

Mobius Sustainable Resins™ PP Regrind Specification Data Sheet

Mountain Valley Recycling LLC
 5501 Jeffrey Lane
 Morristown, TN 37813
 423.581.7558 Office
 423.581.7992 Fax

Resin Grade Mobius Sustainable Resins™ PP Regrind

Resin Origin Regrind is processed from certified, post-consumer plastic clothes hangers.

Melt Flow Index Testing is conducted per ASTM D1238 Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer. The regrinds were tested as received. A 7 minute preheat cycle is utilized. Melt flow index testing is conducted on a Ceast Melt Indexer, Model #6842.000 and Serial #10379. Die diameter is 9.5320 mm, Die length is 8.015 mm, Orifice diameter is 2.09 mm.

Melt Flow Index Results

Test Conditions (Temp. °C / Load,kg.)	Melt Flow Rate (grams / 10 min.)
230°C / 2.16 kg.	14.8
	Standard deviation @ 0.9

Specific Gravity Specific gravity testing was conducted on an Ohaus Analytical Plus Electronic Balance with an Ohaus Density Determination Kit P/N 77402-00. The immersion liquid used was 2-Propanol.

Specific Gravity Results

Specific Gravity (grams/cm ³)
0.9061
Standard deviation @ 0.0005

Melt Point Determination using DSC

Testing is performed per ASTM D3418-03 Standard test Method for Transition Temperatures of Polymers by Thermal Analysis. Differential scanning Calorimetry is performed on a Perkin Elmer Pyris 1, with DSC samples cut from regrinds using a razor blade.

Heat Cycle: Initial heat cycle from 50°C to 300°C at heat rate increase of 20°C per minute.
 Cool cycle from 300°C to 50°C at cool cycle rate of 20°C per minute.
 Final heat cycle from 50°C to 300°C at heat rate increase of 20°C per minute.

DSC Results

The DSC chart results are available on request. In summary, the final heat cycle shows two peak temperatures, 108°C and 123°C. Both peak temperatures are in the normal melting range for Polypropylene and are consistent with the Density of 0.9061 grams/cm³.

Three-Point Flex

Test speed of 0.05 inches per minute with a 0.01 inch/inch/minute Strain Rate. Five PP samples were tested for consistency.

Sample	Modulus	Peak Stress	Percent Strain
1	162606	5086	4.99
2	164068	5086	4.96
3	165875	5113	4.94
4	161007	5051	4.99
5	168706	5249	4.96
Average	164452	5717	4.97
Std. Dev.	2981	1326	0.02

Notched Izod Impact

Testing was performed per ASTM D256 with Pendulum Capacity of 2 Joules. Five specimens were tested and specific test charts are available on request.

Sample	Width(mm)	Windage (J)	Energy Absorbed (J)	Impact Resistance (J / m)	Impact Resistance ft. lb. / in.
Average	3.138	0.032	0.165	42.32	0.79
Std. Dev.	0.004	0	0.010	3.35	0.06

Tensile Test

Testing was performed on an MTS Sintech 2/S unit with TestWorks software applying principles from ASTM D638-03 Tensile Properties of Plastics. A 10kN load cell was used and a DXL extensometer was used for measuring elongation. Five injection molded ASTM Type I Dog Bones with 2.0 inch lengths were used for samples with a Crosshead speed of 2.0 inches/minute. The test specimens have been retained and are available for inspection on request.

Specimen #	Modulus - psi	Yield Stress - psi	Elongation @ Yield - %	Break Stress - psi	Elongation @ Break - %
1	108593	4881	10.5	3694	31.8
2	157988	4807	10.4	4228	22.5
3	241397	4876	9.1	4062	27.3
4	94629	4756	11.7	3998	28.9
5	85079	4724	11.1	4091	25.0
Average	137537	4809	10.6	4015	27.1
Standard Deviation	64490	70	1.0	198	3.5

