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CLIENT:
RICO YAÑEZ S.A.

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RE:
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Drafted by: **Date/Signature**
J. BENITO RODRÍGUEZ FERNÁNDEZ

Checked by: **Date/Signature**
FERNANDO SOLORZANO MIRANDA

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CHARACTERIZATION OF THE PRODUCT

0. IDENTIFICATION DATA FOR THE REPORT

0.1 PROJECT NUMBER: 1/98/0772-13

0.2 REPORT NUMBER: 01/2005

0.3 AUTHORS: J. BENITO RODRÍGUEZ FERNÁNDEZ
FERNANDO SOLÓRZANO MIRANDA

0.4 REPORT DATE: 30th March 2005

0.5 CLIENT: RICO YAÑEZ, S.A.
Attn. D. RODOLFO YAÑEZ
Carretera Nacional VI Km 586
15176. San Pedro de Nós.
La Coruña. Spain.

1. INTRODUCTION

This report corresponds to the analysis of a liquid characterized in accordance with Ministerial Order dated **October 13th 1989** published in the Spanish Official State Bulletin (BOE) Nº270 dated November 10th 1989, on the characterization of toxic and harmful residues, for the classification and labelling of the product **oxi…no** based on **Royal Decree 363/1995** giving approval to the Regulation on the notification of new substances and the classification, packaging and labelling of harmful substances, all subsequent decrees modifying this Regulation, **Royal Decree 255/2003** giving approval to the Regulation on the classification, packaging and labelling of harmful preparations, as well as **Royal Decree 1801/2003,** on the general safety of products.

This report includes data in relation to the tests carried out and the results obtained, as well as the reference methods used.

2. IDENTIFICATION AND SAMPLING

Sample data:

- **IDENTIFICATION:** OXI NO
- **REFERENCE:** 04-2375
- **DESCRIPTION:**

APPEARANCE: Liquid
COLOUR: Brown

- **DATE OF RECEPTION:** 18th October 2004

The sample used in this analysis was taken by the client and sent by messenger service to **the Chemical and Microbiological Analysis Laboratory of Norcontrol SOLUZIONA** in Sada, where it was received on 18.10.04. Two perfectly sealed 1-litre plastic flasks of the product **oxi...no** were received.

Below are details of the analyses carried out in order to characterize the residue to which this report refers.

3. DESCRIPTION OF THE TESTS CARRIED OUT

3.1 Inflammation point

Methods:

Non-equilibrium method applied to liquid residues, described in Section A.9 of 363/1995 giving approval to the Regulation on the notification of new substances classification, packaging and labelling of harmful substances, as detailed in Subsection Appendix to the Order dated October 13th 1989.

Materials and equipment:

Low temperature inflammation point measuring apparatus, Pensky-Martens model, ISO 2719 and DIN 51758 standards.

Results obtained:

The liquid analyzed has an inflammation point >55ºC, defined and determined according closed container method described in point A.9 of Royal Decree 363/1995.

3.2 Corrosiveness

Methods:

According to the B4 acute toxicity method (skin irritation), point 1.4.i, described in Royal Decree 363/1995, giving approval to the Regulation on the notification of new substances and the classification, packaging and labelling of harmful substances. Point 2 of the Appendix to the Order dated October 13th 1989.

pH: Electrochemical method

Material and equipment:

pH-meter.

Results obtained:

The sample does not have any corrosive characteristics, is liquid and has the following pH:

pH=2.10 units of pH at 25ºC

Conclusion: NEGATIVE RESULT

Verified that the sample does not have a pH value of 2 or less or higher than 11.5.

3.3. Reactividad

Métodos:

Verifications carried out according to point 3 of the Appendix to the Order dated 13th October 1989. Method to determine inflammability, according to Appendix II of the aforementioned Order. Features:

- Normally unstable and easily undergoing violent changes without detonation
- Reacting violently to water
- Forming potentially explosive mixtures with water
- Giving off easily inflammable and/or toxic gases in harmful quantities in contact with water or damp air
- Containing substances such as cyanides or sulphides, which when in environments with a pH of between 2 and 12.5 are capable of generating toxic gases.

