

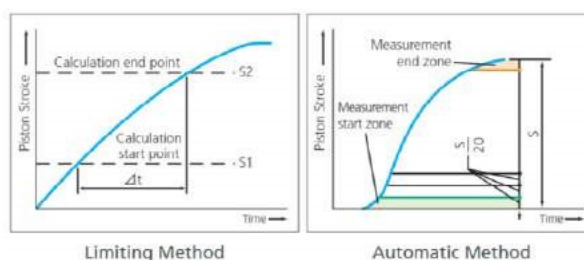
Sample No.	Component	Molecular Weight	GF Ratio (%)	Shear Rate (S ⁻¹)	Viscosity (Pa•s)
1	PC/SGF	17000	33	44,7	1,098
2	PC/SGF	22000	33	30,6	1,604
3	PC/SGF	26000	33	18,5	2,657

Test Results

■ Selection of Measurement Method According to Material

Constant Temperature Method

In the testing method based on the use of a constant temperature, two calculation points on the piston's descent are set beforehand. The calculation is conducted using either the limiting method or the automatic method. In the limiting method, the flowrate is determined from the stroke-time curve of the piston between the above two points. In the automatic method, the stroke-time curve is divided into 20 segments, and the flowrate is determined from the gradients of the curves of those segments except for the first and last segment, with the maximum value taken automatically as the flowrate.



Thermosetting resins



Thermoplastic resins



Rubbers

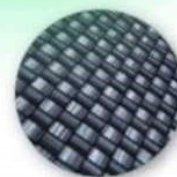
The fluidity of various materials & Evaluation of the heat characteristic



Ceramics



Toners



Composites

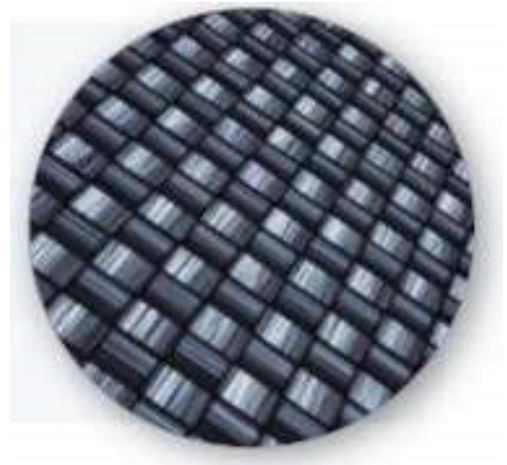
Application News

Material Testing System CFT

No. SCA_300_056

Viscosity Evaluation of Thermoplastic Resins (GFRP)

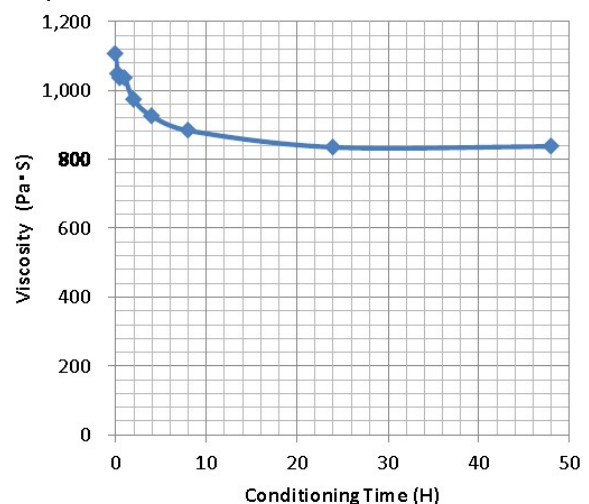
Most mass produced molded plastic products are injection-molded. The appropriate temperature and pressure for injection molding differs depending on the type of resin and shape of the die, over-filling, under-filling, sink marks, voids, or other molding defects. Even if appropriate molding parameters are used, any changes in the status of the resin raw materials used could cause molding defects as well. Therefore, it control the quality of resin raw materials on a daily basis. Furthermore, it is important to perform the daily resin high pressure conditions that approximate molding conditions, which is not possible using the melt flowrate measurement method.



■ Changes in Viscosity Due to Moisture Absorption Time

The change in resin viscosity due to moisture absorption was measured using sample (1), with a molecular weight of 17,000. After drying for 13 hours in a vacuum environment at 100 °C, the sample was left in a room with a temperature of about 23 °C and about 50 % relative humidity for constant temperature testing. The graph shows that the fluidity increases and viscosity decreases as more moisture is absorbed. The results show that about 4 hours after leaving the sample there, viscosity drops sharply and then almost stops decreasing after about 24 hours. Due to the large changes in resin viscosity that result from moisture absorption, using resin materials that have not been controlled for moisture can result in injection molding failures.

Therefore, such injection molding problems can be avoided by using a CFT-EX series flowteter to measure the viscosity to ensure that it is within given standards before molding the parts.



Test Results