AND METAL CONTAINERS AND ACCESSORIES
FOR BAKING AND CONFECTIONERY
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Messrs.
Client

March 2011

Re: *Technical characteristics and declaration of suitability for food use of EPP (expanded polypropylene) for handling and carrying of food in the catering industry.*

The undersigned PAVONI Italia S.p.A hereby states that the expanded polypropylene containers it produces and sells, by virtue of the chemical, physical and mechanical properties of EPP, are:

1. Suitable for secondary packaging, i.e. for carrying food in its original packing or protected by hygienic wrapping in accordance with the relevant HACCP Plans.

2. Suitable for supporting a weight load of 2.5 kg/cm^2, equivalent to an overall load of 10 kg/container when lifted and compressive force of 100 kg/container when evenly distributed across the surface of the container (container density 30 g/l).

3. Suitable for protecting food from impact and mechanical stress thanks to the thickness and structure of the expanded closed cell polymer used.

4. Suitable for protecting food from thermal stress and temperature changes thanks to the insulating properties of the expanded polymer used, which has a thermal resistance factor (Lambda) of 0.039 W/m.K and guarantees thermal loss of 1.5-2.5°C/h/container.

5. Resistant to the use of dry ice (solid CO_2) used to keep chilled food cold, provided they are wrapped in an appropriate HACCP-recognised plastic film.

6. Suitable for washing and sanitizing using HACCP-recognised products commonly used for industrial purposes:

a) anionic surfactants (pH 12-12);
b) non-ionic surfactants (pH 10-12);
c) surfactants combined with quaternary ammonium salts (pH 7-9);

d) water/alcoxol surfactants (isopropyl acid) with pH 7-9;
e) specific products, such as Amuchina disinfectant and/or recognised sanitizing agents foreseen in xygiene rules applying HACCP principles;
f) xot water (continuous cycle) at a max temperature of 80°C or jets of steam (alternating cycle);

7. Resistant to the main categories of chemical agents, their behaviour as set out in the enclosed table.

8. Suitable for recycling as they are made from a single component, do not contain chlorates and are not subject to special RoHS and REACH rules. The containers do not contain hazardous chemical substances or any unacceptable substances foreseen by current primary and secondary packaging recycling standards.

This declaration concerning the technical specifications and suitability for food for the purpose for which they are conceived, designed and built accompanies each shipment of our EPP containers.

PAYONI Italia S.p.A.

Enclosures :
Enclosure A
Symbols
Comparative Sheet
Temperature Curve
Applicable norms sheet

ENCLOSURE A
RESISTANCE TO CHEMICAL PRODUCTS

Resistance of ARPRO after coming into contact with chemical products.

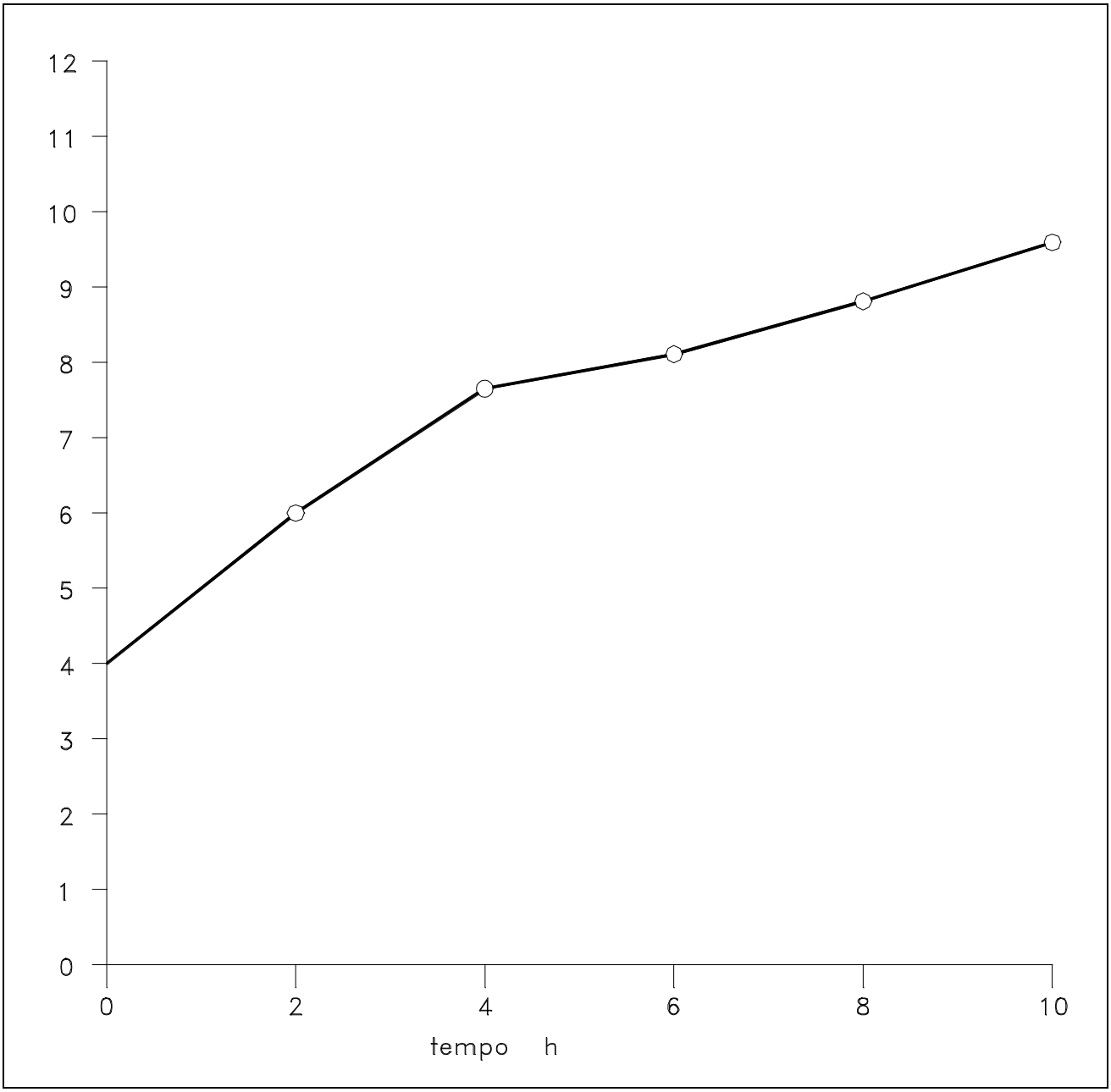
Active agent	*Assessment*	*Observations*
1) Hydrochloric acid 10%	+	
2) Concentrated Hydrochloric acid	+-	
3) Sulphuric acid 3%	+	
4) Sulphuric acid 30%	+	
5) Nitric acid 10%	+-	
6) Distilled water	+	
7) Sea water	+	
8) Hydrogen peroxide 10%	+	
9) Hydrogen 5%	+	
10) Sodium hydroxide	+	
11) Sodium chloride solution	+	
12) Diethyl ether	-	crystallization
13) Acetic acid 3%	+	
14) Concentrated acetic acid	+-	
15) Purified petroleum 100-400	+-	
16) Diesel fuel	+-	swelling, colour changes browning
17) Petroleum	+-	swelling crystallization
18) Turpentine	+	crystallization swelling
19) Olive oil	+-	
20) Purified petroleum + benzene 1:1	+-	yellowing
21) Benzene	+-	yellowing
22) Tetralin	-	
23) Decalin (decahydronaphthalene)	+-	partial deformation
24) Acetone	+	
25) Tetrahydrofuran	-	
26) Ethyl acetate	+	
27) Trichloroethane	+-	crystallization swelling
28) Formalin	+-	deformation

+ Expanded polypropylene resists without any material chemical/physical alterations
+- Expanded polypropylene tends to shrink or swell after prolonged exposure
- Expanded polypropylene shrinks to a greater/lesser degree

