

File No: LTD/1583

March 2012

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

**PUBLIC REPORT**

**CIM-27**

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 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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL: + 61 2 8577 8800	
FAX: + 61 2 8577 8888	
Website:	<a href="http://www.nicnas.gov.au">www.nicnas.gov.au</a>

**Director  
NICNAS**

## **TABLE OF CONTENTS**

SUMMARY .....	3
CONCLUSIONS AND REGULATORY OBLIGATIONS .....	3
ASSESSMENT DETAILS .....	4
1. APPLICANT AND NOTIFICATION DETAILS .....	4
2. IDENTITY OF CHEMICAL.....	4
3. COMPOSITION.....	5
4. PHYSICAL AND CHEMICAL PROPERTIES .....	5
5. INTRODUCTION AND USE INFORMATION .....	5
6. HUMAN HEALTH IMPLICATIONS .....	6
6.1. Exposure Assessment.....	6
6.1.1. Occupational Exposure.....	6
6.1.2. Public Exposure.....	6
6.2. Human Health Effects Assessment .....	7
6.3. Human Health Risk Characterisation .....	7
6.3.1. Occupational Health and Safety .....	7
6.3.2. Public Health .....	7
7. ENVIRONMENTAL IMPLICATIONS.....	7
7.1. Environmental Exposure & Fate Assessment .....	7
7.1.1. Environmental Exposure .....	7
7.1.2. Environmental Fate .....	8
7.1.3. Predicted Environmental Concentration (PEC).....	8
7.2. Environmental Effects Assessment.....	9
7.2.1. Predicted No-Effect Concentration .....	9
7.3. Environmental Risk Assessment .....	9
<u>APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES .....</u>	<u>10</u>
BIBLIOGRAPHY .....	12

## 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
LTD/1583	Canon Australia Pty Ltd	CIM-27	ND*	≤1 tonnes per annum	Component of inkjet printer ink

\*ND = not determined

## CONCLUSIONS AND REGULATORY OBLIGATIONS

### **Hazard classification**

As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

### **Human health risk assessment**

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

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

### **Environmental risk assessment**

On the basis of the PEC/PNEC ratio and the assessed use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

### **Recommendations**

#### CONTROL MEASURES

#### Occupational Health and Safety

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical:
  - Avoid contact with skin and eyes
- Service personnel should wear impervious gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified chemical and during routine maintenance and repairs.
- 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 proposed mode of introduction and/or usage scenario changes such that the level of exposure of workers and/or the public increases;
  - new information becomes available on the toxicity of the notified chemical.

or

- (2) Under Section 64(2) of the Act; if
  - the function or use of the chemical has changed from a component of inkjet printer inks, or is likely to change 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 notified chemical and a product containing the notified chemical provided by the notifier were reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

## **ASSESSMENT DETAILS**

### **1. APPLICANT AND NOTIFICATION DETAILS**

#### APPLICANT(S)

Canon Australia Pty Ltd (ABN 66 005 002 951)  
1 Thomas Holt Drive  
North Ryde NSW 2113

#### 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 and structural formulae, molecular weight, analytical data, degree of purity, impurities, additives/adjuvants, use details and import volume.

#### VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: vapour pressure and particle size.

#### PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

Low volume chemical permit.

#### NOTIFICATION IN OTHER COUNTRIES

USA (2011)

### **2. IDENTITY OF CHEMICAL**

#### MARKETING NAME(S)

CIM-27

MOLECULAR WEIGHT  
>500 Da

ANALYTICAL DATA  
Reference NMR, IR, HPLC, MS and UV spectra were provided.

### 3. COMPOSITION

DEGREE OF PURITY >85%

### 4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Red-brown solid (granules)

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Decomposition at 293 °C	Measured
Density	1650 kg/m <sup>3</sup> at 20 °C	Measured
Vapour Pressure	Not determined	Based on the high molecular weight, vapour pressure is expected to be low.
Water Solubility	>300 g/L at 25 °C	Measured
Hydrolysis as a Function of pH	$t_{1/2}$ >1 year at 25 °C at pH 7 and 9	Measured
Partition Coefficient (n-octanol/water)	log Kow <-2.7 at 25 °C	Measured
Surface Tension	60.3 ± 0.5 mN/m at 25 °C	Measured
Adsorption/Desorption	Not determined	The notified chemical is expected to have a high mobility in soil based on its high water solubility and low log Kow.
Dissociation Constant	pKa = 5.48 at 22 °C	Measured. The notified chemical is expected to have multiple pKa values due to the presence of several ionisable groups.
Particle Size	Not determined	Introduced as a component of formulated products
Flammability	Not highly flammable	Measured
Autoignition Temperature	>285 °C	Measured
Explosive Properties	Predicted negative (no significant exotherms when heated to 500 °C)	Measured
Oxidising Properties	Predicted negative	Contains no functional groups that would imply oxidative properties

#### DISCUSSION OF PROPERTIES

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

#### *Reactivity*

The notified chemical is expected to be stable under normal conditions of use.

