density	1210 kg/m <sup>3</sup> at 20°C	Measured
Vapour Pressure	2.1 x 10 <sup>-15</sup> kPa at 25°C	Calculated
Water Solubility	0.012 g/L at 20°C	Measured
Hydrolysis as a Function of pH	Not determined	Could not be measured due to its low solubility. Based on the chemical structure, it is expected to be hydrolytically stable.
Partition Coefficient (n-octanol/water)	log Pow = 1.6 at 23°C	Measured
Adsorption/Desorption	log K <sub>oc</sub> = 3.1 – 5.0 at 20°C	Measured
Dissociation Constant	No pKa values in environmental range (pH 4 – 9)	Calculated
Particle Size	Not determined	Imported in a resin solution
Flash Point	Not determined	Low vapour pressure solid
Flammability	Not determined	Not expected to be flammable
Autoignition Temperature	Not determined	Not expected to autoignite at temperatures below its decomposition temperature
Explosive Properties	Not predicted to be explosive	Does not contain functional groups that imply explosive properties

#### DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, please refer to Appendix A.

#### Reactivity

Expected to be stable under normal ambient or room temperatures. The notified chemical is reactive at elevated temperatures and will cure at temperatures of 60-80°C.

## 5. INTRODUCTION AND USE INFORMATION

#### MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be imported as a component of resin solutions at concentrations of 1-6%.

#### MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	1	2	3	4	5
Tonnes	< 1	< 1	< 1	< 1	< 1

#### PORT OF ENTRY

Sydney

#### IDENTITY OF RECIPIENT

Nuplex Industries (Aust) Pty Ltd

#### TRANSPORTATION AND PACKAGING

The resin solution containing the notified chemical will be imported in 200 kg steel drums and transported from the wharf by road to a Nuplex storage facility at Botany, NSW. Subsequently, the drums will be delivered to customer sites for reformulation. The finished coating products will be packed into 200 kg drums.

#### USE

A component of automotive coatings at concentrations up to 5%.

#### OPERATION DESCRIPTION

##### Reformulation

Drums of resin solution (1-6% notified chemical) will be transferred from the storage area to the reformulation site. The resin solution will be charged to a mixing tank via a drum spear inserted directly into the drum. Other materials will be added to the mixing tank and the components blended together to produce the finished coating

containing 0.2-5% notified chemical. At the end of charging, the drum spear will be rinsed and the wash residues pumped to the mixing tank.

#### Quality control and packaging

Quality control staff will collect a sample of the finished automotive coating through a valve and analyse to ensure it meets specifications. Packaging workers will pack the coatings into drums using mechanical pumps and hoses.

#### End use

The coatings containing 0.2-5% notified chemical will be used in 'high end' refinishing by spray painters and refinishers in auto body repair shops. The coatings will be applied to metal and plastic auto body parts with a manual spray gun inside a spray booth.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1 Exposure assessment

#### 6.1.1 Occupational exposure

##### NUMBER AND CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport and storage	5	2	20
Warehouse	1-3	8	30
Process operator	1-3	2	50
Quality control	1	1	50
Packaging	1	1	50
End user - tradesperson	1000	8	200

##### EXPOSURE DETAILS

#### Transport and storage

Personnel at the warehouse are not expected to have contact with the notified chemical, except in the case of an accident. Major spills from accidents or drum leakage will be contained by bunding in the warehouse.

#### Reformulation

Workers may experience dermal or ocular exposure through drips or splashes during transfer and blending of the resin solution (containing up to 6% notified chemical). They may encounter similar routes of exposure to the finished coating product containing up to 5% notified chemical during packaging and equipment cleaning. The potential for exposure is expected to be lowered by the automated procedures used for many processes, the enclosed mixing tank and the wearing of personal protective equipment (PPE) including overalls, gloves, boots and safety glasses.

#### Quality control and packaging

Quality control workers may experience dermal or ocular exposure during sampling. Exposure is expected to be minimised as the samples are collected through a controlled valve and analysis will take place in a fume hood with staff wearing PPE. Packaging workers may experience accidental skin contact. However, the process will be largely automated using mechanical pumps and dedicated hoses and workers are expected to wear full PPE to lower exposure.

#### End use

Dermal, ocular and inhalation exposure to the notified chemical (up to 5%) is possible during spray application of the coating product. However, the level of exposure is expected to be minimised by workers wearing full PPE, including full face respirators and overalls and spray operations being conducted inside a ventilated spray booth according to the Australian Standard.

#### 6.1.2. Public exposure

The resin solution and finished automotive coatings will not be sold to the general public. Automotive coatings will only be used by professional auto body tradespersons. The public will come into contact with auto body parts and automobiles after the coatings have been applied and dried, however in this form, the notified chemical will be trapped within the coating film and not available for exposure.

