Emission: 28/04/2016

Technical Data Sheet

ESTABIO PL 0640 T05

Biodegradable compound with high HDT accomplishing the EN 13432, developed for the production via injection moulding technology of coffee caps.
The product was tested using as specimen an used coffee cap with a medium thickness of 1,5 mm, see the attached documentation.
The product is supplied with two different fluidity: <4 g/10min for the process of extrusion and thermoforming; >16 g/10min for the process of injection molding.
The material, in the original packaging, correctly stored, is suitable for food contact.

Shape	Cylindrical/Spherical pellets
Color	Natural

Physical Properties	**Norms**	**Unity**	**Values**	
M.F.R. (190°C / 2,16 Kg)	ASTM D1238	g/10 min	3	Extrusion
M.F.R. (190°C / 2,16 Kg)	ASTM D1238	g/10 min	17	Molding
Density	ASTM D792	g/cm^3	1,3	
Izod notched	ASTM D256	J/m	50	
Tensile strength at yield	ASTM D638	MPa	38	
Elongation at break	ASTM D638	%	>10	
Flexural modulus	ASTM D790	MPa	2350	
H.D.T. (0,45 MPa @ 120°C/h)	ASTM D648	°C	89	
H.D.T. (1,80 MPa @ 120°C/h)	ASTM D648	°C	53	

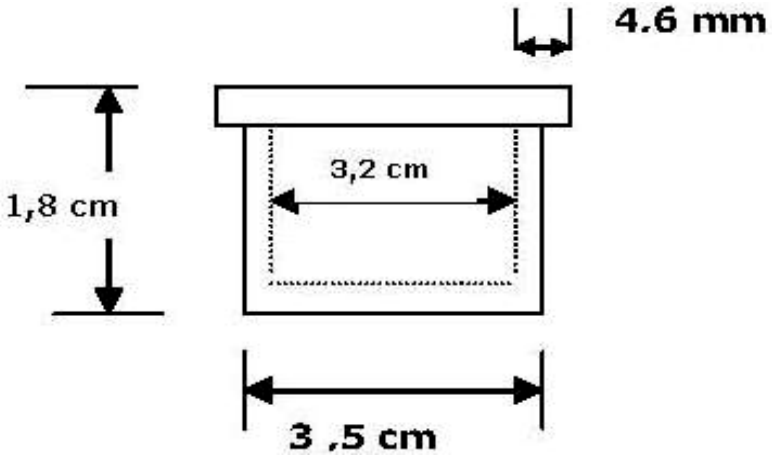
Notes:			
	Typical process conditions:	Injection molding temp.:	190-220°C
		Mould temperature :	30 - 50°C
		Injection pressure:	medium
		Injection Speed:	medium
	Typical conditions extrusion:	Extrusion Temperature:	190-210°C
		Temperature of the chill roll:	30-40°C

→ The product must be dried before use (3 hours at 50°C)
→ The product, unless otherwise agreed, will be supplied in octabins (500 kg weight), equipped with aluminum bag. In case of partial use close with extreme care and protect from moisture.
→ We recommend using the material within six months of arrival.
→ The material may generate undesirable residues as a result of its reuse (see food contact declaration) therefore can not be reused for the same application.

The information contained herein was obtained from test carried out in our laboratory and must therefore be considered indicative and not binding.

FI.PLAST s.r.l.
HEAD OFFICE AND FACTORY: 21050 GORLA MAGGIORE (VA) via del Vignolo, 55
Ph.: 0039.0331.644363 /Fax 0039.0331.366164 - E-Mail : amministrazione@fiplast.it

Description of the specimen coffee caps used in test and indications about their biodegradability and compostability.

Description of the material:	**Caps for Coffee**
Commercial name:	**ESTABIO PL 0640 T05**
Chemical family:	**Biodegradable**
Application;	**Caps for Coffee**
Main characteristic:	**High H.D.T.**
Thickness (average value) of the coffee caps	**Min 1,25mm - Max 2,1mm**
Shape and dimension:	Perforated cylindrical capsule with paper filter, filled with coffee  Diameter: min 3,5cm - max 3,9cm (internal 3,2cm) Height: 1,8mm Bottom thickness: 1,64mm (max 2,1mm) Wall thickness: 1,25mm
Aspect: Picture	 

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Disintegration test : principles and visual observations

The caps were submitted at the test of disintergration just after the use: the method evaluate the disintegration, at laboratory scale, in composting conditions that simulate an anaerobic process.
The sample was put in a reactor in its original form; then it was composted with mature compost. The grade of disintegration was evaluated as percentage of the residues on the initial weight of the empty caps, after a full composting cycle: 90 days.
At the end of the cycle the compost has been sieved with a 2mm siever, in order to recover the residues.
The weight of the not disintegrated material was used to calculate the disintegration level.

After 1 week The sample has maintained its integrity	
After 2 weeks The sample has maintained original shape you notice the detachment of the filter paper.	

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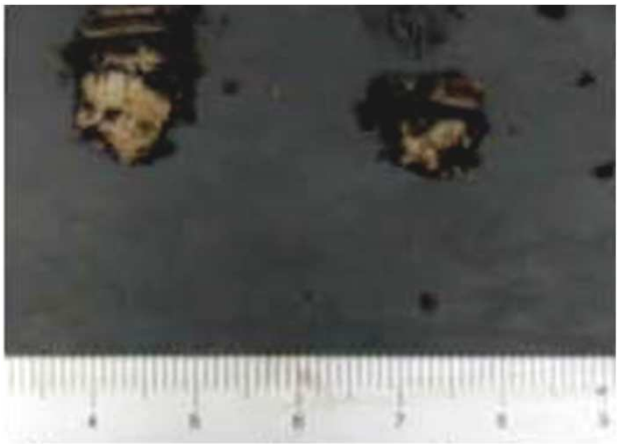
After 5 weeks Disintegration process has started, you notice the total detachment of the paper and the start of the fragmentation.	
After 7 weeks You notice the breaking of the structure of the capsule. The capsule was broken into large pieces.	
After 9 weeks The capsule was broken into little pieces.	

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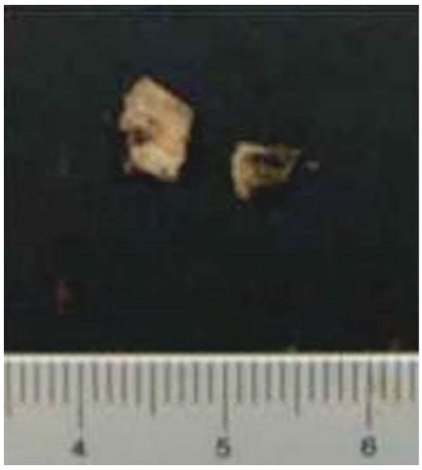
After 11 weeks The fragmented pieces are shrinking in size.	
Day 90th The fragmented pieces are shrinking in size and they are hardly distinguishable from the compost. No fragment of filter paper was found.	

At the end of the test the weight of the residue is less than the 9% of the origianl empty pod introduced in the reactor.
Following this we can confirm that the material tested in these conditions is accoplishing the EN13432.
norma EN 13432

Additional information about the compost composition and the presence of heavy metals can be supplied if requested.

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