



Reinforced Compounds 结构增强改性塑料

Toughblend® compounds are made from a wide selection of base resins blended with fillers such as glass fiber, glass beads and carbon fiber. Toughblend® compounds are an excellent alternative to metal in applications for products requiring improved mechanical properties, special toughness, dimensional stability, temperature and chemical resistance. As compared to neat resins, Toughblend® offers spectacular improvements in terms of tensile strength, heat deflection temperature and coefficient of linear thermal expansion. As compared to metal, Toughblend® allows product engineers more freedom to design injection molded parts with the benefits of lighter part weight, excellent corrosion resistance, electrically non conductive. Most Toughblend® compounds also come with some other properties such as flame retardant, lubricated and colour.

Toughblend®改性塑料是指在基体树脂中均匀混合玻璃纤维、玻璃微珠和碳纤维等已达到客户在成品研发的结构物性需求。结构增强改性塑料是一种很好的金属替代材料，运用于对强度、韧性、尺寸稳定、耐热和抗化学作用方面有要求的领域。

结构增强改性塑料在刚性、抗拉强度、热变形、承受负荷能力等方面比纯树脂有明显的改善。与金属比较，这些材料可以让设计工程师任意选用成本低、重量轻、抗腐蚀、绝缘的注塑零件完成产品设计。大部分的结构增强改性塑料还可以结合其他物性，如阻燃性、耐磨性和多种颜色选择。

特点：强度高，刚性好，耐热，低收缩，综合强度高，韧性好，使用温度范围广，耐翘曲。

应用：车灯外壳，引擎护盖，电动工具外壳和零件，汽车把手，打印机内部零件，汽车电池托盘，电器骨架，换挡器壳，火车铁路分隔片，工业篮子把柄。

Toughblend® Glass Fiber Reinforced Compounds

	TYPICAL PROPERTIES	ASTM TEST METHOD	UNITS	PA6-1300	PA6-1600	PA6-1900	PA6-1900B	PA6-2600	PA66-1300	PA66-1303	PA66-1600	PA66-1700	PA66-1900	PA66-2600	AS-1400
	Filler Content			15% GF	30% GF	45% GF	55% GF	30% CF	15% GF	21%BaSO417%GF	30% GF	35% GF	45% GF	30% CF	20% GF
	MECHANICAL / 机械性能														
1	Tensile Strength / 拉伸强度	D638	MPa	130	180	190	232	220	135	94	190	208	220	230	105
2	Elongation at break / 断裂伸长率	D638	%	3.5	3	2.5	2.2	2	2.5	5.2	2.5	3	2	2	1.5
3	Flexural Strength / 弯曲强度	D790	MPa	185	265	280	348	332	210	155	275	310	350	355	150
4	Flexural Modulus / 弯曲模数	D790	MPa	4800	8450	11500	15030	16734	6100	5116	9250	10100	12000	17100	7400
5	Notched Izod Impact Strength @ 23°C, 3.2mm Thickness 缺口冲击强度	D256	J/m	65	220	230	414	121	58	43	120	215	150	115	50
	PHYSICAL / 物理性能														
1	Specific Gravity / 比重	D792	g/cm3	1.24	1.35	1.53	1.63	1.26	1.24	1.53	1.37	1.40	1.57	1.26	1.23
2	Mold Shrinkage* / 成型收缩率	D955	%	0.3-0.7	0.2-0.6	0.1-0.3	0.1-0.2	0.03-0.1	0.5-0.8	0.5-0.8	0.5-0.7	0.5-0.7	0.3-0.6	0.05-0.2	0.1-0.2
	THERMAL / 热性能														
1	Heat Deflection Temp@0.45 MPa (66psi)	D648	°C	-	-	-	-	-	-	236	-	-	-	-	-
2	Heat Deflection Temp@1.82 MPa (264psi) 热变形温度	D648	°C	198	200	205	212	215	255	-	260	260	265	250	98
3	Flammability / 燃烧性能	D635	mm	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
	SUGGESTED PROCESSING PARAMETERS 建议操作参数														
1	Drying Temperature / 干燥温度		°C	90	90	90	90	90	90	90	90	90	90	90	120
2	Drying Time / 干燥时间		Hours	4	4	4	4	4	4	4	4	4	4	4	4
3	Processing (Melt) Temperature / 操作温度		°C	250-280	250-280	250-280	250-280	250-280	275-295	275-295	275-295	275-295	275-295	275-295	230-260
4	Mold Temperature / 模温		°C	60-90	60-90	60-90	60-90	60-90	70-100	70-100	70-100	70-100	70-100	70-100	85-110

Applications:

There are unlimited applications for Toughblend® compounds. For example, business machines components, power drill components, electronic components, automotive lighting housings & engine cover, door handles and levers, musical instruments stands etc.

*The mold shrinkage values herein are solely based on our own laboratory testing specimens. Users are strongly advised to conduct their own test as molding conditions, mold design, thickness all play a part in determining the part shrinkage.