Leaching test: according to DIN 38414.
The concentration of cyanides and sulphides was determined according to the methods shown below:

Verification of total cyanides: Evaluation or colorimetric method. UNEE 77029-83. Colorimetric method with chloramine –'D0T. Standard cancelled 28.06.02.
Evaluation of sulphides. Iodometric method. UNE 77043: 2002.

PARAMETERS	04-2375
Cyanides (mg/l)	<0.02
Sulphides (mg/l)	<1

Material and equipment:

As described in the methods above.

Results obtained:

The sample analyzed does not present any of the reactivity features expressed in the Order dated October 13th 1989 for the characterization of harmful residues.

3.4 Carcinogenic, mutagenic and teratogenic substances:

In order to verify if the residue contains carcinogenic substances, tests were carried out to determine the concentration of the following metals: arsenic, beryllium, chrome VI, nickel and cadmium.

Methods:

Verification of metals by atomic flame absorption spectrophotometry, except for arsenic, measured using the hydride and chrome VI generator technique, with measurement made using UV-VIS spectrophotometry.

Material and equipment:

Atomic absorption spectrophotometer with hydride generator.
Molecular absorption spectrophotometer.

Results obtained:

The table below shows the results obtained for the parameters verified in the sample analyzed:

PARAMETERS	GROUP/CATEGORY (IARC CLASSIFICATION)	RESULT 04-2375
Chrome VI (%)	1	<0.01
Nickel (%)	1	<0.05
Cadmium (%)	1	<0.05
Arsenic (%)	1	<0.04
Beryllium (%)	1	<0.02
Cobalt (%)	2	<0.05
Lead (%)	2	<0.02
Chrome (%)	3	<0.1
Mercury (%)	3	<0.1

According to Appendix 2 to Order MAM/304/2002, from February 8h, a residue is considered as carcinogenic if it contains “any substance that may be a known carcinogen from category 1 or 2 in a concentration of ≥ 0.1 %, or if it contains “a substance that may be a known carcinogen from category 3 in a concentration of ≥1 %”.
The sample analyzed does not contain any of the substances considered as carcinogenic from group 1 or 2 analyzed, in a concentration of 0.1% or higher, nor any of the substances considered as carcinogenic from group 3 analyzed, in the characterization of harmful residues.

3.4.1 Analysis of mutagenic activity (Ames Test)

Métodos y materiales:

Methods and materials:

Analytical methods used

Plaque incorporation method with and without metabolic activation with microsomal fraction of rat liver (S9) and preincubation at 37ºC for 20 minutes. Procedure used according to Ames (Maron, D.M. and N.N. Ames, 1983. Revised Method for the Salmonella Mutagenicity Test. Mutation Res., 113, 173-215)

Sterility control for the sample

Correct

Preparation of the sample

Filtered once with a filter with membrane of 0.45 µm

Strains used

TA1535 +/- metabolic activation (S9)
TA 1537 +/- metabolic activation (S9)
TA98 +/- metabolic activation (S9)
TA100 +/- metabolic activation (S9)

Doses tested

Dose 1: 0.1 ml/plaque
Dose 2: dilution 1/2 dose 1
Dose 3: dilution 1/2 dose 2.

A) Without metabolic activation

RESULTS WITHOUT METABOLIC ACTIVATION					
Strain N° of reverting colonies per plaque	NUMBER OF REVERTING COLONIES PER PLAQUE				
	Positive control	Negative control	Dose 1	Dose 2	Dose 3
TA 1535	+	*16*	*15*	*16*	*17*
	+	*18*	*15*	*18*	*19*
	+	*18*	*19*	*20*	*23*
		20			
		21			
Mean SD		*18,6*	*16,3*	*18,0*	*19,7*
		1,9	*2,3*	*2,0*	*3,1*
TA 1537	+	*8*	*10*	*8*	*11*
	+	*9*	*11*	*9*	*10*
	+	*9*	*13*	*11*	*10*
		10			
		10			
Mean SD		*9,2*	*11,3*	*9,3*	*10,3*
		0,8	*1,5*	*1,5*	*0,6*
TA 98	+	*27*	*27*	*33*	*28*
	+	*27*	*28*	*29*	*32*
	+	*29*	*34*	*29*	*32*
		31			
		33			
Mean SD		*29,4*	*29,7*	*30,3*	*30,7*
		2,6	*3,8*	*2,3*	*2,3*
TA 100	+	*97*	*99*	*97*	*99*
	+	*101*	*103*	*102*	*101*
	+	*103*	*108*	*104*	*106*
		104			
		107			
Mean SD		*102,4*	*103,3*	*101,0*	*102,0*
		3,7	*4,5*	*3,6*	*3,6*

