TSD-1002,1008 April, 2008

Formation of Flash and Low Flash PPS

1. Formation of flash

1) Flow velocity of resin at gate is very fast and its shear rate is 10^3-10^4 sec^{-1}., as shown in Fig.1.

2) After a mold cavity is filled by the resin, holding pressure acts in the mold cavity.

3) As the result, a melted resin flows in a mold clearance by holding pressure and its flow shear rate is 10^1 to 10^2 sec^{-1}., as shown in Fig.1. Therefore, it is necessary to reduce flash; holding pressure should be maintained in lower level as shown in Fig.2.

4) If a melt viscosity is sufficiently high under low shear rate and is the same viscosity in high shear rate region as the resin "A" in Fig.1, flash will be reduced.

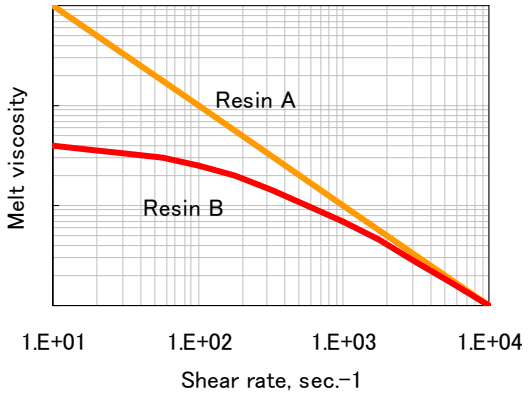

Fig.1 Melt viscosity vs. shear rate.

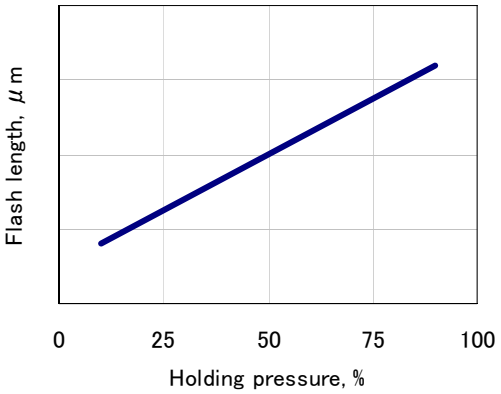

Fig.2 Flash length vs. injection pressure.

2. Low flash Type PPS

The following data are the flash evaluation results comparing with low flash PPS and others. These low flash grades are developed by a control of viscosity and crystalline characteristics.

Table 1 Flash evaluation result using 70mm length connector with pin-gate

	Low Flash FZ-1140-D5	**Low Flash, High Flow FZ-2140-D9**	Conventional PPS G40	PBT G30 FR grade	LCP G30
Minimum injection holding pressure, %	26	19	25	20	5
Gate side flash length, μm	125	80	200	60	<10
Opposite side flash length, μm	100	74	145	65	<10

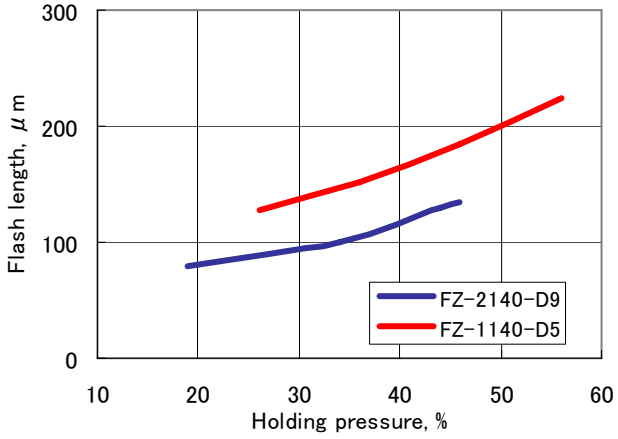

Fig.3 Flash at gate side.

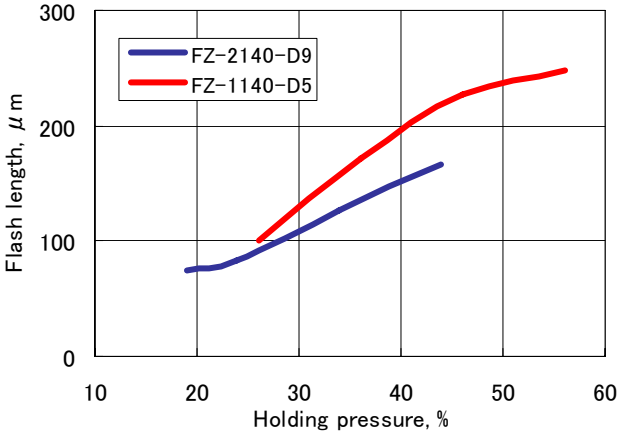

Fig.4 Flash at opposite side of gate.