## 6.2. Human health effects assessment

The results from toxicological investigations conducted on the notified chemical are summarised in the table below. Details of these studies can be found in Appendix B.

<i>Endpoint</i>	<i>Result and Assessment Conclusion</i>
Rat, acute oral toxicity	Low oral toxicity LD50 > 2000 mg/kg bw
Genotoxicity – in vitro chromosome aberration	non genotoxic

### *Toxicokinetics, metabolism and distribution*

Based on the relatively low molecular weight (< 1000), low-moderate solubility in water (1-100 mg/L) and n-octanol (log P<sub>ow</sub> 1-4), the notified chemical has some potential to cross the gastrointestinal (GI) tract by passive diffusion or to be dermally absorbed after exposure. Inhalation may lead to direct absorption across the epithelium of the respiratory tract. The notified chemical has a very low vapour pressure and is not considered volatile.

### *Irritation*

No toxicological studies were available on the potential for eye or skin irritation. The notified chemical does not contain structural alerts for irritation or corrosion.

### *Acute toxicity*

In an oral toxicity test in rats, transient clinical signs included uncoordinated movements and salivation for several hours after dosing, but all animals appeared normal from day 2. The notified chemical is of low acute toxicity via the oral route.

### *Mutagenicity*

The notified chemical is not clastogenic in cultured peripheral human lymphocytes.

### **Health hazard classification**

Based on the available data the notified chemical cannot be classified as hazardous under the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

## 6.3. Human health risk characterisation

### 6.3.1. Occupational health and safety

No hazards were identified for the notified chemical based on the submitted studies. Workers may experience dermal, ocular and inhalation exposure to the notified chemical at concentrations up to 6% during reformulation, quality control, packaging and spray painting operations. The level of exposure is not expected to be significant considering the relatively low concentration of the notified chemical in these products and control measures including engineering controls, automated processes and the use of PPE.

The notified chemical is not considered to pose an unacceptable risk to the health of workers.

### 6.3.2. Public health

Members of the public may occasionally come into contact with substrates coated with the notified chemical. However after the coating has been applied and dried, the notified chemical will be cured into an inert matrix and not available for exposure, therefore the risk to public health is not considered to be unacceptable.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Environmental Exposure & Fate Assessment

#### 7.1.1 Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified chemical will not be manufactured in Australia but imported as a 1-6% resin and reformulated into automotive coatings.

During coating formulation, it is estimated that 1% (<10 kg per annum) of the notified chemical will be lost as the result of spills. The spills will be collected and it is expected they will be disposed to landfill.

It is expected that up to 1% (<10 kg) of the notified chemical will remain as residues in the import containers. The drums will be collected and recycled. The notified chemical is likely to be collected and disposed to landfill or possibly thermally decomposed during the recovery of the drums.

Formulation equipment is likely to be rinsed with industrial solvent. Less than 1% (<10 kg per annum) of the notified chemical is likely to be lost as a result of cleaning the equipment. The solvent washings will be collected and disposed to a trade waste facility where the solvent will be recycled. The notified chemical will be isolated as solid waste and disposed to landfill or thermally decomposed.

#### RELEASE OF CHEMICAL FROM USE

The automotive coating is to be used exclusively in the trade domain and will be applied to auto body parts (metal and plastic) using a manual spray gun. The major loss during use will be from overspray. A maximum of 30% (<300 kg of notified chemical per annum) of the coating product can be expected to be lost as overspray during the spraying process. The overspray will be captured by spray booth filters. The filters are expected to be disposed to landfill or thermally decomposed.

The finished coating drums will be collected by drum recycling contractors. It is estimated that the residues in these drums will be up to 2% (<20 kg of notified chemical per annum). The notified chemical is likely to be collected and disposed to landfill or possibly thermally decomposed during the recovery of the drums.

It is estimated that losses of up to 5% (<5 kg notified chemical per annum) will occur during the cleaning of the application equipment. The equipment is likely to be cleaned with solvents which will be collected and disposed to a trade waste facility where the solvent is likely to be recycled. It is expected the notified chemical will be isolated as solid waste and disposed to landfill or thermally decomposed.

#### RELEASE OF CHEMICAL FROM DISPOSAL

The notified chemical that is contained in waste from spills, application, equipment cleaning, and drums will be collected and is likely to be disposed to landfill or thermally decomposed.

The majority of the notified chemical will be applied to metal and plastic auto body parts. At the end of their useful lives the plastic articles will be disposed to landfill and the metal articles will enter metal recycling.

### 7.1.2 Environmental fate

No environmental fate data were submitted. The notified chemical is not expected to hydrolyse at environmental pH, and none of it is expected to be disposed to the sewer. In landfill, the notified chemical is not likely to leach in soil as the majority of it will be bound in a coating matrix. The remainder is expected to be immobile in soil. The notified chemical is expected to slowly degrade by abiotic and biotic processes. During metal recycling the notified chemical is expected to be combusted and form oxides of carbon and nitrogen and water vapour.

