

# ES4

## TECHNICAL DATA BULLETIN

GRADE: ES4

NEMA: ES-4

U.L. LISTED: N

DESCRIPTION: Composed of melamine/colored paper cores with white or black or colored cover sheets. The main difference between ES-4 and ES-1 is that the core is colored rather than white.

### TYPICAL PROPERTIES

		UNITS	VALUE		
			Thickness Tested		
			0.0625"	0.125"	0.500"
<b>PHYSICAL PROPERTIES</b>					
<b>Specific Gravity</b> (ASTM D792)		-			1.40
<b>Rockwell Hardness</b> (ASTM D785)	0.250" Build-up	M Scale	100		
<b>Moisture Absorption</b> (ASTM D570)	Condition A	%	2.50		
<b>Flexural Strength</b> (ASTM D790)	Condition A LW / CW	psi (Mpa)	13,500 / 13,500 (93.1) / (93.1)		
<b>Flexural Modulus</b> (ASTM D790)	Condition A LW / CW	kpsi (Gpa)	1,500 / 1,500 (10.3) / (10.3)		
<b>Tensile Strength</b> (ASTM D638)	Condition A LW / CW	psi (Mpa)		10,500 / 9,200 (72.4) / (63.4)	
<b>Izod Impact Strength</b> (ASTM D256)	Condition A LW / CW	ft-lb/in (J/cm)			0.60 / 0.55 (0.32) / (0.29)
<b>Compressive Strength</b> (ASTM D695)	Condition A Flatwise	psi (Mpa)			25,000 (172.4)
	Condition E-1/150: T-150 Flatwise	psi (Mpa)			1,000 (6.9)



Global Thermoset Composite Solutions

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## TYPICAL PROPERTIES (continued)

	UNITS	VALUE		
		Thickness Tested		
		0.0625"	0.125"	0.500"
<b>THERMAL PROPERTIES</b>				
<b>Maximum Operating Temperature</b> <sup>1</sup>	°C			120
<b>Flammability Vertical</b> Condition A (UL Bulletin 94)	Class	V-0		
<b>ELECTRICAL PROPERTIES</b>				
<b>Breakdown Voltage</b> Condition A (ASTM D149)	kVolts	50		
	Condition D-48/50	kVolts	5	
<b>Arc Resistance</b> Condition A (ASTM D495)	sec		120	

<sup>1</sup> This temperature is a recommendation only, and based upon experience in various applications. The maximum operating temperature is dependent upon the application and should be investigated prior to use.

This data, while believed to be accurate and based on reliable analytical methods, is for informational purposes only. The terms and conditions of the agreement under which it is sold will govern any sales of this product. Data supplied above are "typical values"; not to be considered "specification values".

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Specification writers: Contact Norplex-Micarta for specification values before submission.