

## Test Report

No. SHAEC1105356003 A01

Date: 28 Apr 2011

Page 1 of 5

RADICI CHIMICA S.P.A.

VIA G.FAVSER,50-28100 NOVARA,ITALY

**THIS REPORT IS TO SUPERSEDE TEST REPORT NO.SHAEC1105356001 DATE: 2011/04/23**

The following sample(s) was/were submitted and identified on behalf of the clients as : RADIPOL A45L/A45L-1

SGS Job No. : SP11-011507 - SH  
Supplier : RADICI CHIMICA S.P.A.  
Date of Sample Received : 20 Apr 2011  
Testing Period : 20 Apr 2011 - 23 Apr 2011  
Test Requested : Selected test(s) as requested by client.  
Test Method : Please refer to next page(s).  
Test Results : Please refer to next page(s).  
Conclusion : Based on the performed tests on submitted samples, the results comply with the RoHS Directive 2002/95/EC and its subsequent amendments.

Signed for and on behalf of  
SGS-CSTC Ltd.



Fan Jingjie, JJ  
Approved Signatory

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



# Test Report

No. SHAEC1105356003 A01

Date: 28 Apr 2011

Page 2 of 5

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	SHA11-053560.001	White solid pellet

Remarks :

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

**RoHS Directive 2002/95/EC**

Test Method : With reference to IEC 62321:2008

- (1) Determination of Cadmium by ICP-OES.
- (2) Determination of Lead by ICP-OES.
- (3) Determination of Mercury by ICP-OES.
- (4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.
- (5) Determination of PBBs / PBDEs content by GC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	1,000	mg/kg	2	ND
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



## Test Report

No. SHAEC1105356003 A01

Date: 28 Apr 2011

Page 3 of 5

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND
Decabromodiphenyl ether	-	mg/kg	5	ND

### Notes :

- (1) The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2002/95/EC

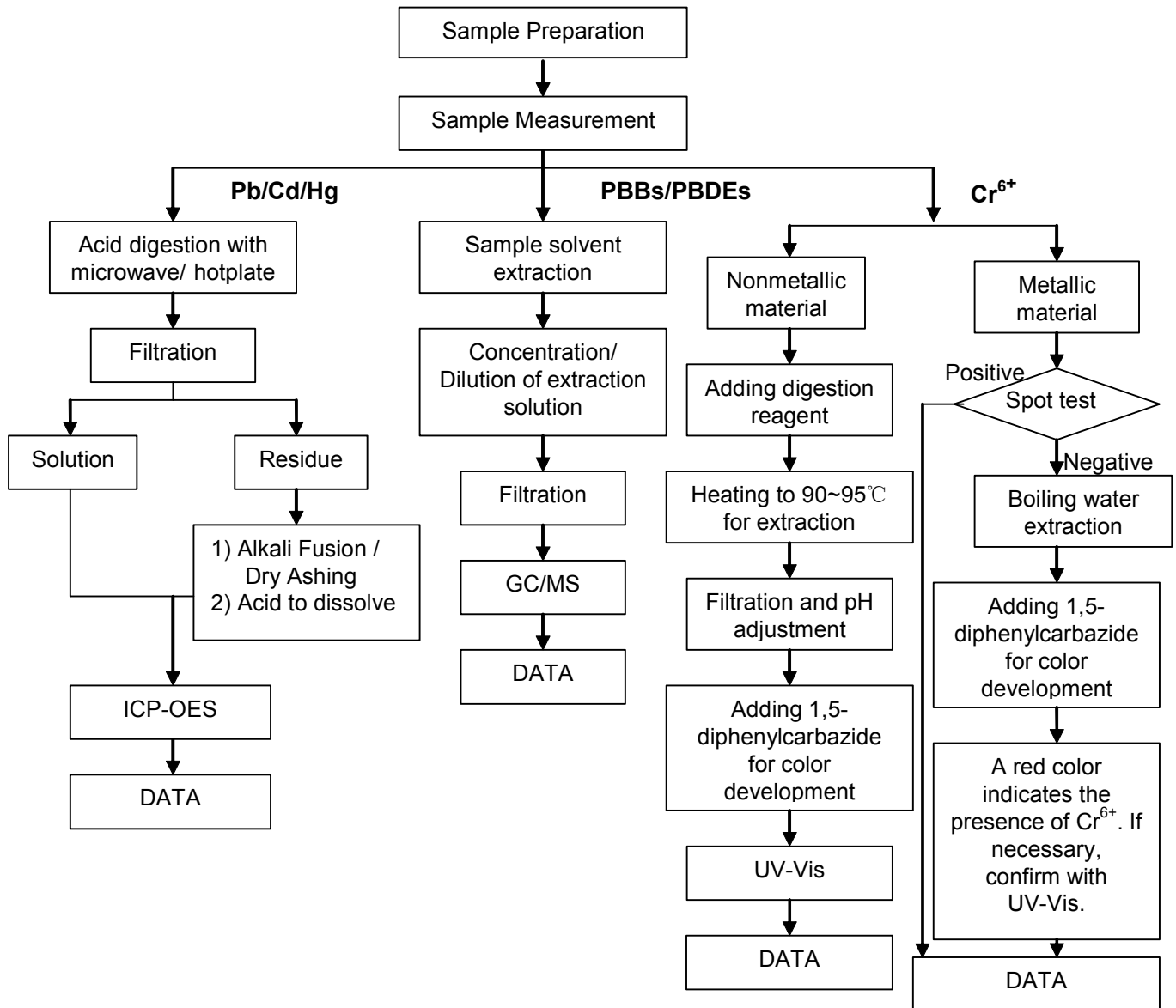
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



