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Product Information    **Tuftec™**

April 1, 2010

**Table of Tuftec™ H Grades and Properties**

<b>Tuftec™ H hydrogenated styrenic thermoplastic elastomers</b>											
<b>Grade No.</b>				<b>H1221</b>	<b>H1052</b>	<b>H1062</b>	<b>H1053</b>	<b>H1041</b>	<b>H1051</b>	<b>H1043</b>	<b>H1272</b>
<b>Property</b>	<b>Test method</b>	<b>Test condition</b>	<b>Units</b>	<b>Non-oil extended</b>							<b>Oil extended</b>
<b>Density</b>	ISO 1183	-	g/cm <sup>3</sup>	0.89	0.89	0.89	0.91	0.91	0.93	0.97	0.90
<b>MFR</b>	ISO 1133	230°C, 2.16 kgf	g/10 min	4.5	13	4.5	1.8	5.0	0.8	2.0	-
		200°C, 5 kgf	g/10 min	-	10	-	-	3.5	0.5	5.0	-
		190°C, 2.16 kgf	g/10 min	-	3	-	-	0.3	-	-	-
<b>Hardness</b>	ISO 7619	Durometer Type A	-	42°	67°	67°	79°	84°	96°	72° *1	35°
<b>Tensile strength</b>	ISO 37	Dumbbell: Type 1A 500 mm/min	MPa	9.5	11.8	15	24.6	21.6	32.3	10.3	18.6
<b>Elongation</b>			%	980	700	670	550	650	600	20*2	950
<b>300% tensile stress</b>			MPa	1.0	2.5	4.3	4.8	3.4	8.3	-	1.0
<b>Heat resistance</b>	ISO 188	Type 2 oven 120°C, 168 hrs	%	-	99	97	98	97	-	99	98
			%	-	98	100	98	101	-	96	99
			-	-	Slight Change	Slight Change	Slight Change	Slight Change	-	Slight Change	Slight Change
<b>S/EB ratio</b>	Asahi Kasei method	-	wt%	12/88	20/80	18/82	29/71	30/70	42/58	67/33	35/65
<b>Product form</b>				Pellet	Pellet	Pellet	Pellet	Pellet	Pellet	Pellet	Pellet

\*1 Type D. \*2 10 mm/min

Table of Tuftec™ M Grades and Properties

Tuftec™ M modified hydrogenated styrenic thermoplastic elastomers							
Grade No.				M1911	M1913	M1943	MP10
Special characteristics				Acid modified			Amine modified
Property	Test method	Test condition	Units				
Density	ISO 1183	-	g/cm <sup>3</sup>	0.91	0.92	0.90	0.91
MFR	ISO 1133	230°C, 2.16 kgf	g/10 min	4.5	5.0	8.0	4.0
		200°C, 5 kgf	g/10 min	3.5	4.0	6.0	-
Hardness	ISO 7619	Durometer Type A	-	84°	84°	67°	89°
Tensile strength	ISO 37	Dumbbell: Type 1A 500 mm/min	MPa	22	22	11	28
Elongation			%	650	600	650	600
300% tensile stress			MPa	4.1	4.4	2.9	5.6
Tensile modulus	ISO 527	1mm/min	MPa	20	25	6.9	-
Heat resistance	ISO 188	Type 2 oven 120°C 168 hrs	%	99	98	99	-
			%	96	95	96	-
			-	Slight Change	Slight Change	Slight Change	Slight Change
Acid number	Titration method	-	mg CH <sub>3</sub> ONa per g polymer	2	10	10	-
S/EB ratio	Asahi Kasei method	-	wt%	30/70	30/70	20/80	30/70
Product form				Pellet	Pellet	Pellet	Pellet

Typical applications: Excellent graft and polymer reaction with reactive compounds and polymers bearing reactive groups. Improvement of resin impact strength and other characteristics. Improvement of polymer adhesion to metals.

Table of Tuftec™ P Grades and Properties

Tuftec™ P selectively hydrogenated styrenic thermoplastic elastomers					
Grade No.				P1500	P2000
Property	Test method	Test condition	Units		
Density	ISO 1183	-	g/cm <sup>3</sup>	0.94	0.98
MFR	ISO 1133	190°C, 2.16kg	g/10 min	4	3
Hardness	ISO 7619	Durometer Type A	-	69°	74° *1)
Tensile strength	ISO 37	Dumbbell: Type 1A 500 mm/min	MPa	3.3	24.5
Elongation			%	780	42
300% Tensile stress			MPa	2.1	-
Solution viscosity		15% Toluene	mPa.s	35	-
S/BB ratio	Asahi Kasei method	-	wt%	30/70	67/33
Product form				Pellet	Pellet

\*1) Type D

Please note that all data and values are given as typical results obtained with the indicated test methods for purposes of basic reference in grade selection only, and not as any product specification or warranty of any nature, and are subject to change without notice.