



# Thermal Properties

Panlite's secondary transition point is between 145-150°C and its heat distortion temperature between 123-132°C, both of which place it within the higher categories among thermoplastics. As for its low-temperature characteristics, the brittle temperature is lower than -100°C -extremely low- and thus Panlite has stable mechanical and electrical properties over a wide temperature range.

## Flame resistance

Panlite has excellent flame resistance compared with other thermoplastic resins.

**Table 2 Flash temperature and auto-ignition temperature of Panlite**

Item	Test method	Characteristic value
Flash temperature	ASTM D1929	480°C
Auto-ignition temperature	ASTM D1929	580°C

**Table 3 UL94 flame class and oxygen index of Panlite**

Grade	UL94 flame class (thickness 1.5mm)	Oxygen index (O.I.)
L-1250Y	94HB	25~26
LV-2225Y	94V-2	29~30
LV-2250Y	94V-2	29~30
LN-2520HA	94V-0	31~32
G-3410R	94V-2	33~34
G-3430R	94V-2	34~35
GN-3410R	94V-0	41~42
GN-3430R	94V-0	42~43
GV-3410R	94V-0	42~43
GV-3430R	94V-0	44~45

\* Oxygen index (O.I.) test method: ASTM D2863

## Continuous service temperature

According to UL 746B, the temperature at which the initial strength of the material is reduced to a half is defined as the long term continuous service temperature (temperature index). Each grade of Panlite is approved as a material having a higher temperature index than that of other materials (Table 4).

**Table 4 Temperature Index of UL (UL746B, Thickness: 1.47 mm)**

Grade	Electric	Mechanical	
		Impact	Non-impact
L-1225Y	125	115	125
L-1250Y	125	115	125
K-1300Y	125	115	125
LN-2520HA	130	125	130
G-3410R	130	120	130
G-3430R	130	125	130
GN-3410R	130	120	130
GN-3430R	130	120	130

## Ball pressure temperature

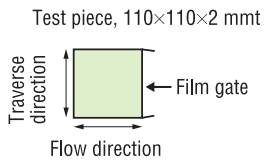
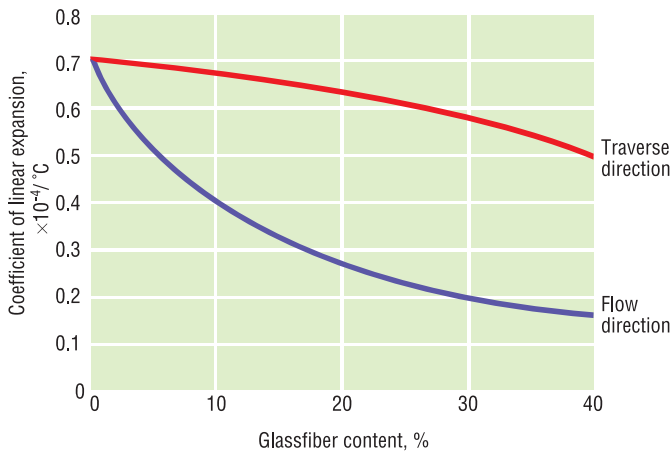
For plastics, ball pressure temperature is specified by IEC Publication 335-1, UL746C and Electric Appliances Control Law (regulations concerning technical standards). The ball pressure temperature of Panlite is on the higher side of all thermoplastics (Table 5).

**Table 5 Ball Pressure Temperature of Panlite**

Grade	Ball pressure temp., °C
L-1225Y	130
L-1250Y	130
K-1300Y	135
LN-2520HA	130
G-3410R	135
G-3430R	135
GN-3410R	135
GN-3430R	135

## Coefficient of linear expansion

Panlite G-3430R has a low coefficient of linear expansion, nearly equal to that of die-cast aluminum (Fig. 12). However, there are differences between the flow direction and traverse direction due to glass fiber orientation. This must be taken into consideration when designing a product.



\* The linear expansion coefficients of glass fiber reinforced grades show different characteristics depending on the grade, as can be seen in Fig. 12.

Fig. 12 Coefficient of Linear Expansion of Panlite

## Melting point and decomposition temperature

As Panlite is an amorphous plastic, it does not show a definite melting point, but is roughly 230-240°C. Also, the decomposition temperature is over 340°C (Fig. 13).

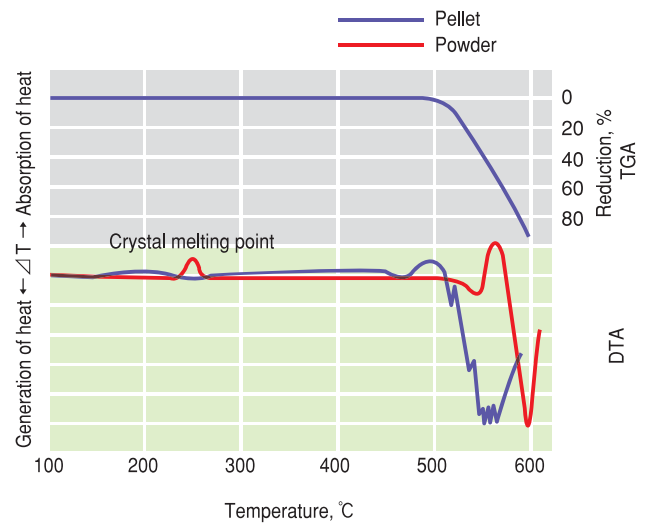


Fig. 13 TGA-DTA Curve of Panlite