ATTACHMENTS

RoHS Testing Flow Chart

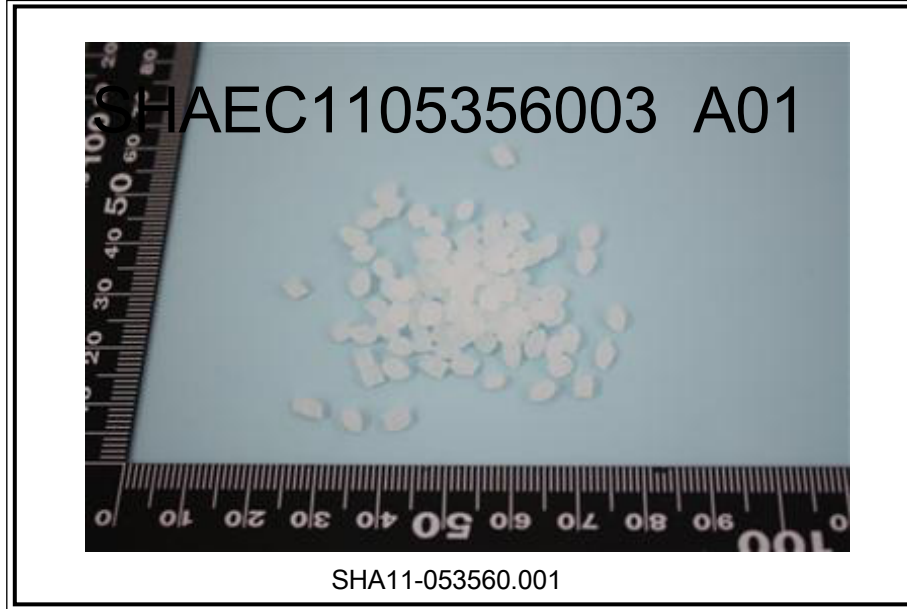
- 1) Name of the person who made testing: Jan Shi/Even Xu/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Elim Lin
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ and PBBs/PBDEs test method excluded)



This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.



Sample photo:



SGS authenticate the photo on original report only

\*\*\* End of Report \*\*\*

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [http://www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.





# RADICI CHIMICA

RADICI CHIMICA S.p.A.  
Production Plant and Offices:  
28100 NOVARA - Via Fauser, 50  
Tel. (0321) 693111 - Fax (0321) 693201

Ref. P66F055  
Ed. 00  
Date 05/2003

## RADIPOL A45L-1

### Description

RADIPOL is the trade name for a wide range of polyamide 6.6 resins supplied by RADICI CHIMICA. RADIPOL A45L-1 is internally and externally lubricated.

N CAS: 32131 - 17 - 2

### Properties

	Units	Value	Analytical method
Chips size	mm	2.0x2.5x3.0	-
Chips weight	g/100 chips	1.5 1.9	MA0027
Density	Kg/dm <sup>3</sup>	1.14	DIN 53479
Bulk density	Kg/dm <sup>3</sup>	0.6 0.7	MA0028
Melting point (DSC)	癩	258 62	MA0317
Ignition Characteristics - Flame rating UL			
- 0.8 mm		V-2	UL 94
- 1.6 mm		V-2	UL 94
- 3.0 mm		V-2	UL 94

### Specifications

	Units	Value	Analytical method
Relative viscosity in sulphuric acid		2.50 2.60	MA0026
Moisture	%	0.15 max	MA0016
Yellow index		- 6 max	MA0017
Contamination (black spots):			
- diameter $\geq$ 0.3 mm, $\leq$ 1 mm	n/1000g	5 max	MA0018
- diameter > 1 mm	n/1000g	0 max	MA0018

Methods of analysis are available on request

### Packaging

Radipol A45L-1 is supplied as granulate in 1000 Kg and 500 Kg moisture proofed octabins, or in 25 Kg moisture proofed bags.