B) With S9 from rat liver induced with Aroclor

RESULTS WITH S9 FROM RAT LIVER INDUCED WITH AROCLOR					
Strain N° of reverting colonies per plaque	**NUMBER OF REVERTING COLONIES PER PLAQUE**				
	Positive control	**Negative control**	**Dose 1**	**Dose 2**	**Dose 3**
TA 1535	+	*16*	*17*	*23*	*17*
	+	*16*	*19*	*22*	*13*
	+	*18*	*22*	*20*	*19*
		19			
		21			
Mean		*18,0*	*19,3*	*21,7*	*16,3*
SD		*2,1*	*2,5*	*1,5*	*3,1*
TA 1537	+	*8*	*10*	*10*	*8*
	+	*9*	*12*	*11*	*9*
	+	*10*	*13*	*12*	*9*
		10			
		11			
Mean		*9,6*	*11,7*	*11,0*	*8,7*
SD		*1,1*	*1,5*	*1,0*	*0,6*
TA 98	+	*28*	*34*	*35*	*33*
	+	*30*	*38*	*38*	*36*
	+	*31*	*40*	*41*	*38*
		33			
		35			
Mean		*31,4*	*37,3*	*38,0*	*35,7*
SD		*2,7*	*3,1*	*3,0*	*2,5*
TA 100	+	*97*	*99*	*103*	*98*
	+	*100*	*103*	*107*	*100*
	+	*102*	*106*	*109*	*104*
		103			
		107			
Mean		*101,8*	*102,7*	*106,3*	*100,7*
SD		*3,7*	*3,5*	*3,1*	*3,1*

Observations:

With regard to the results shown in the tables, according to the spontaneous reversion values of strains TA1535, TA1537, TA98 and TA100, with and without the S9 microsomal fraction, the product analyzed does not induce the reversion of the strains, so that:

Result: The sample analyzed is considered as NON-MUTAGENIC at the doses tested.

3.4.2 Toxicity Test on sample 04-2375:

ACUTE ORAL TOXICITY IN MICE (OCDE 423 method)

Animals used for experimentation:

3 male/female albino mice, weight 24-26 gr.

Experimentation conditions:

- Fourteen days
- Temperature 22ºC (+3ºC)
- Selective humidity: 30-70%
- Lighting: 12 hours light, 12 hours darkness
- Feed: conventional

Dose Tested:

Dose of 2000 mg/1000g of animal´s weight, according to Order dated October 13th 1989 (Spanish Official State Bulletin nº 270) "Characterization of Toxic and Harmful Residues" and Royal Decree 363/1995 of March 10th (Appendix V).

Results

Dose Mg/kg	Dead Animals / Days													
	Time s	Days						Time s	Days					
Sex (M/H)	M	M	M	M	M	M	M	F	F	F	F	F	F	F
Days	1-4	1	2	3	4	7	14	1-4	1	2	3	4	7	14
2000 mg/Kg	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3	0/3

DL50 2000 mg/Kg. Orally non-toxic product

The dose tested during the experimentation period of fourteen days did not cause any losses as a result of death, or any visibly apparent effects.

ACUTE CUTANEOUS TOXICITY IN RABBIT (OCDE 402 method):

Experimentation animals:

5 albino male/female New Zealand rabbits, weighing between 2-3 kg.

