

# ■ Typical Properties of Grivory® G grade

IKP (주)일광폴리머 ILKWANG POLYMER CO.,LTD

		Standard	Unit	State	G 16	G 21	GTR 45 Transparent	GV-2H GF20%	GV-4H GF40%	GV-5H GF50%	GV-6H GF60%	GVN-35H GF35%	GC-4H CF40%	GM-4H MF40%	GVS-5H GF50%	GV-5HL GF50%	GVX-7H GF70%
<b>Mechanical</b>																	
Tensile E-modulus	1 mm/min	ISO 527	MPa	Dry	3,000	3,000	3,000	8,200	14,000	18,000	22,000	11,500	31,000	7,000	18,000	18,000	28,000
				Cond.	3,000	3,000	3,000	7,200	13,000	17,000	21,000	9,500	28,000	6,000	17,000	17,000	27,500
Tensile stress at break	5 mm/min	ISO 527	MPa	Dry	100	100	100	135	230	250	260	200	260	100	250	220	290
				Cond.	100	100	100	130	210	220	240	155	225	80	220	200	260
Elongation at break	5 mm/min	ISO 527	%	Dry	5	5	5	3	3	2.5	2	4	1.5	3	2.5	2	1.5
				Cond.	5	5	5	3	3	2.5	2	5	2	5	2.5	2	1.5
Impact strength	Charpy, 23°C	ISO 179/1eU	kJ/m <sup>2</sup>	Dry	> 100	> 100	> 100	50	90	90	80	80	55	80	90	70	60
				Cond.	> 100	> 100	> 100	50	90	90	80	80	60	100	80	60	60
	Charpy, -30°C	ISO 179/1eU	kJ/m <sup>2</sup>	Dry	> 100	> 100	> 100	35	70	80	80	80	45	75	75	50	60
				Cond.	> 100	> 100	> 100	35	70	80	80	80	50	90	60	40	60
Notched impact strength	Charpy, 23°C	ISO 179/1eA	kJ/m <sup>2</sup>	Dry	8	8	8	7	13	15	14	14	7	6	15	14	15
				Cond.	8	8	8	7	13	15	14	14	7	6	15	13	15
	Charpy, -30°C	ISO 179/1eA	kJ/m <sup>2</sup>	Dry	8	8	8	6	11	13	13	13	4	4	15	15	15
				Cond.	2	2	2	6	11	13	13	13	4	4	15	14	15
Ball indentation hardness		ISO 2039-1	MPa	Dry	145	145	145	225	255	280	315	215	280	225	280	270	370
				Cond.	145	145	145	200	230	255	290	185	260	200	255	250	360
<b>Thermal</b>																	
Melt temperature	DSC	ISO 11357	°C	Dry	125 <sup>Tg</sup>	125 <sup>Tg</sup>	125 <sup>Tg</sup>	260	260	260	260	260	260	260	260	255	260
HDT/A	1.80 MPa	ISO 75	°C	Dry	105	105	105	230	235	235	235	235	235	105	240	230	250
HDT/C	8.00 MPa	ISO 75	°C	Dry	115	115	115	65	145	165	175	70	175	60	185	170	220
Thermal expansion longitudinal	23-55°C	ISO 11359	10 <sup>-4</sup> /K	Dry	0.6	0.6	0.6	0.1	0.15	0.15	0.15	0.15	0.1	0.9	0.15	0.15	0.1
Thermal expansion transverse	23-55°C	ISO 11359	10 <sup>-4</sup> /K	Dry	0.6	0.6	0.6	1	0.9	0.9	0.9	0.9	0.8	0.9	0.7	0.7	0.3
Maximum working temp.	long term	ISO 2578	°C	Dry	40~60	40~60	40~60	100~120	100~120	100~120	100~120	100~120	100~120	100~120	100~120	100~120	100~120
	short term	ISO 2578	°C	Dry	70	70	70	180	180	180	180	180	180	180	180	180	220
<b>Electrical</b>																	
Dielectric strength		IEC 60243-1	kV/mm	Dry	27	27	27	33	33	33	33	35	-	26	33	29	33
				Cond.	27	27	27	33	33	33	33	35	-	26	33	28	33
Comparative tracking index	CTI	IEC 60112		Cond.	600	600	600	575	600	600	600	575	-	600	600	225	600
Specific volume resistance		IEC 60093	Ω · m	Dry	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	< 50	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>10</sup>
				Cond.	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	< 50	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>
Specific surface resistance		IEC 60093	Ω	Cond.	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	< 50	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>12</sup>
<b>General</b>																	
Density		ISO 1183	g/cm <sup>3</sup>	Dry	1.18	1.18	1.18	1.28	1.47	1.56	1.69	1.40	1.34	1.45	1.58	1.60	1.85
Flammability (UL 94)	0.8mm	ISO 1210	Rating	-	V2	V2	V2	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Water absorption	23°C/sat.	ISO 62	%	-	7	7	7	5	4.5	4	3.5	4.5	4.5	4.5	4	4	2.9
Moisture absorption	23°C/50% r.h.	ISO 62	%	-	2	2	2	1.5	1.4	1.4	1.2	1.5	1.4	1.4	1.4	1.4	1
Linear mould shrinkage	long.	ISO 294	%	Dry	0.35	0.35	0.35	0.15	0.10	0.05	0.05	0.15	0.05	0.80	0.05	0.05	0.05
	trans.	ISO 294	%	Dry	0.45	0.45	0.45	0.75	0.60	0.40	0.30	0.45	0.20	0.85	0.50	0.50	0.20