



LABORATORI
D'ENGINYERIA PAPERERA
I MATERIALS POLIMÈRICS



Universitat
de Girona

Product in accordance

with Recommendation XXXVI of german BfR about paper and
board designed for foodstuffs contact

The sample composition of ADHESIVO A-251 manufactured by
TORRASPAPEL, SA, is in accordance with the Recommendation
XXXVI of German regulation BfR and passed the suitability tests
related to pentachlorophenol, polychlorobiphenyles, metallic
elements (mercury, cadmium, chromium and lead), antimicrobial
constituents and formaldehyde to come into contact with foodstuffs
as described in actual fabrication.

Correspondence number: eCP_09_05 /SP

Issued on: July, 5th 2005

Service responsible

M^a Angels Pèlach

Dr. Chemistry Science

Membre de:



ANALYSIS DESCRIPTION AND RESULTS

Sample: ADHESIVO A-251

Experimental analysis and standard methods related:

Analysis	Standard Method
Determination of pentachlorophenol: PCP	EPA 604
Determination of 7 specified polychlorinated biphenyls (PCB)	EN ISO 15318: 1999
Determination of transfer of antimicrobial constituents	UNE-EN 1104
Paper and board intended to come in contact with foodstuffs- Determination of mercury in an aqueous extract.	UNE-EN 12497
Paper and board intended to come in contact with foodstuffs- Determination of cadmium, lead and chromium in an aqueous extract.	UNE-EN 12498
Determination of formaldehydes in an aqueous extract	EN 1541

**DETERMINACIÓN OF PENTACHLOROPHENOL (PCP)
METHOD EPA 604: PHENOLS**

1.- SAMPLE DESCRIPTION:

– Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL, SA

3.- DATE AND PLACE OF TESTING:

– February 12th, 2004

– CROMLAB S.L. Acer 30-32 pl.2 mód. 3
08038 BARCELONA

4.- SAMPLE TREATMENT:

Extraction of 10g of sample in Soxhlet with Hexane: Dichloromethane (1:1).

5.- RESULTS:

Results obtained by means of HRGC-ECD for the sample is:

		<u>Maximum value allowed*</u>
Pentachlorophenol	35,5 ng/g	100 ng/g (ppb)
MDL 10 ng/g		

* Ministère de l'Économie, des Finances et de l'Industrie, France- 13 décembre 2000.

**DETERMINATION OF 7 SPECIFIC POLYCHLORINATED BYPHENIL
(PCB). EN ISO 15318: 1999**

1.- SAMPLE DESCRIPTION:

- Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL, SA

3.- DATE AND PLACE OF TESTING:

- March 25th, 2004
- CROMLAB S.L. Acer 30-32 pl.2 mód. 3
08038 BARCELONA

4.- SAMPLE TREATMENT:

Extraction of PCB and the preparation of standard solutions have been done it as method ENV 1798:1995 describes.

5.- RESULTS:

Chromatographic analysis allows detecting the presence of profiles from polychlorinated byphenyls. Detection limits for each one are:

	CB	($\times 10^{-3}$ mg/kg) ¹
2,4,4'- Trichlorobiphenyl	28	0,16
2,2',5,5'- Tetrachlorobiphenyl	52	n.d.
2,2',4,5,5'- Pentachlorobiphenyl	101	0,17
2,3',4,4',5- Pentachlorobiphenyl	118	1,05
2,2',4,4',5,5'- Hexachlorobiphenyl	138	0,96
2,2',3,4,4',5'- Hexachlorobiphenyl	153	n.d.
2,2',3,4,4',5,5'-Heptachlorobiphenyl	180	n.d.
Total content of PCB's		2,34 · 10⁻³ mg/kg

Total content of polychlorinated biphenyl in sample ADHESIVO A-251 is lower than the maximum limit allowed (<2 mg/Kg) by EN ISO 15318 method.

¹ Límite de detección 0.10 ng/g

**DETERMINATION OF TRANSFER OF ANTIMICROBIC
COMPONENTS according to UNE-EN 1104.**

1.- SAMPLE DESCRIPTION:

- Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL, SA

3.- DATE AND PLACE OF TESTING:

- March, 5th 2004

Grupo LEPAMAP. Universitat de Girona.

Av. Lluís Santaló s/n. 17071 GIRONA

4.- SAMPLE TREATMENT:

The preparation of culture means is made following the indications given in mentioned method.

Plates of petri prepared with *Bacillus Subtilis* and *Aspergillus Niger* are incubated during 3 days to 30°C and 5 days to 25°C respectively. It is observed a growth of flora in all the surface and therefore evidence of zone of inhibition is not appreciated. So, the sample does not contain antimicrobial components that are water soluble.

DETERMINATION OF MERCURY IN AN AQUEOUS EXTRACT.

UNE-EN 12497

1.- SAMPLE DESCRIPTION:

- Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL, SA

3.- DATE AND PLACE OF TESTING:

May, 18th 2005

4.- SAMPLE TREATMENT

Sample preparation and mercury extraction have been carried out according to UNE-EN 645 regulation and UNE-ENV 12497

5.- RESULTS.

	Results (ppm)	Maximum allowed value (ppm)
Mercury	< 0,015 ppm	0,3

These results are expressed in $\mu\text{g/g}$.

Maximum value is those allowed in Recommendation XXXVI of german BfR for this specific metal referred to soluble part.

The sample analysed: ADHESIVO A-251 is **agree** with Recommendation XXXVI of BfR.

**DETERMINATION OF CADMIUM, CHROMIUM AND LEAD IN AN
AQUEOUS EXTRACT. UNE-EN 12498**

1.- SAMPLE DESCRIPTION:

– Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL, SA

3.- DATE AND PLACE OF TESTING:

Cd, Pb, Cr analysis:

May 18th, 2005

4.- SAMPLE TREATMENT

Sample preparation and cadmium, chromium and lead extraction have been carried out according to UNE-EN 645 and UNE-ENV 12498 regulations

5.- RESULTS.

	Results (ppm)	Maximum allowed value (ppm)
Cadmium	<0,025	0,5
Chromium	<0,025	
Lead	0,078	3

These results are expressed in µg/g.

Chromium content is measured as total chromium. Maximum value is those allowed in Recommendation XXXVI of BfR for these specific metals referred to soluble part.

The sample analysed: ADHESIVO A-251 is agree with Recommendation XXXVI of BfR.

**DETERMINATION OF FORMALDEHYDE IN AQUEOUS EXTRACT.
EN 1541 METHOD**

1.- SAMPLE DESCRIPTION:

- Sample: ADHESIVO A-251

2.- MANUFACTURER:

- TORRASPAPEL S.A.

3.- DATE AND PLACE OF TESTING:

- January 13th, 2004
- Universitat de Girona. Chemical Engineering Department
Av. Lluís Santaló s/n. 17071 GIRONA

4.- SAMPLE TREATMENT AND RESULTS

Sample has extracted with cold water according to UNE EN 645. Formaldehyde content was analysed as it is determined in UNE-EN 1541 standard.

Formaldehyde content is:

	<u>Content</u>	<u>Maximum value allowed</u>
Formaldehyde		
Cold water extract.	$< 0,001 \text{ mg/dm}^2$	1 mg/dm^2

Formaldehyde level in sample ADHESIVO A-251 is lower than maximum value allowed by Recommendation XXXVI of German BfR Reglamentation.