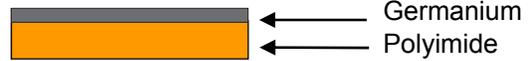


PRODUCT BULLETIN



Germanium Coated Polyimide

Sheldahl® Brand Materials of germanium coated polyimide films are well suited for antenna cover applications due to the coating's unique combination of radio frequency transparency and ability to bleed off static charges. This product may be ordered on a variety of polyimide substrates: Kapton® HN, 100CB Black Kapton® (non-conductive), 100XC Black Kapton® (conductive, nominal $10^7 \Omega/\text{square}$), or 160XC and 275XC Black Kapton® (conductive). The germanium coating is nominally 1000 Å thick, but other thicknesses from 500 to 1750 Å are available. The product is manufactured as sheets 4 feet (1.22 m) wide and 10 feet (3 m) long or Roll-to-Roll up to 48 inches (1.22 m) wide.

PRODUCT CHARACTERISTICS

Parameter (independent of film)	Specified Value
Germanium surface resistivity	$\leq 10^9 \Omega/\text{square}$ (typical $10^7 \Omega/\text{square}$)
Transmittance (Kapton® HN only)	≤ 0.20
Solar Absorptance (α) Black Kapton® Side	0.93 typical
Normal Emittance (ϵ_N) Black Kapton® Side	0.84 typical
Intermittent temperature range	-250° C to 400° C (-420° F to 750° F)
Continuous temperature range	-250° C to 290° C (-420° F to 550° F)
Outgassing: (ASTM – E595)	TML - WVR $\leq 1.0 \%$; CVCM $\leq 0.1\%$

Item Number	Thickness mil (μm)	Ge Coated Surface Properties		Typical Weight (g/m^2)	Substrate
		α	ϵ_N		
146663	1.0 (25)	≤ 0.45	≥ 0.72	36	Kapton® HN
160970	2.0 (51)	≤ 0.45	≥ 0.72	71	Kapton® HN
160971	3.0 (76)	≤ 0.45	≥ 0.72	109	Kapton® HN
158816	5.0 (127)	≤ 0.45	≥ 0.72	181	Kapton® HN

GERMANIUM
POLYIMIDE

WARRANTY INFORMATION

Multek warrants that our thermal control materials will meet all acceptance testing criteria for one year from the date of shipment (except Germanium, see product bulletin) if the materials have been stored indoors at standard conditions in their original packaging.



A Multek Brand

SHELF LIFE

This product shall meet specified values for a minimum of 12 months after the date of shipment provided that the material is stored in its original unopened container at normal interior temperatures (10° C to 27° C/50° F to 80° F).

The shelf life of the material should be much longer than the warranty period. We recommend retesting any material that is more than one year old (or more than one year since most recent testing) prior to use. This will verify that the material has not been accidentally damaged. Multek offers retest services for a nominal fee.

Our standard packaging utilizes anti-moisture packaging for our vacuum deposited germanium coated products. The packaging includes interleaving the germanium material with a PET film for batch processed material. In addition, the roll is suspended on round 6” diameter plastic end plates, taped from end-to end to keep the end plates in place. This interleaved rolled up germanium material is placed in a metallized moisture barrier packaging that has been dry nitrogen purged twice before being sealed within the bag. Multek also requires our customers store the vacuum deposited germanium material in a moisture free environment, such as a nitrogen dry box or re-purging and sealing in the delivered bag after each time the bag is opened.

SPECIFICATION AND ITEM NUMBERS

Standard Numbers		Substrate & Thickness
Multek Specification	Item Number	
G428310	146663	1.0 mil Kapton® HN
G428320	160970	2.0 mil Kapton® HN
G428330	160971	3.0 mil Kapton® HN
G428350	158816	5.0 mil Kapton® HN

Multek manufactures a broad range of vacuum deposited films, laminates and tapes. Ask for additional product bulletins describing other Sheldahl® Brand Materials.

The information on this product bulletin is based on data obtained by our research and is considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data and the results obtained from the use thereof. This information is furnished upon the condition that the recipient shall conduct tests to determine the suitability of the product for his or her particular application.