

# CHO-SHIELD® 4994 & 4998

## Conductive Flexible Coatings



### Customer Value Proposition:

CHO-SHIELD 4994 and 4998 are smooth, highly conductive flexible silver-filled polyurethane coatings designed for military/aerospace airframe applications. Both coatings provide superior adhesion, excellent solvent rub and wear resistance, and are resistant against numerous operational and environmental fluids. CHO-SHIELD 4994 and 4998 can be applied to aluminum as well as non-conductive substrates and are designed to be used with primers and with external topcoat systems. CHO-SHIELD 1091 can be used as a primer for ensuring improved performance on aluminum substrates.



### Product Features:

- CHO-SHIELD 4994: 3 hour pot life with 7 day full cure under ambient conditions.
- CHO-SHIELD 4998: 1 hour pot life with 24 hour full cure under ambient conditions.
- Both coatings can be cured under heat accelerated conditions within 4 hours.
- Designed for application by standard high volume low pressure spray equipment.
- Superior conductivity, flexibility and fluid resistance.

# Product Information

**Table 1 - Typical Physical Properties**

<b>Resin</b>		Polyurethane			
<b>Filler</b>		Silver			
<b>Color</b>		Metallic Light Brown			
<b>Mix Ratio</b>	<b>CHO-SHIELD® 4994</b>	Mix [A]:[B]:[C]:[D] 100:18.33:1.36:20.91			
	<b>CHO-SHIELD® 4998</b>	Mix [A]:[B]:[C]:[D] 100:18.30:1.39:20.57			
<b>Cure Schedule</b>	<b>CHO-SHIELD® 4994</b>	(1) 7 Days @ Standard Conditions (60-70°F 40-60% RH)			
		(2) 2 Hours @ Standard Conditions + 2 hrs @ 130°F			
	<b>CHO-SHIELD® 4998</b>	(1) 24 Hours @ Standard Conditions (60-70°F 40-60% RH)			
		(2) 2 Hours @ Standard Conditions + 2 hrs @ 130°F			
<b>Recommended Dry Film Thickness (DFT)</b>		3.00 - 4.00 mil			
<b>Property</b>		<b>Method**</b>		<b>Typical Properties</b>	
<b>Surface Resistance</b>		CEPS-0002 (Q/C)		< .075 (Ω/Square)	
<b>Wet Density</b>		ASTM D1475 (Q/C)		2.1 (g/cc)	
<b>Pot Life</b>		ASTM D4212 (Q/C)		CHO-SHIELD® 4994	3.00 Hours
				CHO-SHIELD® 4998	1.00 Hour
<b>Solvent Rub Resistance</b>		CHO-TM 95-40-6013 (Q/C)		Pass	
<b>Adhesion</b>		ASTM D3359 (Q/C)		5B	
<b>Wear Resistance (Taber)</b>		ASTM D4060 (Q)		Wear Index: Wear Cycles per Mil:	0.160 (mg/cycle) 1000
<b>Pencil Hardness</b>		ASTM D3363 (Q)		Scratch : Gouge:	4H 2H
<b>Shielding Effectiveness</b>		Modified Chomerics TP-08 (Q)		> 85 dB (200 - 10,000 MHz)	
<b>Continuous Operating Temperature</b>		(Q)		-40°F to + 185°F	
<b>VOC (Less H<sub>2</sub>O and Exempt Solvents)</b>		USEPA Method 24 (Q)		596 (g/l)	
<b>Typical Coverage</b>		via ASTM D2697 (Q)		250ft <sup>2</sup> /gal @ 3.0 mil Dry Film Thickness	
<b>Shelf Life</b>		(Q)		6 Months From Date of Manufacture	

\*\* Q= Qualification Test  
QC= Quality Conformance Test

# Product Information (Continued)

**Table 2 - Typical Product Specifications**

	Property	Method	Specifications		
Flexibility (Aluminum)	Impact Testing	ASTM D2794 (Q)	Intrusion: >75 (ft/lb) / Extrusion: >75 (ft/lb)		
	Mandrel Bend	ASTM D522 - Test Method B (Q)	> 500%		
	Conical Bend	ASTM D522 - Test Method A (Q)	Elongation: ≥ 32.0% / