

工程塑料用流动性提高助剂 OGSOL MF-11

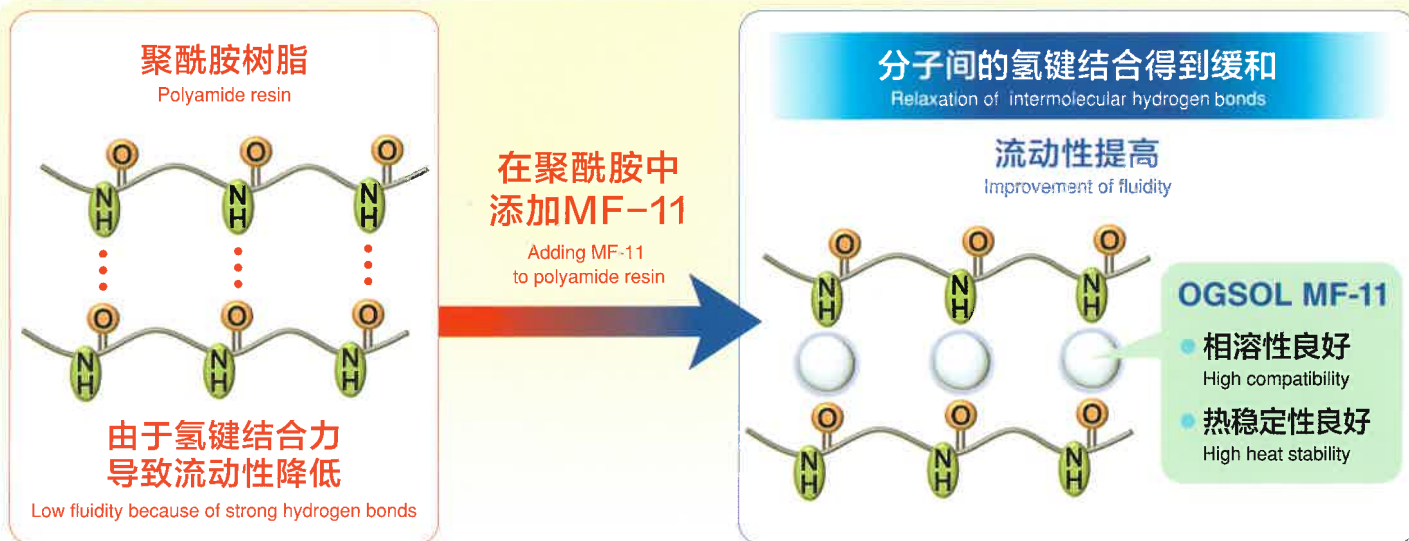
Flow Improver for Engineering Plastics

OGSOL MF-11 是一款新概念的流动性提高助剂。

与各种结晶性,非结晶性树脂有良好的相容性,大幅提高了流动性,同时不损害树脂原有的物性。用于提高流动性,可明显改善树脂的成形加工条件。

OGSOL MF-11 is a flow improver from our brand-new concept. It is highly compatible with both crystalline and non-crystalline resins, and improves fluidity without deteriorating the resins' own properties. Therefore, it is favorable for improving processability of resins.

概念 / Concept



特点和效果 / Features and effect

MF-11在不损害树脂原有的物理性能的同时大幅提高了流动性。

特别是对于各种聚酰胺树脂(脂肪族PA,芳香族PA)和氨基弹性体等,分子中有氢键结合的热可塑树脂有显著效果。

MF-11 improves fluidity without deteriorating the resins own properties. Especially, it is effective for thermoplastic resin having hydrogen bonds in the molecule, such as polyamide resins (aliphatic PA, aromatic PA) and urethane elastomers.