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Toughblend® Glass Fiber Reinforced Compounds

	TYPICAL PROPERTIES	ASTM TEST METHOD	UNITS	PBT-1200	PBT-1300	PBT-1400	PBT-1600	ABS-1200	ABS-1400	ABS-1401	ABS-1600	PC-1200	PC-1400	PC-1600
	Filler Content			10% GF	15% GF	20% GF	30% GF	10% GF	20% GF	20% GF	30% GF	10% GF	20% GF	30% GF
	MECHANICAL / 机械性能													
1	Tensile Strength / 拉伸强度	D638	MPa	87	95	120	135	70	88	77	100	88	100	135
2	Elongation at break / 断裂伸长率	D638	%	4.5	3.5	3.5	3	3	1.8	2	1.5	6	4	3
3	Flexural Strength / 弯曲强度	D790	MPa	135	147	180	198	100	115	110	140	145	165	195
4	Flexural Modulus / 弯曲模数	D790	MPa	4100	4850	6000	8280	4120	5750	5800	8300	4112	5500	8150
5	Notched Izod Impact Strength @ 23°C, 3.2mm Thickness 缺口冲击强度	D256	J/m	55	100	125	180	85	75	71	70	100	150	160
	PHYSICAL / 物理性能													
1	Specific Gravity / 比重	D792	g/cm3	1.38	1.41	1.45	1.52	1.11	1.2	1.18	1.27	1.27	1.32	1.42
2	Mold Shrinkage* / 成型收缩率	D955	%	0.3-0.6	0.4-0.9	0.2-0.4	0.2-0.4	0.2-0.5	0.1-0.3	0.2-0.5	0.1-0.2	0.5-0.7	0.2-0.4	0.1-0.3
	THERMAL / 热性能													
1	Heat Deflection Temp@0.45 MPa (66psi)	D648	°C	215	-	230	234	-	100	-	-	-	-	-
2	Heat Deflection Temp@1.82 MPa (264psi) 热变形温度	D648	°C	195	195	215	218	90	98	100	115	138	140	142
3	Flammability / 燃烧性能	D635	mm	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
	SUGGESTED PROCESSING PARAMETERS 建议操作参数													
1	Drying Temperature / 干燥温度		°C	120	120	120	120	80-90	80-90	80-90	80-90	120	120	120
2	Drying Time / 干燥时间		Hours	4	4	4	4	4	4	4	4	4	4	4
3	Processing (Melt) Temperature / 操作温度		°C	240-260	240-260	240-260	240-260	220-250	220-250	220-250	220-250	275-300	275-300	275-300
4	Mold Temperature / 模温		°C	80-100	80-100	80-100	80-100	70-80	70-80	70-80	70-80	85-110	85-110	85-110

Applications:

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	TYPICAL PROPERTIES	ASTM TEST METHOD	UNITS	PP-1200	PP-1400	PP-1600	PP-1607	PP-1800	PP-1250	PP-1450	PP-1650	PP-1302	PP-1201
	Filler Content			10% GF	20% GF	30% GF	30%(GF+TF)	40% GF	10% GF	20% GF	30% GF	15%TF15%GF	10%MF10%GF
	MECHANICAL / 机械性能												
1	Tensile Strength / 拉伸强度	D638	MPa	45	71	75	58	90	44	63	77	45	55
2	Elongation at break / 断裂伸长率	D638	%	4	3.5	3	3.5	2	6	4	3.4	2	1
3	Flexural Strength / 弯曲强度	D790	MPa	65	105	130	85	142	64	89	110	58	81
4	Flexural Modulus / 弯曲模数	D790	MPa	2075	3600	5450	3500	6330	1760	2850	4500	5000	3700
5	Notched Izod Impact Strength @ 23°C, 3.2mm Thickness 缺口冲击强度	D256	J/m	40	97	105	70	80	109	134	142	60	67
	PHYSICAL / 物理性能												
1	Specific Gravity / 比重	D792	g/cm3	0.97	1.04	1.13	1.14	1.22	0.96	1.04	1.12	1.2	1.05
2	Mold Shrinkage* / 成型收缩率	D955	%	0.4-0.8	0.2-0.5	0.2-0.8	0.2-0.8	0.1-0.3	0.4-0.8	0.2-0.7	0.2-0.6	0.2-0.5	0.2-0.5
	THERMAL / 热性能												
1	Heat Deflection Temp@0.45 MPa (66psi)	D648	°C	155	162	165	160	169	150	155	158	135	-
2	Heat Deflection Temp@1.82 MPa (264psi) 热变形温度	D648	°C	115	130	133	140	150	125	137	143	120	131
3	Flammability / 燃烧性能	D635	mm	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
	SUGGESTED PROCESSING PARAMETERS 建议操作参数												
1	Drying Temperature / 干燥温度		°C	100	100	100	80	100	100	100	100	100	100
2	Drying Time / 干燥时间		Hours	2	2	2	2	2	2	2	2	2	2
3	Processing (Melt) Temperature / 操作温度		°C	190-230	190-230	190-230	190-230	190-230	190-230	190-230	190-230	190-230	190-230
4	Mold Temperature / 模温		°C	60-70	60-70	60-70	20-60	60-70	60-70	60-70	60-70	60-70	60-70

Applications:

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