Experimentation conditions:

- Fourteen days
- Temperature: 20ºC (+3ºC)
- Selective humidity: 30-70%
- Lighting: 12 hours of light, 12 hours of darkness
- Feed: conventional

Dose tested:

Dose of 2000 mg/1000g. of animal's weight. After shaving 6% of the animal's body, contact was made with the sample for 24 hours, according to the Order dated October 13th 1989 (Spanish Official State Bulletin nº. 270) "Characterization of Toxic and Harmful Residues", and Royal Decree 363/1995 from March 10th (Appendix V)

Resultados

Dose Mg/kg	Dead Animals / Days													
	Time s	Days						Time s	Days					
Sex (M/H)	*M*	*M*	*M*	*M*	*M*	*M*	*M*	*F*	*F*	*F*	*F*	*F*	*F*	*F*
Days	*1-4*	*1*	*2*	*3*	*4*	*7*	*14*	*1-4*	*1*	*2*	*3*	*4*	*7*	*14*
2000 mg/Kg	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*	*0/5*

DL50≥2000 mg/kg. Product is not toxic by skin contact.

A slight skin irritation was noted, possibly due to its pH of 2. Redness of the skin lasted 24 hours and then disappeared.

The dose tested during the experimentation period of fourteen days did not cause any deaths, although a slight skin irritation was noted that was visible for 24 hours after application of the residue.

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3.5. Lixiviación y Ecotoxicidad

3.5.1 Acute CL50/CE50 toxicity in Daphnia

Standard:

A residue is considered toxic if the leaching agents have an acute CL50 toxicity for Daphnia of 750 mg/litre or less.

Method:

Royal Decree 363/1995 dated March 10th, ratifying the Regulation on the notification of new substances and the classification, packaging and labelling of harmful substances. Appendix V; Testing Methods. Section C.2.: Acute toxicity in Daphnia.

Material, experimental conditions and procedure:

The breeding tank used is made of glass and measures 240mm wide x 400 mm long x 200 mm high, with a glass lid with corner ventilation, artificial lighting with 12 hours of light and 12 hours of darkness, and oxygenation using an electric pump and porous filter. Feeding was on alternate days with a suspension of baker's yeast in an aqueous solution of 1 mg/ml.

Test conditions

- Receptacle: Erlenmeyer tubes in borosilicate glass, 100 ml.
- Lighting: 12 hours of light and 12 hours of darkness
- Water temperature: 20 ±n 1ºC.
- Oxygenation: without oxygenation during testing
- Feeding: no feeding during testing.
- Water quality: packaged natural mineral water.

- pH: 7.59 units pH
- Calcium: 62.1 mg/litre
- Magnesium: 18.2 mg/litre
- Potassium: 0.5 mg/litre
- Sodium: 0.7 mg/litre
- Silicon: 3.2 mg/litre
- Sulphates: 21.3 mg/litre
- Bicarbonates: 252.4 mg/litre
- Chlorides: 2.1 mg/litre
- Dry residue: 240 mg/litre

The sample is drawn up in a pipette and dissolved in diluting water, in an equal amount to that normally used in the breeding aquarium. The test solution is distributed in the glass containers in quantities of 100 ml. per unit, so that the test quantity corresponded to 10 ml. of solution for each animal.

The animals used for the control group were kept in identical containers, with diluting water of the same quality as that used in the sample suspension.

On the day of administration, 24 hours and 48 hours later, the animals were clinically examined, observing:

1. Mortality
2. General condition of the animal (somatic and motor activity, behaviour, shaking, flotation, immobility).
3. The progress of mobility is controlled in both the group to which the substance was administered, as well as in the control group.

In this test, acute toxicity is expressed by the Effective Mean Concentration (CE50) for immobility: the concentration that inhibits the mobility of 50% of the daphnia from one batch subjected to testing during an exposure period of 48 hours.

The requirements of the Directive on CL50 regarding Daphnia are therefore fulfilled through the determination of CE50 according to this test method.

Animal species: Daphnia magna

Number of animals: 20, shared out in batches of 10

Age: Young less than 24 hours old

Load: 10ml. of test solution per animal

Test period: 48 hours

Test result:

Sample reference	04-2375
IMMOBILITY RATE 0	0 % (CONCENTRATIÓN 750 mg/l)

CONTROL GROUP: The immobility of the control animals at the end of the test was lower than 10%, and they were not drawn towards the surface of the water.

