

Technical Literature E-01-01

Dielectric Constant and Dielectric Dissipation Factor of AURUM[®]

The dielectric constant of a substance represents the properties of the substance relating to its dielectric polarization. It is a critical property of a plastic when the plastic is used as an electrical insulator.

On the other hand, the dielectric dissipation factor of a substance is an important index of the amount of the energy loss that will occur when volts alternating current is passed through the substance. A plastic may be heated due to such loss, causing troubles such as dielectric breakdown, deformation and change in quality. Because of this, materials having a low value of the dielectric dissipation factor are generally selected except for those uses for high-frequency heating (dielectric heating).

Both dielectric constant and dielectric dissipation constant of AURUM[®] are small and yet stable even in a high-frequency range. For this reason, it may be said that AURUM[®] has practical properties satisfactory enough to be used as a general electrical insulating material.

Table 1 shows the frequency dependence of the dielectric constant and dielectric dissipation factor of AURUM[®].

Table 1 Dielectric Constant and Dielectric Dissipation Factor of AURUM[®]

	Frequency (Hz)	Natural	GF20%	GF30%
Dielectric constant	60	3.1	3.4	3.8
	1K	3.2	3.4	3.8
	30K	3.1	3.4	3.8
	1M	3.1	3.4	3.7
Dielectric dissipation factor	60	7.0E(-4)	9.7E(-4)	1.2E(-3)
	1K	9.0E(-4)	2.5E(-3)	1.2E(-3)
	30K	2.5E(-3)	2.1E(-3)	2.5E(-3)
	1M	3.4E(-3)	2.5E(-3)	3.6E(-3)

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Technical Literature E-01-02

Dielectric Constant and Dielectric Dissipation Factor of AURUM[®] in High Frequency

The Table below shows results of the measurement of the dielectric constant and dielectric dissipation factor of AURUM[®] in a high-frequency range.

Testing frequency	Room temperature 23°C/50%RH		After boiling 120°C/2atm/5hrs	
	Dielectric constant	Dielectric dissipation factor	Dielectric constant	Dielectric dissipation factor
3 GHz	3.192	5.283×10^{-3}	3.313	1.033×10^{-2}
6 GHz	3.195	6.433×10^{-3}	3.327	1.300×10^{-2}
12 GHz	3.215	7.817×10^{-3}	3.308	1.817×10^{-2}

The thickness of the test specimen was 400 μ m, and that of the standard substrate was 0.582 mm.

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Technical Literature E-03

Arc Resistance and Dielectric Breakdown Strength of AURUM[®]

The Table below shows results of the measurement of the arc resistance and dielectric breakdown strength of AURUM[®].

Grade	Arc resistance (Sec)	Dielectric breakdown strength (KV/mm)
Natural 450	81	16.6
JGN3030	91	21.1

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Technical Literature E-04

Comparison of UL Long-term Heat Resistance Temperature of AURUM[®]

Unit: °C

Product	Electrical	Mechanical	
		With impact	Without impact
Aurum:			
PL450	260	-	-
JGN3030	260	240	260
JCN3030	-	220	220
PEEK:			
450G	260	180	240
450GL30	240	220	240
450CA30	-	220	240
Torlon:			
4203L	220	200	220
9040(GF)	240	200	240
VECTRA:			
C-130(GF)	240	200	240
VESPEL:			
All grades	50	50	50
PPS:			
Fortron #6165	240	220	240
XYDAR:			
FSR-315	260	240	260

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