**1. Chemical product/company identification**

1.1. *Chemical product:* Polyamide 66 (Poly hexamethylenadipamide) may contains pigments, additives, charges.

Radipol A40	Radipol 40AM30
Radipol A40D	Radipol 40AM170
Radipol A45	Radipol 40AM130
Radipol A45D	Radipol A75K02
Radipol A45D02	Radipol A45K02
Radipol A45-26	Radipol A45DH
Radipol A45H01	Radipol A45DD
Radipol A45H02	Radipol 45A00D
Radipol A4503	Radipol A45DL09
Radipol A35	Radipol A45DLK02
Radipol A35D	Radipol A45DLK03
Radipol A125	Radipol A45DNL05
Radipol A150	Radipol A45-04
Radipol A170	Radipol A45-44
Radipol A105	Radipol 40AM30-04
Radipol A60	Radipol 40AM30-44
Radipol A75	Radipol 88
Radipol A95	Radipol X----
Radipol 40A00D	Radipol A45K05
Radipol 40A00	Radipol A45L
Radipol A4506	Radipol A45DK05
Radipol A45L-1	Radipol A45H
Radipol A4502	Radipol A45DL08
Radipol A4005	

1.2. *Product use:* Yarn, tuft, mono-yarn , technopolymer production.

1.3. *Company identification:* RADICI CHIMICA S.p.A.  
Via Fauser, 50 - 28100 NOVARA  
Tel.+39-0321693111 Fax+39-0321693201

1.4. *Emergency contact number:* +39-0321-693111

**2. Composition/information on ingredients**

2.1. *Composition* Polyamide 66 marketed in granular form.

2.2. *Classification:* Not classified.

2.3. *CAS N°:* 32131-17-2

**3. Hazards identification**

3.1. *Adverse health effects:* The product, marketed in granular form, is not dangerous

3.2. *Fire or explosion:* Combustible. If the product is kept in a liquid state for a long time, it emits vapours that may ignite in contact with air. Combustion or thermal decomposition may free toxic gases (carbon oxide, nitric oxides) and carbon dioxide. Product handling with pneumatic transports may cause granule crushing with formation of films and dusts that may form explosive mixtures if mixed with air.

3.3. *Adverse environment effects:* The product, in granular form, is inert and not biodegradable.

**4. First aid measures**

The product is not dangerous when in granular form.

The following indications take into account damages to organism that may be caused by the product in liquid state, including vapours generated from the body by thermal effect.

4.1. *Skin contact:* Granules: flush with water.

Melted product: immediately sprinkle the injured part with plenty of water in order to cool the melted product and to limit damages caused by deep burns of flesh. Do not remove the polymer tearing. Call a physician.

4.2. *Eye contact:* Granules: flush the injured part with water.

Vapours: immediately sprinkle with running water for at least 15 minutes. During the operation, keep eyelids wide open so that the water can wash all the surfaces of the eye and eyelid. Call a physician.

4.3. *Ingestion:* Granules: There is no danger of toxicity through ingestion.

4.4. *Inhalation:* Vapours: move the affected person to fresh air and call a physician. If the affected person is not breathing, give artificial respiration; if breathing is difficult, give oxygen. In case of a shock, practice the appropriate treatments as soon as possible.

**5. Fire fighting measures**

5.1. *Suitable extinguishing media:* Spay water, foam, carbon dioxide, chemical powder.

5.2. *Specific hazards:* In case of fire in the fumes may be present: carbon monoxide, carbon dioxide, nitrogen oxides, caprolactame, ketones, cyanides.

5.3. *Protection of fire-fighters:* Self-contained breathing apparatus, integral gas mask with polyvalent filter, gloves, boots, overall.

5.4. *Special rules:* When using fire-fighting equipment, do not raise dust in the air.

Cool the containers exposed to heat with spray water. The personnel must work windward as to the fire.

Move away no-protected and no-authorized people.

**6. Accidental release measures**

6.1. *General standards:* If spillage occurs on the public highway, indicate the danger and notify the authorities immediately (police, fire brigade). Eliminate all sources of ignition (heat, spark, flame, collision or electricity).

6.2. *Personal precautions:* Gloves, goggles, waterproof boots or shoes (see also point 8).

6.3. *Environmental precautions:* Stop the leakage and isolate the area. Prevent the product from spreading into the sewers or water courses.

6.4. *Product recovery:* Recover most part of the product in appropriate containers by using a broom and a shovel. Label the containers properly.

6.5. *Area cleaning and decontamination:* Polyamide granules left on the floor may cause falls. Sweep the ground carefully. See point 6.4.

6.6. *Disposal:* The collected non-reusable product and the polluted water must be sent to an authorised disposal site. Refer to what is indicated in point 13 "Disposal considerations".



**7. Handling and storage**

- 7.1. *Handling: Granules:* handle the product away from heat sources or flames.  
*Melted product (small laboratory quantities):* avoid breathing vapours; operate under suction hoods.  
Technical measures: Suction and dust collection systems. Grounding the equipment. Appropriate room ventilation.
- 7.2. *Storage.* Technical measures:  
*Packed product:* Store away from the direct rays of the sun in rooms provided with a proper ventilation.  
The packages must be kept closed until utilisation, particularly when the product is dry, because it absorbs humidity from air.  
*Storing in silo:* Store in stainless steel silos.  
*Packaging material* Multilayer cardboard octabins, polypropylene bags or polythene aluminium bags with barrier effect.  
*Incompatible products:* Strong oxidisers.

**8. Exposure control/personal protection**

Suction and ventilation equipment and systems must be designed so as to keep the concentration of dust in the room within recommended limits, particularly when remelting the product during working.

- 8.1. *Exposure limit values:* Relatively to the dust of polyamide 66, the exposure limits are referred to the particle (insoluble) not otherwise classified (PNOC)  
Inhalable particles: TLV-TWA (ACGIH) = 10 mg/m<sup>3</sup>  
Breathable particles: TLV-TWA (ACGIH) = 3 mg/m<sup>3</sup>
- 8.2. *Exposure control*  
*Respiratory protection: Granules:* dust-proof masks.  
*Melted product:* masks with polyfunctional filters (A-B-E-K) when executing operation that imply exceeding, even if temporarily, the levels allowed.  
*Eye protection:* Safety goggles.  
*Hand protection:* Leather gloves. Heatproof gloves when working with the product in a liquid state.  
*Personal protection:* Dust-proof overalls, headgear with face shield.  
*Collective measures:* Safety showers, eye bath.  
*Hygiene measures:* Do not drink, eat or smoke in the workplace.
- 8.3. *Exposure environmental control:* The product, in granular form, is inert and not biodegradable.

**9. Physical and chemical properties**

Appearance:  
Physical state: Granular solid.  
Colour: Colourless or white with TiO<sub>2</sub> additive  
Odour: Odourless  
Melting point: 260÷266,5° C  
Auto-ignition temperature: 400° C  
Density: 1.14 Kg/dm<sup>3</sup>  
Bulk density: 0.6-0.7 Kg/dm<sup>3</sup>  
Solubility in water: non soluble  
Thermal decomposition: stable up to 340° C  
Main solvents: formic acid, phenol

**10. Stability and reactivity**

10.1. *Stability*: The granular polyamide 66 is a stable product; it can be stored without modifying its qualities for a long time.

10.2. *Reactivity*: It reacts with strong oxidisers. It reacts with strong acids.

**11. Toxicological information**

Polyamides 66 are generally considered biologically inert.

**12. Ecological information**

Data not yet disposable.

**13. Disposal considerations**

13.1. *Prohibition*: Burying or discharging waste in rivers and drains is forbidden.

13.2. *Destruction/Disposal*: The polluted product that cannot be recovered may be destroyed through combustion in an appropriate incinerator.

13.3. *Polluted packages*: Send to an authorised disposal centre.

13.4. *Regulations in force*: Local law limits and prescriptions apply for what concerns product disposal.

**14. Transportation information**

There is no need of labelling the product according to EEC directive 67/548 since it is not classified as hazardous.

**15. Regulatory information**

Not subject to the labelling.

**16. Other information**

16.1. *Main bibliographic references*:

ACGIH 2001

28° Adjustment Regulation 67/548/CEE of the Council Regulation 2001/59/CE of the Committee of 6/8/2001

ADR 2001

The data and information in this sheet are based on our knowledge of this product at the time of publication. RADICI CHIMICA is not responsible for their correctness nor for the consequences that may derive from the utilisation of this information.

The only purpose of the safety data sheet is to describe the products as to their safety. The information do not represent warranty of quality.

This does not exonerate the user from ensuring that legal obligations, other than those mentioned, relating to the use and storage of the product, do not exist. This is solely his responsibility.