COMPARISON OF THE DIFFERENT TYPES OF EPP USED FOR CARRYING FOOD

Proprieties	U.M.	EPP (1)	EPP (2)	EPP (3)	Test specifications
Apparent density	Kg/m^3	20	30	40	DIN EN 53420
Tensile strength Ultimate strength	KPa %	260 14	330 12	600 12	DIN EN 53571 DIN EN 53421
Compressive stress: - 25% deformation - 50% deformation - 75% deformation	 KPa KPa KPa	 90 170 350	 140 250 520	 230 320 750	DIN EN 53420
Permanent plastic deformation after compression 22h/RT – 24h/unloading - 25% compression - 50% compression	 % %	 9.2 27.0	 9.4 27.2	 9.8 27.0	DIN EN 53572
Impact elasticity	%	46	35	29	DIN EN 53512
Compressive strength	KPa	50	100	200	DIN EN 53577
Padding factor "C" (at optimal work point) Specific energy absorption (h/t = 10)	/ KNm/m^3	2.8 90	2.7 140	2.7 320	ISO UNI EN 4651
Static compression at RT for 100 days	KPa	12	25	-	ISO UNI EN 7850
Dimensional stability (heat) Thermal conductivity at 10°C	°C W/m.K	110 0.039	110 0.040	110 0.041	DIN EN 52612
Water absorption - After 24 h - After 168 h	 % %	 0.5 1.5	 0.6 0.9	 0.6 1.0	DIN EN 53428
Surface resistance	Ohm	$5\text{-}10^{12}$	$5\text{-}10^{12}$	$5\text{-}10^{12}$	DIN VDE 0303T.3

TEMPERATURE CURVE AT THE CENTRE OF FOOD IN AN EPP CONTAINER (1)

