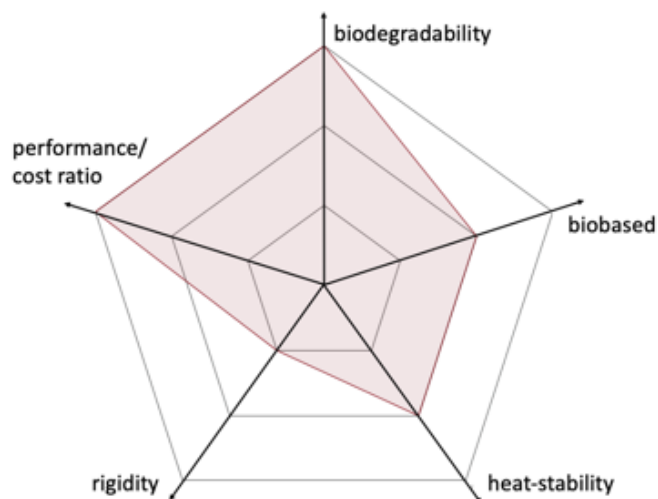




## SUMMARY

Spectabio TR grades are developed for balanced to flexible injection molded application where a maximum filler content of natural agricultural by-products is required. Spectabio TR<sub>45</sub>MB is reinforced with 45 w.-% rice husk (agricultural by-product). Spectabio TR grades are biodegradable in all conditions.

## KEY CHARACTERISTICS



- biopolymer compound, rice husk filled
- injection molding grade
- good impact and elongation values
- naturally heat-stable up to 65°C
- biodegradable in controlled (e.g. industrial compost) and non-controlled conditions (e.g. landfill, soil, roadside)
- food contact safe
- dishwasher-ok
- can be filled with bamboo powder (B), coffee (C) or wheat husk (W) alternatively
- global availability

Spectabio TR<sub>45</sub>MB is a biopolymer compound. The grade is reinforced with 45 w.-% rice husk (agricultural by-product). The material can be filled with bamboo powder, coffee or wheat husk alternatively.

Spectabio TR<sub>45</sub>MB is designed to be completely biodegradable & compostable (microbial and enzymatic degradation) in the targeted disposal environment; it is biodegradable both in controlled (e.g. industrial compost facilities) and in non-controlled (e.g. soil, roadside, landfill) conditions. The grade offers a significant reduction in carbon footprint compared to traditional fossil-based plastics.

The material exhibits good impact and elongation properties.

Part wall-thickness shall be greater than 1.5 mm.

TECHNICAL DATA SHEET (TDS)

TYPICAL CHARACTERISTICS			
Property	Test Method	Unit	Typical Value*
Density		g/cm <sup>3</sup>	1.23
Melt Flow Rate (190°C/2.16 kg)	ASTM D1238	g/10 min	9.4
Melt Flow Rate (190°C/5 kg)	ASTM D1238	g/10 min	19.1
HDT-B (@ 0.46 MPa)	ASTM D648	°C	64.5
Tensile Strength (50 mm/min)	ASTM D638	Mpa	10.6
Flexural Strength	ASTM D790A	Mpa	13.6
Flexural Modulus (1% secant)	ASTM D790A	Gpa	0.5
Elongation (50 mm/min)	ASTM D638	%	16.1
IZOD Notched Impact Strength (@ 23°C)	ASTM D256	J/m	64.6
Mold Shrinkage		%	0.4

\* Typical values; properties are minimum values and might be slightly higher than indicated (for density and mold shrinkage, maximum values, slightly lower). All mechanical properties as per ASTM D638 Type I specimen injection moulded in accordance with ASTM D4101.



home compostable



biodegradable in controlled condition



biodegradable in non controlled condition



## TYPICAL APPLICATIONS

Typical applications where Spectabio TR45MB is used for are:

- gardening (plant pots & containers, candle housing)
- agricultural
- outdoor (pest control traps)





## PROCESS GUIDELINES

Spectabio TR45MB can be processed on conventional injection moulding equipment. The material is sensitive to moisture and high temperatures (above 190°C); high shear rates shall be avoided. The material needs to be dried before processing. It is recommended to use magnetic traps in the feeding system since Spectabio TR grades come with a high-filler grade of natural and agricultural by-products.

1. PREPERATION	
Storage	Keep the material tightly closed in a dry and cool place. Keep away from heat and sources of ignition and avoid exposure to moisture, dampness. Do not store outdoors. Use material within 6 month after delivery.
Drying	Dry the material for a minimum of 4 - 6 hours at 80° C. A moisture content of less than 0.07% (700 ppm) is required / less than 0.10% (1000 ppm) is recommended. Avoid exposing the material to atmospheric conditions after drying; process immediately.
Preparation	<ol style="list-style-type: none"> <li>1. Vacuum-out/clean hopper and air-suction system to avoid contamination.</li> <li>2. Clean/purge the barrel.</li> <li>3. Once the barrel has been cleaned, reduce barrel temperatures to the right set points (see next section).</li> <li>4. Introduce the compounds into the barrel only after all barrel temperatures are at target set points. The material cannot enter into the barrel when temperatures are above 190°C in any section!</li> <li>5. Make sure that the mold is heated up to a temperature of around 50°C.</li> <li>6. Start with a moderate holding pressure and keep it applied for long initially. Start with long cooling times before opening the mold.</li> <li>7. It is suggested to use hot runner to get better surface quality for injection moulding.</li> <li>8. After start-up, the injection moulding process shall be optimized step-by-step to industry relevant process parameters.</li> </ol>
SDS	Read and understand the Material Safety Data Sheet (SDS) provided with the material.

2. INJECTION MOULDING PROCESS PARAMETERS	
Hopper Temperature	45° C
Feed Zone Temperature	160° C to 165° C
Compression Zone Temperature	165° C to 170° C
Metering Zone Temperature	170° C to 175° C
Nozzle Temperature	175° C
Mould Temperature	50°C – 60°C
Screw Speed	low – medium
Injection Pressure	medium
Holding Pressure	low – medium / long
Injection Speed	slow – medium
Cooling Time	medium



**Get in touch with our experts for more information.**

**[support@nature2need.com](mailto:support@nature2need.com)**

**<http://nature2need.com>**

The material has to be stored, handled and processed according to nature2need Safety Data Sheets (SDS) & Process Guidelines. In some cases, mold deposits may develop. These deposits shall be removed periodically; we recommend a mold cleaning cycle of every 50.000 shots. This information and data presented herein is true and best as per our knowledge. We make no warranty, expressed or implied, regarding the performance or otherwise. The user of the information is advised to obtain the latest details from the authorised representatives of the company, as the information is subject to change based on the research and development work undertaken by the company.