■ MF-11流动性提高特别有效的成形案例

Application for which MF-11 is especially effective

- 低温成形
Low temperature molding
- 薄成形
Thin-wall molding
- 精密成形
Precision molding
- 高充填成形
Highly-filled molding

耐热性 / Heat stability



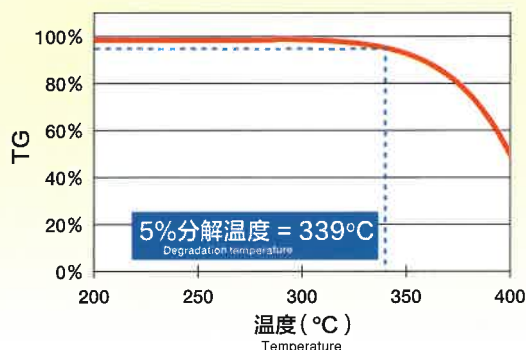
由于MF-11有较高的耐热性,可以添加在工程塑料中使用。

Owing to its high heat stability, MF-11 can be added to engineering plastics.

【TG-DTA 测定条件】

Measuring conditions

- 气氛: N₂
Atmosphere
- 升温速度: 10°C/min
Heating rate



代理商: 松金国际贸易南通有限公司

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玻璃纤维 (GF) 强化聚酰胺 (PA66) 树脂改质数据 / Glass fiber reinforced polyamide (PA66) resin data

基本物理性质 / Fundamental properties

通过MF-11的添加, GF强化聚酰胺树脂的物性没有损坏, 流动性得到大幅度提高。

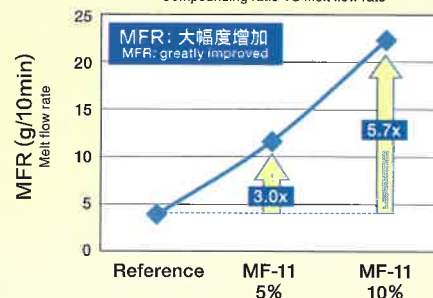
Addition of MF-11 greatly improves fluidity of the GF reinforced polyamide resin with almost maintaining other properties.

测试项目 Measurement item			Reference	MF-11 5%	MF-11 10%	测试条件 Measuring conditions
混合比 Compounding ratio	聚酰胺 (PA66) Polyamide (PA66)	wt%	50	47.5	45	对于混合物 全体的比例 Ratio to total of compounding
	MF-11	wt%	—	2.5	5	
	玻璃纤维 (GF) Glass fiber (GF)	wt%		50		
混炼数据 Kneading data	树脂压力 Resin pressure	MPa	1.6	1.3	1.0	同方向回转 双轴挤出机 Co-rotating twin screw extruder
	实测树脂温度 Resin temperature	°C	298	297	298	
物性数据 Physically data	MFR Melt flow rate	g/10min	3.9	11.7	22.4	ISO1133 280°C 2.16kg
	拉伸强度 Tensile strength	MPa	243	249	257	ISO527
	拉伸伸长率 Tensile elongation	%	4.0	4.0	2.0	
	弯曲强度 Flexural strength	MPa	394	385	401	ISO178
	弯曲弹性率 Flexural modulus	GPa	16.2	16.6	16.9	
	IZOD冲击强度 (有槽口) Impact strength (With notch)	kg·cm/cm²	18.0	16.7	15.6	JIS K7110
	热挠曲温度 Heat deflection temperature	°C	243	242	235	ISO75 1.8MPa
	饱和吸水率 Saturated water absorption ratio	%	3.8	3.5	3.4	100°C×72hr 水浸渍 Water immersion
	熔点 Melting point	°C	270	269	268	DSC 10°C/min