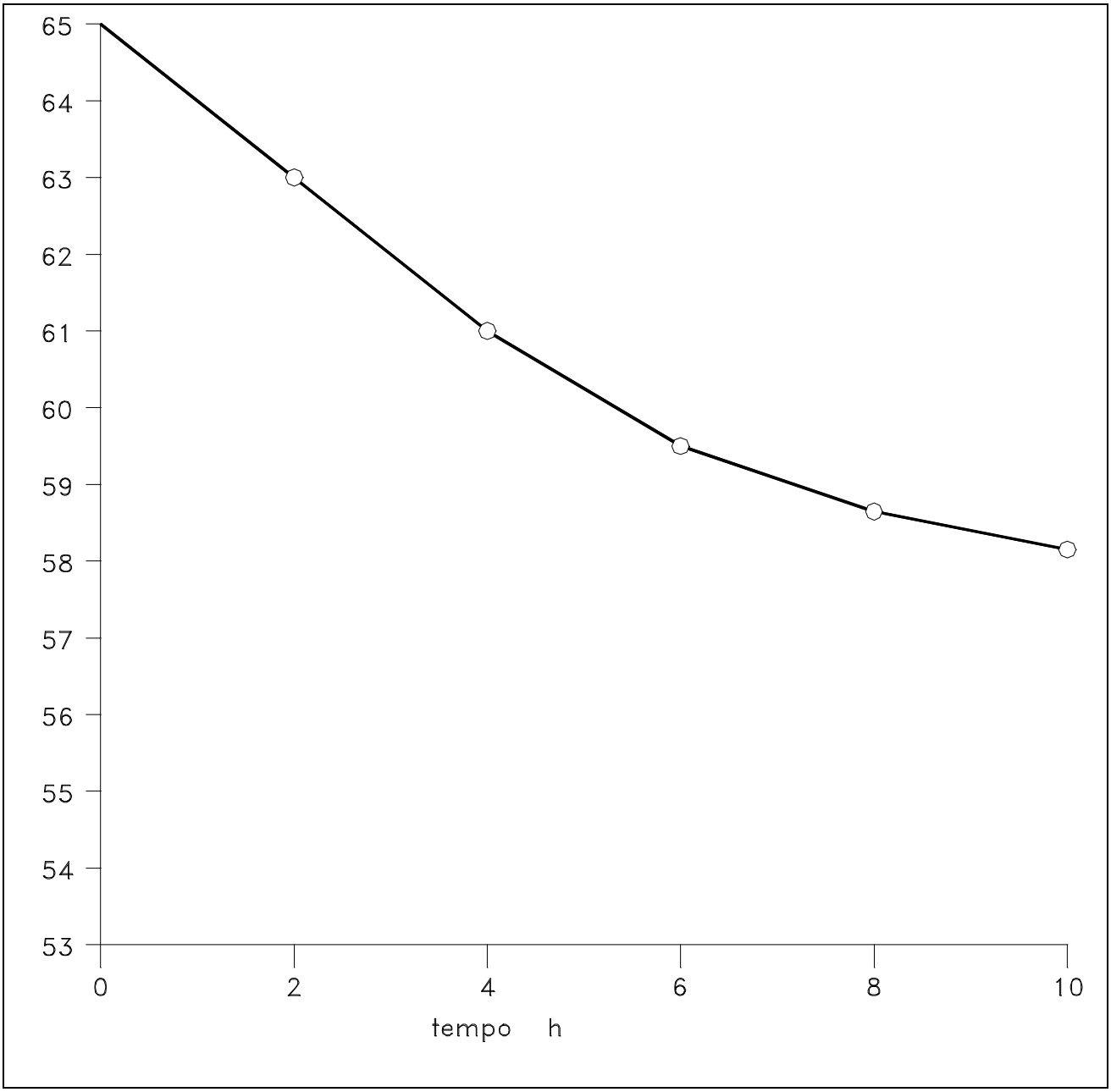


TEMPERATURE
T°C room +22°C

Roast-beef T°C test + 4°C

CONTAINER
EPP density 40 g/l
Wall thickness 30 mm.

TEMPERATURE CURVE AT THE CENTRE OF FOOD IN AN EPP CONTAINER (2)



TEMPERATURE
T°C room +22°C

Veal point T°C +65°C

CONTAINER
EPP density 30 g/l
Wall thickness 30 mm.

Applicable Norms

Expanded Polypropylene satisfies the following European and Italian standards used as Guidelines for materials used to produce primary and secondary packaging in the food and food-contact sectors:

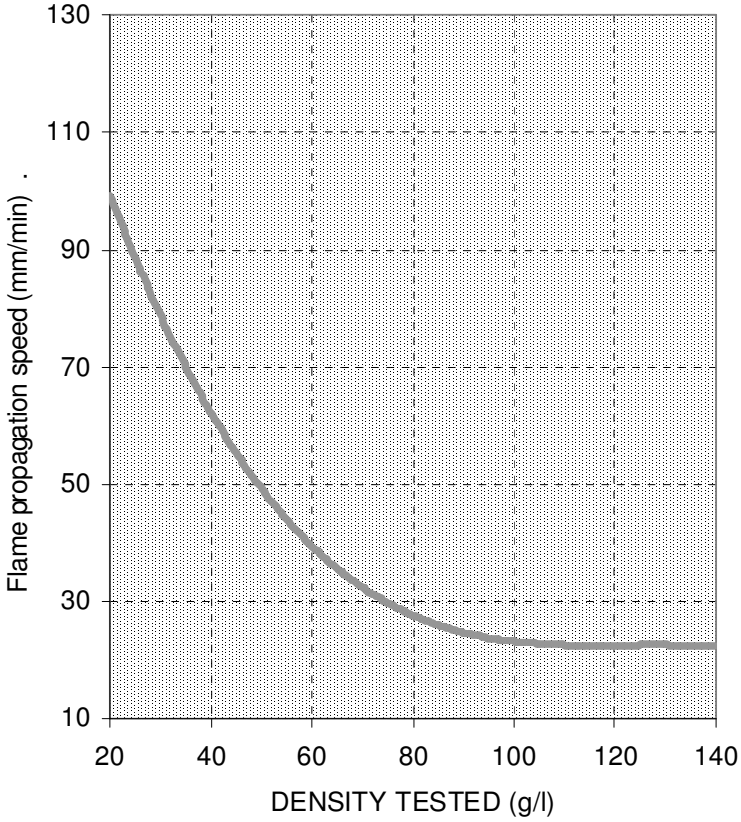
CE 2002/72 dated 6 August 2002;
CE 2004/19 dated 1 March 2004;
CE 2004/1935 dated 27 October 2004;
CE 2005/79 dated 18 November 2005;
CE 2008/39 dated 6 March 2008;
CE 2006/2023 dated 22 December 2006;

Italian Ministerial Degree dated 21/03/73 and subsequent amendments;
Italian Legislative Decree n° 108 dated 25/01/92;
Italian Ministerial Decree n° 572 dated 24/09/96;

It also meets the technical and sanitary hygiene requirements of the NSF (National Sanitation Foundation). It is also suitable to be used as equipment in HACCP compliant environments.

FLAME/DENSITY PROPAGATION SPEED

FMVSS 302, ISO 3795 *



* Thickness of test specimens: 12.5 mm