File No: LTD/1904

June 2016

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

K-FLEX® 7301

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 the Department of Health, 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.

This Public Report is 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

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette:*

ASSESSMENT REFERENCE	APPLICANT	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1904	PPG Industries Australia Pty Ltd	K-FLEX® 7301	ND*	1 tonne per annum	Component of aircraft coating formulations

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification
As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

Human health risk assessment
Provided that the recommended controls are being adhered to, 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
Based on the assessed use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

Recommendations

REGULATORY CONTROLS

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following isolation and engineering controls where possible to minimise occupational exposure to the notified chemical;
  - Spray booths
  - Aircraft hangars with well-ventilated environment

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure to the notified chemical;
  - Avoid contact with skin and eyes
  - Avoid inhalation of vapours or mists

- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical;
  - Coveralls
  - Impervious gloves
  - Safety goggles
  - Respiratory protection during spray operations

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (SWA, 2015) or relevant State or Territory Code of Practice.

- A copy of the (M)SDS should be easily accessible to employees.

- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Globally Harmonised System of 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

- Where reuse or recycling are not appropriate, dispose of the notified chemical in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Emergency procedures

- Spills and/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;

or

(2) Under Section 64(2) of the Act; if
  – the function or use of the chemical has changed from a component of aircraft coating formulations, 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 (M)SDS of the notified chemical and products containing the notified chemical provided by the notifier were reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT
PPG Industries Australia Pty Ltd (ABN: 82 055 500 939)
23 Ovata Drive
TULLAMARINE VIC 3043

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, and use details (concentration)

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed for all physical and chemical properties except for water solubility and partition coefficient

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
K-FLEX® 7301

MOLECULAR WEIGHT
< 500 Da

ANALYTICAL DATA
Reference IR spectrum was provided

3. COMPOSITION

DEGREE OF PURITY
> 90%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: clear amber liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Liquid at ambient temperature
Boiling Point	251°C	(M)SDS
Density	1,150 kg/m^3	(M)SDS
Vapour Pressure	8.15 x 10^{-3} kPa at 25 °C	Estimated. Modified Watson Correlation method
Water Solubility	28.2 g/L at 20 °C	Measured
Hydrolysis as a Function of pH	6.6-12.2 years at pH 4, 2.5-5.8 years at pH 7, and 9.2-21.1 days at pH 9	Estimated
Partition Coefficient (n-octanol/water)	log Pow = 2.02 at 20 °C	Measured
Adsorption/Desorption	log Koc = 2.04	Estimated
Dissociation Constant	Not determined	The notified chemical does not contain any functional groups that are expected to ionise under environmental conditions (pH 4 – 9).

Property	Value	Data Source/Justification
Flash Point	94 °C	(M)SDS
Flammability	Not determined	The notified chemical is not expected to be flammable based on flash point
Autoignition Temperature	Not determined	The notified chemical is not expected to auto-ignite under normal use conditions
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	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.

Physical hazard classification
Based on the submitted physico-chemical data depicted in the above table, the notified chemical is not recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified chemical will be imported into Australia as a component of the base part (at < 30% concentration) of a two part coating for use in the aerospace industry.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonne	1	1	1	1	1

PORT OF ENTRY
Melbourne and Sydney

IDENTITY OF RECIPIENTS
PPG Industries Australia Pty Ltd

TRANSPORTATION AND PACKAGING
The notified chemical will be imported into Australia as a component of the base part (at < 30% concentration) of a two part coating in 1 gallon (~3.8 L), 1 quart (~1.3 L) or 1 pint (~0.5 L) metal cans and transported by road.

USE
The notified chemical will be used as a component of the base part of a two-part coating formulation for the aerospace industry.

OPERATION DESCRIPTION
The notified chemical will not be manufactured, reformulated or repackaged in Australia. The base part containing the notified chemical at < 30% concentration will be mixed with the curing part (usually at 3:1 ratio) using manual or mechanical methods to develop the two-part coating. The developed coating mixture containing the notified chemical at < 25% concentration will then be applied to the aircraft surface by spray (conventional, air, air assisted, airless, HVLP or electrostatic).

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

Category of Worker	*Exposure Duration (hours/day)*	*Exposure Frequency (days/year)*
Transport and storage	2-3	10-15
Spray application	6	260

EXPOSURE DETAILS
Transport and storage workers are not expected to be exposed to the notified chemical except in the unlikely event of an accident.

Dermal, ocular or inhalation exposure to the notified chemical at concentrations up to 30% may occur during mixing and spray application, and during cleaning and maintenance of equipment. Exposure should be mitigated by the use of ventilated environments (including spray booths and/or aircraft hangars) and personal protective equipment (PPE: goggles, impervious gloves, appropriate industrial clothing and respirators during spray operations).

Once the coating is cured and dried, the notified chemical will be reacted into an inert polymer matrix and will not be bioavailable.

6.1.2. Public Exposure
The finished product containing the notified chemical (< 25% concentration) will be used in industrial settings and will not be available to the public. Once the coating is cured, the notified chemical will be trapped in an inert polymer matrix and will be unavailable for exposure.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

Based on the low molecular weight (< 500 Da) and partition coefficient (log Pow = 2.02) of the notified chemical, absorption across biological membranes may occur.

The notified chemical has been determined to be of low acute oral toxicity in rats (LD50 > 34.3 mL/kg) and of low acute dermal toxicity (LD50 > 16 mL/kg) in rabbits (TOXNET, 2016). Based on limited toxicological information on the notified chemical, precautions should be taken when handling the notified chemical or products containing it.

Health hazard classification
As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety
No toxicity data was provided for the notified chemical. However, based on limited available information the notified chemical is of low acute oral and dermal toxicity. Given the potential for the notified chemical to be absorbed and the lack of reliable toxicity data the hazard profile of the notified chemical is uncertain, therefore suitable precautions should be taken to minimise exposure when using the notified chemical or products containg it.

There is potential for dermal, ocular and inhalation exposure of workers to the notified chemical at < 30% concentration when mixing the imported product containing the notified chemical to form finished coatings and during application of the coatings containing the notified chemical at < 25% by spray. However, exposure should be minimised by the stated use of PPE including goggles, impervious gloves, appropriate industrial clothing and

respirators during spray operations, and by conducting of spray operations in open/well ventilated areas or spray booths. Furthermore, the protective measures in place to minimise risks involved in handling the hazardous substances present in the product containing the notified chemical [as stated in the (M)SDS of the product] should reduce the risks. Once the coating is cured, the notified chemical will be unavailable for exposure.

Overall, the risk to workers from use of the notified chemical is not considered unreasonable provided the stated engineering controls and PPE to minimise exposure are in place.

6.3.2. Public Health

The product containing the notified chemical is intended for industrial or professional use only. Once the coating is cured, the notified chemical will be unavailable for exposure. Therefore, when used in the proposed manner, the risk to public health from 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 not be manufactured or reformulated in Australia. The import containers are designed to minimise the release of the notified chemical to the environment during importation, storage and transport. If release does occur as a result of an accident, it is expected to be contained, collected and disposed of to landfill. Releases due to accidental spills are expected to be physically contained, absorbed on inert material and disposed of to landfill.

RELEASE OF CHEMICAL FROM USE

The product containing the notified chemical will be mixed with the curing solution or solvents. The spray application of coating formulations containing the notified chemical to aircrafts will be applied in an industrial environment only by trained professional operators. Therefore, no significant release is expected from mixing and application processes. Once the coating containing the notified chemical is cured, the chemical is considered to be consumed and will not be available for further exposure.

RELEASE OF CHEMICAL FROM DISPOSAL

The majority of the notified chemical will share the fate of articles to which it has been applied and therefore is expected to be disposed of to landfill or thermally decomposed during metals reclamation processes. Any residues in the end use empty containers are expected to be disposed of to landfill with the containers.

7.1.2. Environmental Fate

No environmental fate data were submitted. The majority of the notified chemical is expected to be irreversibly cross-linked into an inert polymer matrix as part of its use pattern and is therefore not expected to be mobile, bioavailable nor readily biodegradable in this form. When disposed of to landfill, the notified chemical is expected to be held within a cured matrix and is not expected to be mobile or bioavailable. The notified polymer will eventually degrade in landfill, or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon.

Some notified chemical is expected to be released to landfill due to disposal of waste from spills, residues remaining in product containers. In landfill or in soil, the notified chemical is expected to have high mobility, due to its high water solubility and anticipated low sorption to soil and sediment. Given the notified chemical's low n-octanol/water partition coefficient, it is not expected to be bioaccumulative. Eventually, in landfill or water, the notified chemical is expected to undergo biotic or abiotic degradation processes, forming water and oxides of carbon.

7.1.3. Predicted Environmental Concentration (PEC)

A predicted environmental concentration (PEC) was not determined because no aquatic exposure of the notified chemical is expected based on its reported use pattern.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. No significant exposure of the notified chemical to aquatic organisms is expected based on its use in coating for the aerospace industry. Further, the majority of the notified chemical will be cured with other chemical substances as part of the coating process and is not expected to be bioavailable.

7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) has not been calculated for the notified chemical as no aquatic exposure is expected based on its reported use pattern.

7.3. Environmental Risk Assessment

The risk quotient (Q = PEC/PNEC) for the notified chemical has not been calculated as release to the aquatic environment is not expected based on its reported use pattern. The majority of the notified chemical will ultimately be cured into an inert matrix. In its cured state, the notified chemical is irreversibly bound within an inert matrix, and is not expected to be bioavailable or mobile. Therefore, based on its use pattern and limited aquatic exposure, the notified chemical is not considered to pose an unreasonable risk to the environment.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES

Water Solubility 28.2 g/L at 20 °C

Method	OECD TG 105 Water Solubility.
Remarks	Column Elution Method
Test Facility	ISI (2015)

Partition Coefficient (n-octanol/water) log Pow = 2.02 at 20 °C

Method	OECD TG 117 Partition Coefficient (n-octanol/water).
Remarks	HPLC Method
Test Facility	ISI (2015)

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