Conclusion:
LEACHING OF NON-TOXIC RESIDUE, according to the Daphnia test (immobility rate <50%)

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3.6 Relative density

Methods:

Verification of density. Gravimetric method in lined flask.

Materials and equipment:

Volumetric material

Results obtained:

Density = 0,976 mg/dm^3

3.7 Biodegradability

Methods:

Verification of DB05. Winkler Method
Verification of DQO. Potassium dichromate method.

Materials and equipment:

Volumetric material and heating blankets

Results obtained:

DBO5 < 30 mg/l
DQO < 300 mg/l

4. SUMMARY OF RESULTS

The table shown below offers a summary of the results obtained for the sample considered, indicating the sections of the Order from October 13th 1989 that act as points of reference, the features being tested, the results obtained, and the sections of the report in which they are described.

Order 13/10/89	CHARACTERISTIC	RESULT 04-2375	REPORT SECTIONS
1	Inflammation point	NEGATIVE	3.1
3	Reactivity	NEGATIVE	3.2
2	Corrosiveness features	NEGATIVE	3.3
4.5	Carcinogenic, mutagenic and teratogenic substances	NEGATIVE	3.4
6	Acute oral toxicity in rats	NEGATIVE	3.4.1
6	Acute dermal toxicity in rabbits	NEGATIVE	3.4.2
7	Acute toxicity of CL50/CE50 in Daphnia: immobility rate <50%	NEGATIVE	3.5.1

IT IS CONCLUDED THAT FOR THE TESTS CARRIED OUT, THE PRODUCT ANALYZED DOES NOT PRESENT ANY HARMFUL CHARACTERISTICS.

The details given below indicate the tests carried out for each of the characteristics or H codes listed in table 5 of Royal Decree 952/1997.

H1. "Explosive". Due to the nature of the sample liquid tested, only a heating test without confinement with a gas flame and another shock test are considered, as described in Section A.14, 'Explosive properties', paragraph 14.1 of Appendix V to Royal Decree 363/1995. The text of Test A.14 expressly states that "it is not necessary to carry out testing if the material does not present any risk of explosion".

H2. "Combustible". Due to the liquid nature of the sample being tested, it was not considered necessary to carry out the preliminary test described in method A.17, 'Combustible properties (solids)' from Royal Decree 363/1995, as this is only applicable to solid products

H3-A- "Easily inflammable". The non-equilibrium method with a Pensky-Martins apparatus is used, checking at least in the case of liquid residues if they have an inflammation point of 22ºC or lower. Verification is carried out according to method A.9, Inflammation Point, described in Royal Decree 363/1995, ratifying the Regulation on the notification of new substances and the classification, packaging and labelling of harmful substances.

H3-B. "Inflammable". The non-equilibrium method with a Pensky-Martins apparatus is used, checking at least in the case of liquid residues if they have an inflammation point of 22ºC or lower. Verification is carried out according to method A.9, Inflammation Point, described in Royal Decree 363/1995, ratifying the Regulation on the notification of new substances and the classification, packaging and labelling of harmful substances.

Verification is also made that no easily inflammable gases are given off in harmful amounts oncontact with water, in accordance with stages 1 and 2 of method A.12, Inflammability (in contact with water) described in Royal Decree 363/1995.

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H4, H5 and H6: "Irritant", "Harmful" and "Toxic". Oral toxicity test in mice and acute cutaneous in rabbits. Verification if the product is toxic for mice in oral doses of 2000 mg/Kg or higher, and DL50 toxicity through skin contact for doses of 2000 mg/Kg. In order to carry out the oral toxicity test ("Toxic" and "Harmful") the conditions are applied as described in method B.1 "Acute Toxicity (Oral)" – Fixed dose method, in Royal Decree 363/1995. In the case of the toxicity by contact test ("Toxic", "Harmful" and "Irritant"), the conditions are applied as described in method B3, "Acute toxicity through cutaneous contact"'D3 as described in Royal Decree 363/1995, ratifying the Regulations on the notification of new substances and the classification, packaging and labelling of harmful substances.