### 7.1.3 Predicted Environmental Concentration (PEC)

As the notified chemical is not expected to be released to the sewage system, a PEC has not been calculated.

## 7.2. Environmental effects assessment

No ecotoxicity data were submitted.

### 7.2.1 Predicted No-Effect Concentration

A PNEC cannot be calculated as no aquatic toxicity data are available.

## 7.3. Environmental risk assessment

The notified chemical is not expected to enter the aquatic environment when it is used as intended for automotive coatings. Therefore, the notified chemical is not considered to pose a risk to the environment.

## 8. CONCLUSIONS AND REGULATORY OBLIGATIONS

### Hazard classification

Based on the available data the notified chemical cannot be classified as hazardous under the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)].

### Human health risk assessment

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

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

### Environmental risk assessment

The notified chemical is not considered to pose a risk to the environment.

### Recommendations

#### REGULATORY CONTROLS

#### CONTROL MEASURES

##### Occupational Health and Safety

- Employers should implement the following safe work practices to minimise exposure during reformulation:
  - Avoid skin and eye contact
- Employers should implement the following safe work practices to minimise occupational exposure to the notified chemical during spray application:
  - Spray application should be carried out in accordance with the Safework Australia National Guidance Material for Spray Painting [NOHSC (1999b)].
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical during reformulation:
  - Gloves
  - Safety glasses
  - Protective clothing
- Employers should ensure that personal protective equipment is used by workers to minimise occupational exposure to the notified chemical during spray painting in accordance with Safework Australia *National Guidance Material for Spray Painting* [NOHSC (1999b)].

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 chemical 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.

#### Disposal

- The notified chemical should be disposed of to landfill.



#### Emergency procedures

- Spills or accidental release of the notified chemical should be handled by physical 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 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 importation volume exceeds one tonne per annum notified chemical;
  - the chemical is imported into Australia in a powder form,or
- (2) Under Section 64(2) of the Act; if
  - the function or use of the chemical has changed from a component of automotive coatings, or is likely to change significantly;
  - the amount of chemical being introduced has increased from one tonne, or is likely to increase, significantly;
  - the chemical 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 chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

**APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Melting Point/Freezing Point</b>	131-157°C
Method	OECD TG 102 Melting Point/Melting Range. EC Directive 92/69/EEC A.1 Melting/Freezing Temperature.
Remarks	Minor effects were observed in the temperature range 110-135 °C, which may have been caused by melting and successive recrystallisation or evaporation of small amounts of volatile impurities.
Test Facility	NOTOX (2002a)
<b>Boiling Point</b>	Reacts or decomposes above approximately 175 °C at 101.325 kPa
Method	OECD TG 103 Boiling Point. EC Directive 92/69/EEC A.2 Boiling Temperature.
Remarks	Boiling was not observed below the temperature at which reaction or decomposition started.
Test Facility	NOTOX (2002a)
<b>Density</b>	1210 kg/m <sup>3</sup> at 20°C
Method	OECD TG 109 Density of Liquids and Solids. EC Directive 92/69/EEC A.3 Relative Density. Gas comparison pycnometer.
Test Facility	NOTOX (2002b)
<b>Vapour Pressure</b>	2.1x10 <sup>-15</sup> kPa at 25°C
Method	OECD TG 104 Vapour Pressure. EC Directive 92/69/EEC A.4 Vapour Pressure.
Remarks	The vapour pressure was determined using the boiling point of the notified chemical and the Modified Watson Correlation calculation method. Experimental measurement was not performed because the calculated vapour pressure was considered to be too low.
Test Facility	NOTOX (2002c)
<b>Water Solubility</b>	0.012 g/L at 20°C
Method	OECD TG 105 Water Solubility. EC Directive 92/69/EEC A.6 Water Solubility.
Remarks	The water solubility at 20°C was evaluated using the Column Elution Method after a preliminary study indicated the Flask Method was unsuitable. Detection and quantitation was by mass spectrometry (LC/MSMS, ESI <sup>+</sup> ). Quantitation was on the daughter ions.
Test Facility	NOTOX (2003b)
<b>Hydrolysis as a Function of pH</b>	Variable results were determined
Method	EC Directive 92/69/EEC C.7 Degradation: Abiotic Degradation: Hydrolysis as a Function of pH.
Remarks	The same method of quantitation was used as that for the Water Solubility test. However, variable recoveries were measured and the test material concentrations were too low to be accurately quantified. Hence, the hydrolysis of the test material was not characterised experimentally. Based on the chemical structure, it is expected the notified chemical is hydrolytically stable.
Test Facility	NOTOX (2003c)
<b>Partition Coefficient (n-octanol/water)</b>	log Pow = 1.6 at 23°C
Method	OECD TG 117 Partition Coefficient (n-octanol/water). EC Directive 92/69/EEC A.8 Partition Coefficient.