#### *Dangerous Goods classification*

Based on the submitted physical-chemical data in the above table, the notified chemical is not classified according to the Australian Dangerous Goods Code (NTC, 2007). However, the data above do not address all Dangerous Goods endpoints. Therefore, consideration of all endpoints should be undertaken before a final decision on the Dangerous Goods classification is made by the introducer of the chemical.

### 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 (≤7%) of inkjet printer ink.

## 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>	1	1	1	1	1

## PORT OF ENTRY

Melbourne and Sydney.

## IDENTITY OF MANUFACTURER/RECIPIENTS

Canon Australia Pty Ltd

## TRANSPORTATION AND PACKAGING

The notified chemical will be imported as a component of inkjet printer ink in sealed cartridges. The cartridges will vary in size between 5-900 mL and will be packaged in sealed foil bags. The printer cartridges will be transported by road to the Canon Australia Pty Ltd warehouse and then distributed to retail outlets/end-users.

## USE

The notified chemical will be used as a component ( $\leq 7\%$ ) of inkjet printer ink for commercial and household printers.

## OPERATION DESCRIPTION

The notified chemical will be imported as a component of ink in sealed cartridges. Reformulation will not take place in Australia.

End-users (including service technicians, office workers and the general public) will remove the cartridge from the packaging and place the cartridge into the printer. The cartridge will be disposed of when empty.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### 6.1.1. Occupational Exposure

## CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Exposure Duration</i>	<i>Exposure Frequency (days/year)</i>
Import/waterside	<8 hours/day	10-50
Storage and transport	<8 hours/day	10-50
Office workers	10 seconds/day	2
Service technicians	1 hour/day	230

## EXPOSURE DETAILS

Waterside, storage and transport workers may come into contact with the notified chemical, as a component of ink ( $\leq 7\%$ ), only in the unlikely event of an accident.

Service technicians and office workers may be exposed to the ink containing  $\leq 7\%$  of the notified chemical when replacing spent cartridges and during the repair and cleaning of ink jet printers. Dermal exposure is expected to be the main route of exposure, and it is expected to be minimised by users following instructions for replacing spent cartridges, which will be included with the cartridges.

Occasional dermal exposure during use of printers could also occur if the printed pages were touched before the ink had dried. Once the ink dries, the notified chemical will be bound to the paper and is not expected to be bioavailable, thus further dermal contact should not lead to exposure. Inhalation exposure to the notified chemical is not expected under the proposed use scenario.

#### 6.1.2. Public Exposure

Dermal exposure of the public to inks containing the notified chemical (at  $\leq 7\%$ ) is expected to be similar, though less frequent, than that described above for office workers.

## 6.2. Human Health Effects Assessment

No toxicity data were submitted.

Absorption of the notified chemical across gastrointestinal tract and the skin is expected to be limited by the high molecular weight (>500 Da) and the low partition coefficient ( $\log P_{ow} < -2.7$ ). However, the notified chemical contains a number of identified impurities (<5%), that are similarly structured but with a lower molecular weight, that may be absorbed. In addition, the notified chemical contains functional groups that are expected to be metabolised into lower molecular weight chemicals.

The notified chemical contains functional groups that have been associated with skin irritation, severe eye irritation, skin sensitisation and carcinogenic effects. The potential for these effects may be limited by the relatively high molecular weight of the notified chemical. However, they cannot be completely ruled out, particularly due to the presence of the lower molecular weight impurities and/or metabolic products.

### *Health hazard classification*

As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

## 6.3. Human Health Risk Characterisation

### 6.3.1. Occupational Health and Safety

The notified chemical will be handled by workers at  $\leq 7\%$  concentration. At such concentrations, skin irritation is not expected. However, eye irritation, skin sensitisation and carcinogenic effects cannot be ruled out following exposure to the notified chemical. While ocular exposure is not expected under the proposed use scenario, dermal exposure may occur when replacing spent cartridges (and/or incidental exposure through the touching of wet ink on printed pages).