H7: "Carcinogenic". Testing is carried out in order to verify the concentration of the metals arsenic, beryllium, cadmium, chrome VI and nickel, considered as carcinogens (group 1) by the IARC (International Agency for Research on Cancer) and cobalt and lead, considered as possibly carcinogenic (group 2B), and chrome and mercury, considered in group 3. To do so, atomic flame absorption spectrophotometry analysis techniques are used, except for mercury, determined using the cold vapour method.

H8: "Corrosive". The electrochemical method is used to verify the pH of the product, checking if its pH is 2 or less or 11.5 or higher.
Information is also obtained form the acute toxicity skin test ("Toxic", "Harmful" and "Irritant"), according to the conditions described in method B3, "Acute Toxicity through skin contact", in Royal Decree 363/1995.

H9: "Infectious". Testing was not considered necessary, as no method has been established by law.

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H10. "Toxic for reproduction". Due to the nature of the sample being tested and the prolonged completion period involved, this test was not considered as necessary.

H11. "Mutagenic". The Ames test is carried out with 4 strains (including TA98 and TA100) of Salmonella Typhimurium with and without the S9 fraction without repeatability, described in B.13/14, "Mutagenicity- inverse mutation test in bacteria" from Royal Decree 363/1995.

H12. Substances or preparations that emit toxic or highly toxic gases on contact with the air, water or acids. Testing is carried out to establish the presence or absence of the following reactivity features:

+ Being normally unstable and easily prone to violent changes without detonation
+ Reacting violently with water
+ Forming potentially explosive mixtures with water
+ Giving off easily inflammable and/or toxic gases in dangerous amounts in contact with water or damp air
+ Containing substances such as cyanides or sulphides, which when in environments with a pH of between 2 and 12.5 may generate toxic gases.

These tests, if applied, are carried out in accordance with the stipulations of Appendix II to the Order dated October 13th, 1989.

H14. "Harmful to the environment". Testing for ecotoxicity with Daphnia magna is proposed. Testing is carried out at 48 hrs. with trial concentrations of CE50 of 1 mg/l, 10 mg/l and 100 mg/l, according to Section C.2, "Acute Toxicity in Daphnia" from Royal Decree 363/1995.

In order to have information on the biodegradability of the product, the DB05/DQO, according to sections C.5 "Degrading: biochemical oxygen demand" and C.6 "Degrading: chemical oxygen demand", from Royal Decree 363/1995.

In summary, the table below shows the tests carried out in relation to the H codes, together with the results of the tests.

H CODE	TEST/METHOD	RESULT
H1 Explosive	Not necessary for type of sample (point A14, RD 363/1995)	...
H2 Combustible	For type of sample, reactivity (Order 13/10/89)	Negative
H3 A-Easily inflammable	For type of sample, reactivity (Order 13/10/89) Point A9 from RD 363/1995 applicable	Negative
H3 B- Inflammable	For type of sample, reactivity (Order 13/10/89) Point A9 from RD 363/1995 applicable	Negative
H4 Irritant	Contact toxicity (point B3 of RD 363/95)	Negative
H5 Harmful	Contact toxicity point B3 of RD 363/95) Oral toxicity (point B1 of RD 363/95)	Negative
H6 Toxic	Contact toxicity point B3 of RD 363/95) Oral toxicity (point B1 of RD 363/95)	Negative
H7 Carcinogen	Concentrations of carcinogenic metals according to IARC (Order dated 13/10/89, Council Decision 22/12/94 and Order MAN/304/2002	Negative
H8 Corrosive	Contact toxicity (Point B3 from RD 363/95) Verification of pH (indicative, but not applicable) (Order dated 13/10/89)	Negative
H9 Infectious	Method not defined in law	Negative
H10 Toxic for reproduction	Testing not carried out due to complexity and duration	Negative
H11 Mutagenic	Ames Test (point B14 of RD 363/95)	Negative
H12 Emission of toxic gases	For type of sample. Reactivity (Order dated 13/10/89)	Negative
H13 Other substance	Method not defined in law	Negative
H14 Harmful to the environment	Ecotoxicity of leaching CL50/CE50 in Daphnia	Negative

Based on the type of sample and the tests carried out, the product may be classified as harmless

CHARACTERIZATION OF THE PRODUCT