Remarks The partition coefficient was measured using the HPLC Method (RP-HPLC, detection at 210 nm).  
 Test Facility NOTOX (2003d)

**Adsorption/Desorption**  $\log K_{oc} = 3.1 - 5.0$  at 20°C  
 – main test

Method OECD TG 106 Adsorption - Desorption Using a Batch Equilibrium Method.

<i>Soil Type</i>	<i>Organic Carbon Content (%)</i>	<i>pH</i>	<i>K<sub>oc</sub> (mL/g)</i>
Clay loam	1.7	7.9	110 x 10 <sup>3</sup>
Silt loam	3.0	7.1	6.33 x 10 <sup>3</sup>
Sandy loam	1.1	5.6	1.26 x 10 <sup>3</sup>

Remarks The same method of quantitation was used as that for the Water Solubility test. The  $K_{oc}$  values of the notified chemical in clay loam and silt loam indicates it is likely to be immobile in these soils while it is likely to have low mobility in sandy loam (McCall et al., 1980). Significant desorption of the test material (55%) was only observed in sandy loam.  
 Test Facility NOTOX (2003e)

**APPENDIX B: TOXICOLOGICAL INVESTIGATIONS****B.1. Acute toxicity – oral**

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 423 Acute Oral Toxicity – Acute Toxic Class Method. EC Directive 96/54/EC B.1tris Acute Oral Toxicity – Acute Toxic Class Method.
Species/Strain	Rat/Wistar CrI:(WI) BR
Vehicle	Propylene glycol
Remarks - Method	6 animals (3 female, 3 male) were each given a single dose of 2000 mg/kg bw by oral gavage and observed for up to 15 days after dosing.
RESULTS	
LD50	> 2000 mg/kg bw
Signs of Toxicity	Salivation was observed in one male immediately after dosing. This animal appeared normal at the 2-hour observation and thereafter. All 3 females displayed uncoordinated movements 2 and 4 hours after dosing. All animals appeared normal by day 2.
Effects in Organs	An enlarged spleen and dark red, hard nodules were found in the left kidney of one female. No other abnormal findings were noted at necropsy.
Remarks - Results	No mortality occurred and all animals showed expected body weight gain during the observation period.
CONCLUSION	The notified chemical is of low toxicity via the oral route.
TEST FACILITY	NOTOX (2003f)

**B.2. Genotoxicity – in vitro**

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 473 <i>In vitro</i> Mammalian Chromosome Aberration Test. EC Directive 2000/32/EC B.10 Mutagenicity - <i>In vitro</i> Mammalian Chromosome Aberration Test.
Cell Type/Cell Line	Human lymphocytes
Metabolic Activation System	Aroclor 1254-induced rat liver S9 preparation
Vehicle	Dimethyl sulfoxide
Remarks - Method	No significant protocol deviations.

<i>Metabolic Activation</i>	<i>Test Substance Concentration (µg/mL)</i>	<i>Exposure Period (hrs)</i>	<i>Harvest Time (hrs)</i>
<i>Absent</i>			
Test 1	10*, 33*, 100*	3	24
Test 2	10*, 33*, 66, 100*	24	24
Test 3	10*, 20, 33*, 66, 100*	48	48
<i>Present</i>			
Test 1	10*, 33*, 100*	3	24
Test 2	10*, 33*, 100*	3	48

\*Cultures selected for metaphase analysis.

<i>Metabolic Activation</i>	<i>Test Substance Concentration (µg/mL) Resulting in:</i>			
	<i>Cytotoxicity in Preliminary Test</i>	<i>Cytotoxicity in Main Test</i>	<i>Precipitation</i>	<i>Genotoxic Effect</i>
<i>Absent</i>				
Test 1	> 100	> 100	> 33	Negative
Test 2	> 33	> 100	> 66	Negative

Test 3	> 10	> 100	> 66	Negative
<i>Present</i>				
Test 1	> 100	> 100	> 33	Negative
Test 2		> 100	> 33	Negative

## Remarks - Results

Polyploidy was observed in a culture treated with 100 µg/mL in the presence of S9 at 3-hr exposure/24-hr harvest time and in a control (1% DMSO) culture in the presence of S9 at 3 hr exposure/48-hr harvest time. There was no statistically significant increase in the frequency of aberrations at any dose of notified chemical either with or without metabolic activation when compared to the controls.

## CONCLUSION

The notified chemical not clastogenic to cultured peripheral human lymphocytes treated *in vitro* under the conditions of the test.

## TEST FACILITY

NOTOX (2002d)

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