※GF/纤维直径 filament diameter : 10.5 μm 切割长度 cut length : 3.0mm

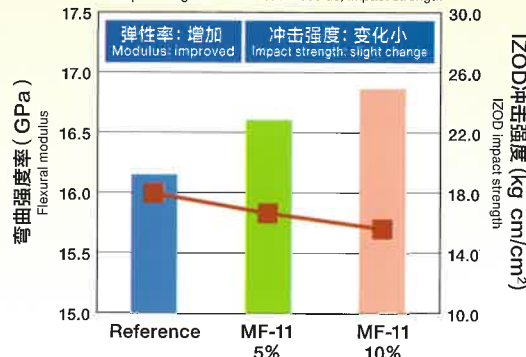
添加比例 VS MFR

Compounding ratio VS melt flow rate



添加比例 VS 弹性率, 冲击强度

Compounding ratio VS elastic modulus, impact strength



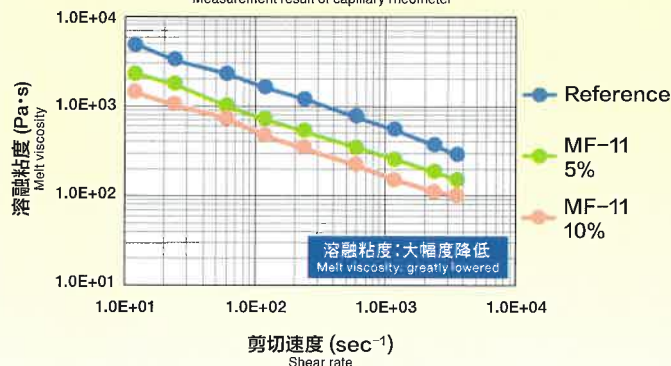
流动特性 / Flow properties

在多种的剪切速度和成形条件下, 已经确认通过添加MF-11可以提高流动性。

In wide range of shear rate and processing conditions, improvement of fluidity is found with addition of MF-11.

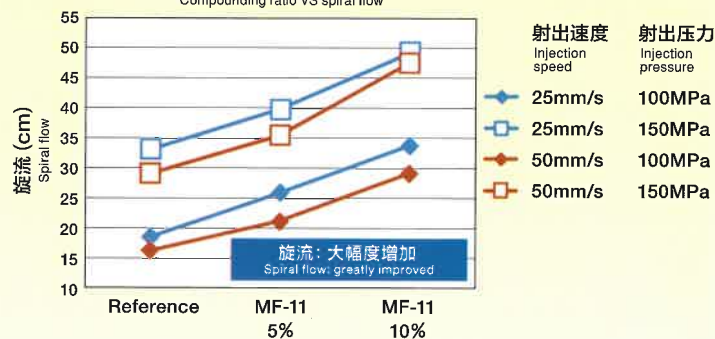
毛细管流变仪测定结果

Measurement result of capillary rheometer



添加比例 VS 旋流

Compounding ratio VS spiral flow



【测试条件】
Measuring conditions
•毛细管长: 10mm
Capillary length
•毛细管直径: 1mm
Capillary diameter
•圆筒直径: 9.55mm
Barrel diameter
•树脂温度: 280°C
Resin temperature

【测试条件】
Measuring conditions
•模具温度: 80°C
Mold temperature
•树脂温度: 280°C
Resin temperature

【旋流形状】
Spiral fashion
•宽度: 5mm
Breadth
•厚度: 3mm
Thickness

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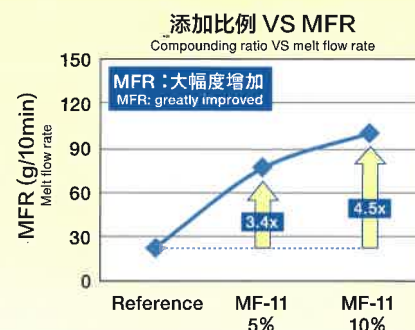
*以上数据为比较用, 并非保证值。
※The above data are for reference only, and not guaranteed.

工程塑料用流动性提高助剂 OGSOL MF-11

Flow Improver for Engineering Plastics

玻璃纤维 (GF) 强化聚酰胺 (PA6T) 改质数据 / Glass fiber reinforced polyamide (PA6T) resin data

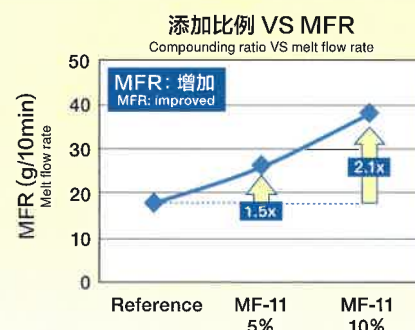
测试项目 Measurement item		Reference	MF-11 5%	MF-11 10%	测试条件 Measuring conditions
混合比 Compounding Ratio	聚酰胺 (PA6T) Polyamide (PA6T)	wt%	50	47.5	占混合物 全体的比例 Ratio to total of compounding
	MF-11	wt%	0	2.5	
	玻璃纤维 (GF) Glass fiber (GF)	wt%	50		
物理指标 Physicality data	MFR Melt flow rate	g/10min	22.0	75.8	ISO1133 335°C 2.16kg
	拉伸强度 Tensile strength	MPa	216	232	ISO527
	拉伸伸长率 Tensile elongation	%	1.7	1.9	
	弯曲强度 Flexural strength	MPa	385	378	ISO178
	弯曲弹性率 Flexural modulus	GPa	15.6	16.0	
	IZOD冲击强度 (有槽口) Impact strength (With notch)	kJ/m²	10.3	9.1	ISO180
	热挠曲温度 Heat deflection temperature	°C	288.0	281.0	ISO75 1.8MPa
	熔点 Melting point	°C	310	305	DSC 10°C/min