While significant dermal exposure of technicians to the notified chemical is not expected given the containment of the chemical within cartridges, the performing of printer maintenance operations, in an industrial setting, may occur on a frequent basis. Therefore, measures should be taken to avoid exposure to the notified chemical (e.g. use of impervious gloves).

Dermal exposure of office workers to the notified chemical is expected to be infrequent and of a low level, given the containment of the chemical within cartridges and the provision of instructions for replacing the cartridges.

Therefore, provided that measures to protect technicians are being adhered to (i.e., use of impervious gloves and adequate ventilation when performing printer maintenance operations), and based on the expected low exposure of office workers to the notified chemical, the risk to the health of workers from use of the notified chemical is not considered to be unreasonable.

### 6.3.2. Public Health

Public exposure to the notified chemical is expected to be similar, though less frequent than office workers. Therefore, the risk to the health of the public from use of the notified chemical is not considered to be unreasonable.

## 7. ENVIRONMENTAL IMPLICATIONS

### 7.1. Environmental Exposure & Fate Assessment

#### 7.1.1. Environmental Exposure

##### RELEASE OF CHEMICAL AT SITE

The notified chemical will be imported into Australia as a component of inkjet printer ink in ready-to-use cartridges. Release of the ink solution to the environment is not expected as manufacturing and reformulation of the ink containing the notified chemical will not take place in Australia. Environmental release of the notified chemical is unlikely during importation, storage and transportation.

##### RELEASE OF CHEMICAL FROM USE

The notified chemical will not be released from the printed paper. Approximately 5% of the ink containing the notified chemical will remain in spent cartridges. The ink remaining in the ink cartridges during the recycling process will not be reused and will be disposed of with the packaging. Environmental release of the notified chemical is possible during paper recycling and from the disposal of used print cartridges.

#### RELEASE OF CHEMICAL FROM DISPOSAL

The notifier will collect the used cartridges from collection boxes in general merchandising stores and post offices, etc. The collected cartridges will then be sent to a subcontractor who will disassemble the used cartridges and recycle them into raw materials such as plastics. The remaining ink separated from the used cartridges will be disposed of under State/Territory regulations. Uncollected cartridges will be disposed of to landfill.

Half of the paper to which the notified chemical will be applied is expected to be recycled. During recycling processes, waste paper will be repulped using a variety of chemical agents which, amongst other things, will enhance detachment of toner from the fibres.

#### 7.1.2. Environmental Fate

In the MSDS for the notified chemical, it is reported to be not readily biodegradable (OECD 301F; <5% biodegradation after 28 days). The majority of the notified chemical is expected to enter the environment from disposal of printed paper products on which ink containing the notified chemical will be used. Approximately 45% of the notified chemical will be disposed of to landfill when bound to the printed waste paper, and eventually degrade *in-situ* by abiotic and biotic processes into water, inorganic salts and oxides of carbon, nitrogen and sulfur. Notified chemical not bound to paper in landfill may leach due to the expected low  $K_{oc}$  and high water solubility.

The remaining 50% of the notified chemical is expected to be released to sewer, after the de-inking of paper during recycling. Assuming a worst-case scenario, the entire amount of notified chemical from paper recycling will be released from sewage treatment plants into aquatic ecosystems, where the notified chemical is expected to be mobile. However, the notified chemical is not expected to bioaccumulate due to its very low  $K_{ow}$  and high solubility in water.

#### 7.1.3. Predicted Environmental Concentration (PEC)

Under a worst case scenario, it was assumed that 50% of the paper products containing the notified chemical will be recycled and released into sewers with no removal of the notified chemical by recycling or sewage treatment plant (STP) processes. As the notified chemical is to be processed at paper recycling facilities located throughout Australia, it is anticipated that such releases will occur on 260 days into the Australian effluent volume. The resultant Predicted Environmental Concentration (PEC) in sewage effluent nationwide is estimated as follows:

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	1,000	kg/year
Proportion expected to be released to sewer	50%	
Annual quantity of chemical released to sewer	500	kg/year
Days per year where release occurs	260	days/year
Daily chemical release:	1.92	kg/day
Water use	200	L/person/day
Population of Australia (Millions)	22.613	million
Removal within STP	0%	
Daily effluent production:	4,523	ML
Dilution Factor - River	1.0	
Dilution Factor - Ocean	10.0	
PEC - River:	0.43	µg/L
PEC □ Ocean:	0.043	µg/L

STP effluent re-use for irrigation occurs throughout Australia. The agricultural irrigation application rate is assumed to be 1000 L/m<sup>2</sup>/year (10 ML/ha/year). The notified chemical in this volume is assumed to infiltrate and accumulate in the top 10 cm of soil (density 1500 kg/m<sup>3</sup>). Using these assumptions, irrigation with a concentration of 0.425 µg/L may potentially result in a soil concentration of approximately 2.835 µg/kg.



Assuming accumulation of the notified chemical in soil for 5 and 10 years under repeated irrigation, the concentration of notified chemical in the applied soil in 5 and 10 years may be approximately 14.17 µg/kg and 28.35 µg/kg, respectively.

## 7.2. Environmental Effects Assessment

The results from ecotoxicological investigations conducted on the notified chemical and reported in the MSDS are outlined in the table below. Only a very brief summary of the tests was reported in the MSDS.

<i>Endpoint</i>	<i>Test Guideline</i>	<i>Result</i>	<i>Assessment Conclusion</i>
Daphnia Toxicity	OECD 202	EC50 (48 h) >54 mg/L	Potentially harmful
Algal Toxicity	OECD 201*	EC50 (72 h) = 7.2 mg/L**	Potentially toxic

\*Conducted with the ETAD modification for coloured substances.

\*\*Not clear if this was an endpoint based on biomass or growth rate.

The ecotoxicity endpoints from the notified chemical's MSDS summarised above are considered acceptable to characterise the hazard of the notified chemical for risk assessment purposes. However, as the full study reports on which the endpoints are based are not available, the endpoints are considered insufficient to formally classify the notified chemical under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS; United Nations, 2009).

In the algal study the Ecological and Toxicological Association of Dyes and Organic Pigments (ETAD) method was used to distinguish the effect of shading by the coloured test substance and toxic inhibition effects. It was reported that the observed algal growth inhibition effect of the test substance is caused by an indirect effect, namely the light absorption in the coloured test solution. However, this method is considered too simplistic to allow evaluation of both toxic and light absorption effects of coloured substances (EC, 2006). Furthermore, it is ambiguous if the reported endpoints in the MSDS are for biomass or growth. In the absence of a full study report, the most conservative algal endpoint provided in the MSDS is utilised for risk characterisation of the notified chemical.

### 7.2.1. Predicted No-Effect Concentration

The endpoint from the most sensitive species from the results reported in the MSDS was used to calculate the Predicted No-Effect Concentration (PNEC). A conservative assessment factor of 1000 was used as acute toxicity endpoints were available for effects of the notified chemical on aquatic species from only two trophic levels and full study reports were not provided.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
72 h Algae EC50	7.2	mg/L
Assessment Factor	1000	
PNEC:	7.2	µg/L

## 7.3. Environmental Risk Assessment

Risk Assessment	PEC µg/L	PNEC µg/L	Q
Q □ River	0.43	7.2	0.059
Q - Ocean	0.043	7.2	0.0059

The Risk Quotients (Q = PEC/PNEC) for the worst case discharge scenario have been calculated to be <<1 for the river and ocean compartments. This indicates that the notified chemical is not expected to pose an unreasonable risk to the aquatic environment based on its reported use pattern.

## APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES

### Melting Point/Freezing Point

Decomposition at 293 °C

Method EC Directive 92/69/EEC A.1 Melting/Freezing Temperature.  
 Remarks Determined using a Buchi Melting Point Apparatus B-545. A change in form was observed at 293 °C, which was likely due to decomposition.  
 Test Facility Intertek (2011)

### Density

1650 kg/m<sup>3</sup> at 20 °C

Method EC Directive 92/69/EEC A.3 Relative Density.  
 Remarks Determined using a Micromeritics Pycnometer 1330 TC.  
 Test Facility Intertek (2011)

### Water Solubility

&gt;300 g/L at 25 °C

Method EC Council Regulation No 440/2008 A.6 Water Solubility.  
 Remarks A series of three solutions was prepared with increasing concentrations of test substance. Each sample was sonicated for 5 minutes and placed in a water bath at 25 ± 1 °C overnight. The solubility of the test substance was determined by visual inspection of the samples.  
 Test Facility Intertek (2011)

### Hydrolysis as a Function of pH

*t*<sub>½</sub> >1 year at 25 °C at pH 7 and 9

Method EC Council Regulation No 440/2008 C.7 Degradation: Abiotic Degradation: Hydrolysis as a Function of pH.

