

VESTAMID® *Terra* for Filaments

Naturally Strong!

With the development of VESTAMID® *Terra*, Evonik has a new member of its VESTAMID® family: a group of new polyamides, the monomers for which are based entirely or partly on renewable raw materials.

- VESTAMID® *Terra* DS and
- VESTAMID® *Terra* HS

VESTAMID® *Terra* DS, 100 percent natural

VESTAMID® *Terra* DS is based on polyamide 1010 und is the polycondensation product of 1,10-decamethylene diamine (D) and 1,10-decanedioic acid (sebacic acid—S). Because both monomers are extracted from castor oil, VESTAMID® *Terra* DS is a material that is based 100 percent on natural resources.

Technically speaking, VESTAMID® *Terra* DS occupies a position between the high-performance long-chain polyamides such as PA 12 and PA 1212 and the standard polyamides PA 6 und PA 66, which have a shorter chain length.

VESTAMID® *Terra* DS is semicrystalline, which is the reason for its high mechanical resistance and chemical stability. It absorbs little water and as a result its mechanical properties and high dimensional stability change little when exposed to fluctuating environmental humidity.

The high melting point of VESTAMID® *Terra* DS compounds results in a high heat deflection temperature that can be advantageous for some applications.

Because of its chemical and physical properties, and the plant origins of its monomers, VESTAMID® *Terra* DS is an interesting completion to conventional longer-chain polyamides, and it



also meets the growing demand for materials made from renewable raw materials.

VESTAMID® *Terra* HS, partly based on renewable raw materials

VESTAMID® *Terra* HS is based on polyamide 610. PA 610 is the polycondensation product of 1,6-hexamethylene diamine (H) and 1,10-decanedioic acid (sebacic acid—S). Because sebacic acid is extracted from castor oil, VESTAMID® *Terra* HS is a material that is partly based on natural, renewable resources.

Technically speaking, VESTAMID® *Terra* HS occupies a position between the high-performance polyamide 612 and the standard polyamides PA 6 and PA 66.

Like VESTAMID® *Terra* DS, VESTAMID® *Terra* HS is also semicrystalline and thus has high mechanical resistance and chemical stability.

Due to its higher melting point, VESTAMID® *Terra* HS has a higher heat deflection temperature than VESTAMID® *Terra* DS.

Important properties of VESTAMID® Terra

Property	Test method	Unit	Terra DS16	Terra HS16	Terra HS 18	Terra HS22
Viscosity number	ISO 307	cm ³ /g	160	160	180	220
Melting temperature	ISO 11357	°C	200	222	222	222
Glas transition temp.		°C	37	48	48	48
Water absorption, 23 °C saturation	Evonik	%	1.8	3.3	3.3	3.3
VICAT softening temp Method B 50 N	ISO 306	°C	171	196	196	196
Tensile test	ISO 527					
Stress at yield		MPa	54	61	61	61
Strain at yield		%	5	5	5	5
Strain at break		%	> 50	> 50	> 50	> 50
Tensile modulus	ISO 527	MPa	1700	2100	2100	2100
CHARPY 23 °C	ISO	kJ/m ²	N	N	N	N
impact strength -40 °C	179/1eU	kJ/m ²	N	N	N	N
CHARPY notched 23 °C	ISO	kJ/m ²	7 C	6 C	7 C	7 C
impact strength 40 °C	179/1eA	kJ/m ²	7 C	6 C	6 C	6 C

N = no break

C = complete break

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