*GF/纤维直径 filament diameter: 10.5 μm
切割长度 cut length: 3.0mm

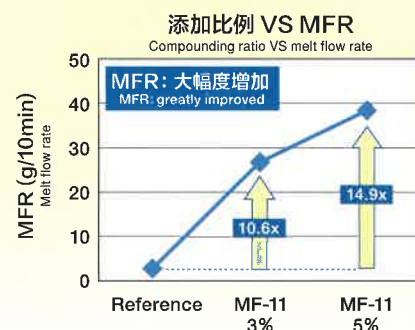
非强化聚酰胺 (PA12) 改质数据 / Non reinforced polyamide (PA12) resin data

测试项目 Measurement item		Reference	MF-11 5%	MF-11 10%	测试条件 Measuring conditions
混合比 Compounding Ratio	聚酰胺 (PA12) Polyamide (PA12)	wt%	100	95	—
	MF-11	wt%	0	5	
物理指标 Physicality data	MFR Melt flow rate	g/10min	17.6	25.8	ISO1133 225°C 11.77N
	拉伸强度 Tensile strength	MPa	56	56	ISO527
	拉伸伸长率 Tensile elongation	%	303	300	
	弯曲强度 Flexural strength	MPa	55	50	ISO178
	弯曲弹性率 Flexural modulus	GPa	1401	1321	
	IZOD冲击强度 (有槽口) Impact strength (With notch)	kJ/m²	31.5	26.6	ISO180
	热挠曲温度 Heat deflection temperature	°C	45.6	44.1	ISO75 1.8MPa
				43.8	



TPU (热塑性聚亚安酯) 改质数据 / Thermoplastic polyurethane resin data

测试项目 Measurement item		Reference	MF-11 3%	MF-11 5%	测试条件 Measuring conditions
混合比 Compounding Ratio	TPU Thermoplastic polyurethane	wt%	100	97	—
	MF-11	wt%	0	3	
物理指标 Physicality data	MFR Melt flow rate	g/10min	2.6	27.5	ISO1133 200°C 2.16kg
	100% 拉伸强度 100% tensile strength	MPa	6.8	7.0	ISO527
	300% 拉伸强度 300% tensile strength	MPa	14.8	14.1	
	拉伸伸长率 tensile elongation	%	>400	>400	
	热挠曲温度 Heat deflection temperature	°C	47.9	50.4	ISO75 0.45MPa



*表中数据并不是保证值。Values in the tables not guaranteed for the products.

