

### COMPARISON OF IR TRANSMITTING GLASSES PRODUCED BY AMI

Property	AMTIR-1	AMTIR-2	AMTIR-3	AMTIR-4	AMTIR-5	AMTIR-6	AMTIR-7
Composition	Ge-As-Se	As-Se	Ge-Sb-Se	As-Se	As-Se	As-S	As-Se
Transmission Range $\mu\text{m}$	0.7-12	1.0-14	1.0-12	1.0-12	1.0-12	0.6-8	1.0-12
Ref Index @ 10 $\mu\text{m}$	2.49715	2.7703	2.6027	2.646	2.7423	2.3807	2.68929
$\Delta n/\Delta T^{\circ}\text{C} \times 10^{-6}$ @ 10 $\mu\text{m}$	71	30.7	91	-19	20	<1	5.7
Knoop Hardness	170	110	150	84	87	109	86
Therm Exp $\times 10^{-6} / ^{\circ}\text{C}$	12.6	22.4	14	27	23.7	21.6	28.2
Thermal Condx (cal/gm sec $^{\circ}\text{C}$ ) $10^{-4}$	6	5.3	5.3	5.3	5.7	4	5.5
Specific Heat (cal/gm $^{\circ}\text{C}$ )	0.072	0.068	0.066	0.086	0.076	0.109	
Density gm/cm $^3$	4.43	4.66	4.67	4.49	4.51	3.2	4.5
Rupture Mod (psi)	2850	2500	2500	2358	2400	2400	2279
Young's Mod ( $\times 10^6$ psi)	3.07	5.6	3.1	2.2	2.56	2.3	2.6
Shear Mod ( $\times 10^6$ psi)	1.26	1.03	1.2	0.85	1.01	0.94	1.05
Poisson's Ratio	0.215	0.29	0.26	0.297	0.279	0.24	0.242
Softening Point $^{\circ}\text{C}$	405	188	295	131	170	210	151
Glass Trans Temp (T $_g$ $^{\circ}\text{C}$ )	353	167	278	103	143	187	119
Upper Use Temp $^{\circ}\text{C}$	300	150	250	90	130	150	120
Dispersion Values							
3 - 5 $\mu\text{m}$	202	171	159	186	175	155	148
8 - 12 $\mu\text{m}$	109	149	110	235	172		196