

Technical Information

VESTAMID® Terra for Filaments

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 und
- VESTAMID® Terra HS

VESTAMID® TERRA DS, 100 % 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

Properties	Test method	Unit	Terra DS16	Terra HS16	Terra HS18	Terra HS22					
Viscosity number	ISO 307	cm ³ /g	160	160	180	220					
Melting temperature	ISO 11357	°C	200	222	222	222					
Glass 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	MPa	54	61	61	61					
Stress at yield							%	5	5	5	5
Strain at yield							%	> 50	> 50	> 50	> 50
Strain at break							%	> 50	> 50	> 50	> 50
Tensile modulus	ISO 527	MPa	1700	2100	2100	2100					
CHARPY impact strength 23 °C -40 °C	ISO 179/1eU	kJ/m ² kJ/m ²	N N	N N	N N	N N					
CHARPY notched impact strength 23 °C -40 °C	ISO 179/1eA	kJ/m ² kJ/m ²	7 C 7 C	6 C 6 C	7 C 6 C	7 C 6 C					

N = No break C = Complete break

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