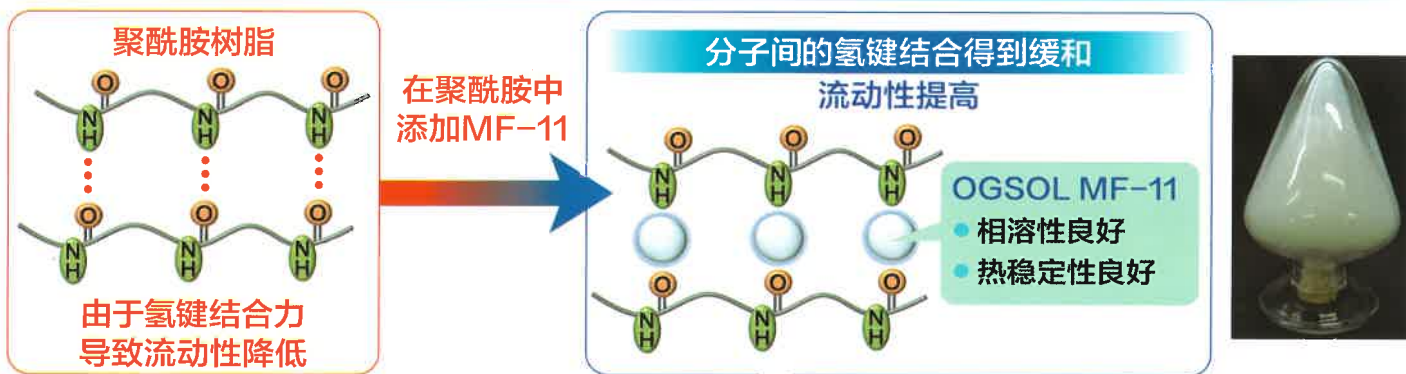
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CFRTP用树脂流动性改善剂 OGSOL MF-11

聚酰胺树脂(PA)添加MF-11后,通过流动性的提高,提升了对碳纤维的浸渗性
因此,可期待对CFRTP(热可塑性碳纤维复合材料)成形性或机械特性的提高

概念



■ MF-11流动性提高特别有效的成形案例

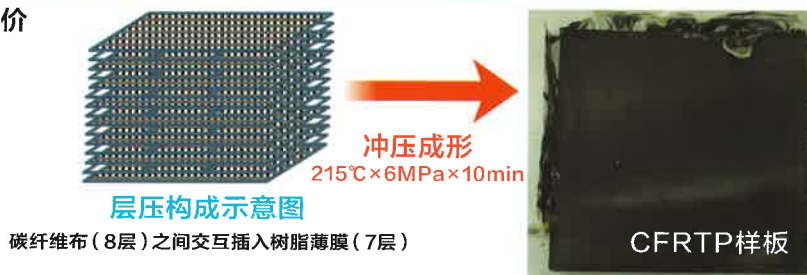
· 低温成形 · 薄成形 精密成形 高充填成形

CFRTP的评价条件

利用低成本·短时间可成形的冲压成形法进行评价

■ 评价方法

- ① MF-11 (10wt%) 添加于PA6后制成薄膜
- ② 将碳纤维布于PA6树脂薄膜交互层压
- ③ 以215℃ x 6MPa x 10min的条件
冲压成形为CFRTP样板



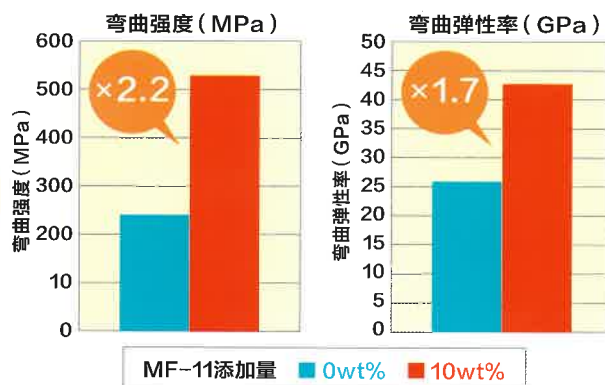
树脂浸渗性(剖面观察,空隙率)

通过流动性的提高,树脂更容易渗透到碳纤维内部,
从而减少了空隙(黑色部分)的面积

MF-11添加量	0wt%	10wt%
PA6+MF-11 流动性MFR(225℃、2.16kg)	41g/10min.	123g/10min.
剖面观察	 纤维束的中心, 界面产生 多数的空隙	 空隙大幅减少
空隙率 Vv	4.4%	≒0.0%
纤维体积含有率 Vf	38.3%	46.1%

机械特性(弯曲强度,弯曲弹性率)

通过空隙的减少提高了CFRTP的
弯曲强度及弯曲弹性率



本材料不仅仅适用于CFRTP薄膜冲压成形法
也可适用LFT-D (Long Fiber Thermoplastic Direct) 成形法

※上述技术数据,由广岛县综合技术研究所 西部工业技术中心 碳纤维PT部门技术支持提供。※上述数据并非保证值

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