<i>pH</i>	<i>T</i> (°C)	<i>t</i> <sub>½</sub> (years)
7	25	> 1
9	25	> 1

Remarks Test solutions, at pH 7 and 9, were prepared in duplicate and pH was measured prior to storage at 50 ± 1 °C. The substance was not soluble at pH 4 and therefore the hydrolysis was not measured at this pH. Analysis of the test solutions by HPLC was carried out initially and at intervals over 5 days. There was less than 10% hydrolysis at pH 7 and 9 after 5 days at 50 °C.

Test Facility Intertek (2011)

### Partition Coefficient (n-octanol/water)

log K<sub>ow</sub> <-2.7 at 25 °C

Method EC Council Regulation No 440/2008 A.8 Partition Coefficient  
 Remarks Shake Flask Method. Test solutions were prepared in n-octanol saturated water and were centrifuged for 10 min at 2000 rpm and allowed to stand for at least an hour at 25 ± 1 °C. The concentration of test substance in the water and octanol phases was measured spectrophotometrically at 427 nm. The mean result from six measurements was reported.  
 Test Facility Intertek (2011)

### Surface Tension

60.3 ± 0.5 mN/m at 25 °C

Method EC Council Regulation No 440/2008 A.5 Surface Tension.  
 Remarks Concentration: 0.1% solution.  
 The test substance was not considered to be surface active material.  
 Test Facility Intertek (2011)

### Dissociation Constant

pK<sub>a</sub> = 5.48 at 22 °C

Method In house method

Remarks The pKa was determined by titration with 0.1 M HCl using a potentiometric titrator fitted with a pH electrode. The titration was performed at three different weights and the pKa was estimated by extrapolation to infinite dilution.

Test Facility Intertek (2011)

**Flammability** Not highly flammable

Method EC Council Regulation No 440/2008 A.10 Flammability (Solids).

Remarks Determined by measuring the burning rate of the test material. The test material failed to ignite following application of a Bunsen burner flame for a period of two minutes.

Test Facility Harlan (2011)

**Autoignition Temperature** >285 °C

Method EC Council Regulation No 440/2008 A.16 Relative Self-Ignition Temperature (Solids)

Remarks Determined by heating aliquots of the test substance in an oven (up to 285 °C) and observing for any signs of ignition.

Test Facility Harlan (2011)

**Explosive Properties** Predicted negative

Method EC Council Regulation No 440/2008 A.14 Explosive Properties.

Remarks Following the observation of functional groups in the notified chemical that imply explosive properties, thermal analysis was conducted using differential scanning calorimetry (DSC) (25-500 °C temperature program at a rate of 5°C/min, in an air atmosphere). Under the conditions of the test, there were no significant exotherms.

Test Facility Harlan (2011)

**Oxidizing Properties** Predicted negative

Method EC Council Regulation No 440/2008 A.17 Oxidizing Properties (Solids).

Remarks The structure of the notified chemical was assessed for chemical groups that imply oxidising properties.

Test Facility Harlan (2011)

**BIBLIOGRAPHY**

- Harlan (2011) [Notified chemical]: Determination of Hazardous Physico-Chemical Properties (Project No.: 41100523, April, 2011). Derbyshire, U.K., Harlan Laboratories Ltd (unpublished report submitted by the notifier).
- Intertek (2011) [Notified chemical]: Annex VII and Worldwide Notification Testing (Study 1322241, May, 2011). Manchester, U.K., Intertek ASG (unpublished report submitted by the notifier).
- NOHSC (1994) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.
- NOHSC (2003) National Code of Practice for the Preparation of Material Safety Data Sheets, 2<sup>nd</sup> edition [NOHSC:2011(2003)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.
- NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3<sup>rd</sup> edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.
- NTC (National Transport Commission) 2007 Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG code), 7th Edition, Commonwealth of Australia
- United Nations (2009) Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 3<sup>rd</sup> revised edition. United Nations Economic Commission for Europe (UN/ECE), <[http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev03/03files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html) >.