



MECHANICAL PROPERTIES TEST REPORT AND MATERIAL REMARKS

MATERIALS:

GRAFTALEN™ MP-UHHD 00850

Melt Processable Ultra High Molecular Weight Polyethylene/High Density Polyethylene Alloy



PROCESSING GUIDELINES FOR EXTRUSION

For extrusion of GRAFTALEN™ MP-UHHD 00850, we suggest the following temperature profile, screw and feeder rotation:



Screw rotation: **350 rpm**

Feeder rotation: **12 rpm**

Temperature Settings: [°C]

Extrusion Direction →

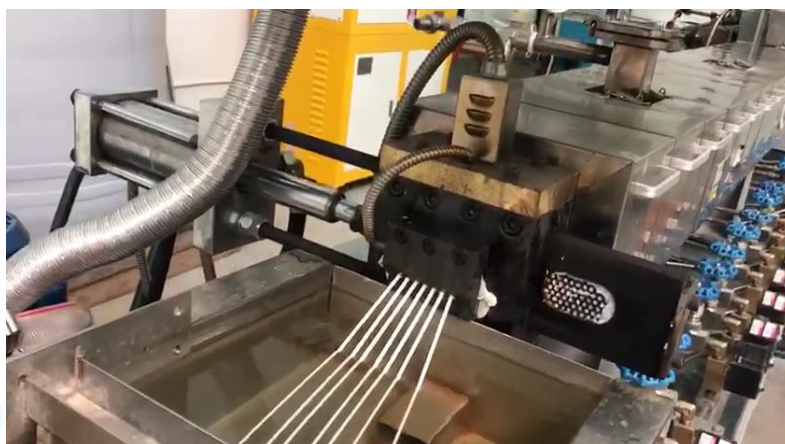
Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone10	Zone11	Zone12	Zone13	Head
60	100	120	150	160	200	200	200	200	200	180	180	180	170

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PERFORMED TESTS:

Test Name	Measured Property	Testing Device	Standard
Tensile Test	Tensile Strength at Yield, Max. and Break	Universal Testing Machine	ISO 527
Charpy Impact Strength	Notched Impact Strength	Charpy Pendulum Impact Tester	ISO 179
Melt Flow Index/Rate	MFI	MFI Tester Machine	ISO 1133
Shore Hardness	Shore D Hardness	Shore D Durometer	ASTM D2240
Density	Density	Pycnometer/Immersion Method	ISO 1183

All tests were performed on Extrusion Molded Specimen (1A specimen size by ISO 527). Samples were extruded at normal processing parameters (180°C-200°C) with a twin screw extruder and pressed to 4 mm thickness under a press machine at 200°C.



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TENSILE TEST RESULTS

Tested with a universal testing machine at the speed of 10 mm/min.

Property	Results	
Tensile Strength at Yield [MPa]	18,4	±0,30
Strain at Yield [%]	9,8	±0,14
Tensile Strength at Break (=Max.) [MPa]	30,9	±0,88
Strain at Break [%]	395	±3,6



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CHARPY IMPACT TEST

Charpy Impact test was also performed on Extrusion Molded Specimen. Specimen was tested with A type notch, direction of impact was edgewise.

*Note: Charpy test is not comparable to Izod (ISO 180) and Tensile Impact Strength (ISO 8256)

Property	Results	
Charpy Impact Strength [kJ/m ²] @ 23°C	NB	
Charpy Impact Strength [kJ/m ²] @ 40°C	10	±0,5



MELT FLOW INDEX

MFI was measured with 5 kg weight at material temperature 230°C.

*Note: When heating the MFI Tester to 230°C, the material itself had only 110°C, as UHMWPE is very bad at conducting heat. To heat the material to 230°C, MFI was set to 350°C and material temperature was measured at the die with a laser thermometer.

Property	Results
MFI @ 230°C, 5 kg	8,5



SHORE D HARDNESS

Hardness was measured with Shore D Durometer at ambient conditions.

Property	Results
Shore D Hardness	60

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DENSITY

Density was measured with a 25mL pycnometer, by using water at 20°C and with immersion method (also with water at 20°C) on an analytical scale.

Property	Results
Density (20°C)	0,940



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