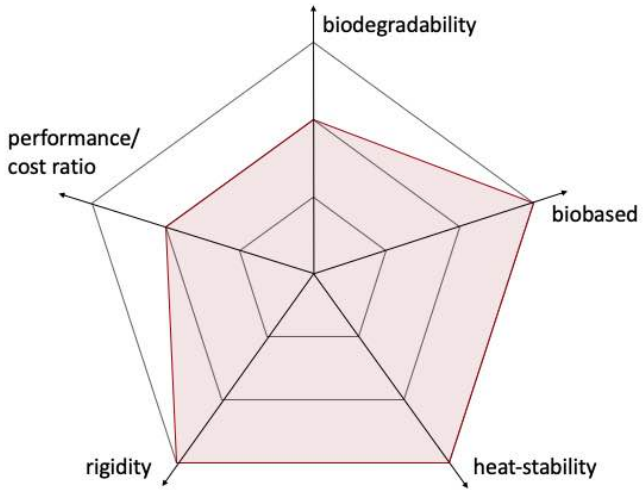
nature2need
Bioblend LT25B (B/R/K/W/H)

Revision No. 1.4 | Last Update: January 25th, 2020 | ENG

SUMMARY

Bioblend LT grades (optimized cPLA grade) are developed for rigid injection molded applications. The grades can be crystallized/annealed in order to have the part heat-stable at temperatures up to 110°C. Bioblend LT grades are biodegradable in controlled conditions.

KEY CHARACTERISTICS



- injection molding grade
- biopolymer compound, mineral filled
- can be blended with bamboo powder (B), rice husk (R), coffee husk (K), wheat straw (W) and wood powder (H)
- high rigidity
- can be crystallized/annealed to be heat-stable up to 110°C
- biodegradable in controlled conditions (e.g. industrial compost) according to DIN EN 13432 / ASTM D6400
- easier to process than virgin PLA/cPLA
- food contact safe
- dishwasher-ok / microwave-ok
- global availability

Bioblend LT25B (B/R/K/W/H) is a modified PLA-blend. The grade is enhanced with a blend of natural mineral fillers. Bioblend LT grades are easy to process and prepared for a fast and efficient post-processing crystallization/annealing process. The material can additionally be blended with bamboo powder, rice husk or coffee husk, wheat straw and wood powder to support a natural look.

Bioblend LT25B (B/R/C/W/H) is compostable/biodegradable (microbial and enzymatic degradation) in the targeted disposal environment; it is biodegradable in controlled (e.g. industrial compost facilities) conditions according to EN 13432 (for Europe) and ASTM D6400 (for the USA). Bioblend LT grades offer a significant reduction in carbon footprint compared to fossil-based plastics.

The grades exhibit excellent strength and stiffness properties as well as a good flow combined with improved elongation values. An increased rate of crystallization allows an annealing to a heat-stable temperature of 110 °C (HDT-B) and above.

Part wall-thickness shall be greater than 1.5 mm.

TECHNICAL DATA SHEETS (TDS)

TYPICAL CHARACTERISTICS not annealed			
Property	**Test Method**	**Unit**	**Typical Value***
Density		g/cm^3	1.3
Melt Flow Rate (190°C/2.16 kg)	ASTM D1238	g/10 min	> 70.0
HDT-B (@ 0.46 MPa)	ASTM D648	°C	54.2
Tensile Strength (50 mm/min)	ASTM D638	Mpa	51.7
Flexural Strength	ASTM D790A	Mpa	65.2
Flexural Modulus (1% secant)	ASTM D790A	Gpa	5.3
Elongation (50 mm/min) @ Yield	ASTM D638	%	7.5
Elongation (50 mm/min) @ Break	ASTM D638	%	31.0
IZOD Notched Impact Strength (@ 23°C)	ASTM D256	J/m	31.5‘
Mold Shrinkage		%	0.45

TYPICAL CHARACTERISTICS post-process crystallization/annealing, 5 minutes @ 130 °C			
Property	**Test Method**	**Unit**	**Typical Value***
Density		g/cm^3	1.3
HDT-B (@ 0.46 MPa)	ASTM D648	°C	> 125.0
Tensile Strength (50 mm/min)	ASTM D638	Mpa	37.3
Flexural Strength	ASTM D790A	Mpa	56.9
Flexural Modulus (1% secant)	ASTM D790A	Gpa	5.1
Elongation (50 mm/min) @ Yield	ASTM D638	%	7.5
Elongation (50 mm/min) @ Break	ASTM D638	%	9.5
IZOD Notched Impact Strength (@ 23°C)	ASTM D256	J/m	29.8‘

* 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.

CERTIFICATIONS

Bioblend LT25B (B/R/K/W/H) has obtained the following certifications:

- food contact safe (TÜV Rheinland)
    - German §31 LFGB (Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch)
    - European Regulation (EC) No 1935/2004
    - Commission Regulation (EU) No 10/2011
- degradation tests / certificates (DIN CERTCO, Certificate Registration No. 7W0349/9K0067)
    - biodegradation in controlled conditions Europe EN 13432:2000-12
    - biodegradation in controlled conditions Europe US ASTM D640

TYPICAL APPLICATIONS

Typical applications where Bioblend LT25B (B/R/K/W/H) is used for are:

- consumer goods (e.g. pens, frames)
- kitchen ware (e.g. season use cutlery, cups, boxes, trays, kitchen utilities)
- toys
- personal care (e.g. tooth brush handle, soap box)
- rigid packaging (e.g. make-up boxes)
- beauty (e.g. cosmetic brushes)
- sports & outdoor

PROCESS GUIDELINES

Bioblend LT25B (B/R/K/W/H) 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 matrial needs to be dried before processing. Do not keep the material in the heated barrel longer than 5 – 8 minutes; the material is prone to degrade.

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 stor 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.
Injection Moulding Start-Up	1. Vacuum-out/clean hopper and air-suction system to avoid contamination. 2. Clean/purge the barrel. 3. Once the barrel has been cleaned, reduce barrel temperatures to the right set points (see next section). 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! 5. Make sure that the mold is heated up to a temperature of around 55°C. Bioblend LT grades cannot be processed on cold molds. 6. Start with a moderate holding pressure and keep it applied for long initially. Bioblend LT grades have a slow solidification. Sink marks throughout the part are a result of a too low holding pressures that are applied for a too short time. Carefully increase holding pressure and prolong holding time until sink marks disappear. 7. Start with long cooling times before opening the mold: $t_{cooling}$ *(in sec) > biggest wall-thickness (in mm) x 10* 8. After start-up, the injection moulding process shall be optimized step-by-step to industry relevant process paramaters
SDS	Read and understand the Material Safety Data Sheet (SDS) provided with the material.

Remark	Do not keep the material longer than 5-8 minutes in the heated barrel; if so, the material needs to be purged and removed to avoid degradation.

2. INJECTION MOULDING PROCESS PARAMETERS	
Hopper Temperature	room temperature
Feed Zone Temperature	180°C
Compression Zone Temperature	185°C
Metering Zone Temperature	190°C
Nozzle Temperature	185° C
Mould Temperature	50°C – 60°C
Screw Speed	low – medium
Injection Pressure	low
Holding Pressure	long
Injection Speed	slow
Cooling Time	long

3. ANNEALING

Moulded parts can be annealed during or after injection moulding. Annealing initiates a further crystallization of the material. The moulded part will, depending on the intensity of the annealing process, become effectively **heat stable to temperatures above 100°C** (HDT-B). Mechanical properties will change as well; please refer to the respective TDS.

Parts with wall-thickness below 1.5 mm:

Thin parts can be annealed in the injection mould itself. Set the mould temperature to 90 °C. Understand required holding and cooling times to be able to demould.

Post-moulding annealing for parts with wall-thickness above 1.5 mm:

Post-moulding annealing is the exposure of the part to temperatures around 120 – 140°C for 10 – 15 minutes (depending on the wall-thickness). Please make sure that there is no load on the part (during the annealing process, the material is softening) and that parts are not touching each other. Heat ovens or channels with circulating hot air are most suitable for mass production.

After the direct annealing process, the material will further crystallize slowly. Final results shall be obtained after 24 – 48 hours.

DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

CERTIFICATE

Certificate holder	**Nature2need Co., Ltd.** **Lian Huashan Industrial Park** **B1C1 Building** **No. 7 Economic Development Area** **Quzhou** **324100 ZHEJIANG** **CHINA**
Product	Compostable material for industrial composting
Type, Model	nature2need Bioblend LT25B
Testing basis	DIN EN 13432:2000-12 Certification scheme Products made of compostable materials (DIN-Geprüft) (2017-10)
Mark of conformity	INDUSTRIELL KOMPOSTIERBAR DIN Geprüft
Registration No.	9K0067
Valid until	2026-01-31
Right of use	With this certificate the holder is granted the special entitlement for advertising purposes for the mark of conformity shown above in conjunction with the specified registration number. See annex for further information.

2020-01-15

Dipl.-Phys. Carlo Seiser
Head of Certification Body

GESELLSCHAFT FÜR KONFORMITÄTSBEWERTUNG MBH DIN CERTCO

DAkkS Deutsche Akkreditierungsstelle D-ZE-11125-01-00

DIN

DIN CERTCO
Gesellschaft für Konformitätsbewertung mbH

NOTIFICATION OF REGISTRATION

Holder	**Nature2need Co., Ltd.** **Lian Huashan Industrial Park** **B1C1 Building** **No. 7 Economic Development Area** **Quzhou** **324100 ZHEJIANG** **CHINA**
Product	Compostable material
Type, Model	nature2need Bioblend LT25B
Testing basis	DIN EN 13432:2000-12 ASTM D 6400:2012-01 Certification scheme products made of compostable materials (2016-01)
Mark of conformity	kompostierbar
Registration No.	7W0349
Valid until	2026-01-31
Right of use	With this notification of registration the holder is granted the special entitlement for advertising purposes according to §8 (5) of the Regulations governing Use of the Mark and the Trademark Usage Guidelines for the mark of conformity shown above in conjunction with the specified registration number. See annex for further information.

2020-01-15

Dipl.-Phys. Carlo Seiser
Head of Certification Body

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DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-11125-01-00

DIN

Get in touch with our experts for more information.
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.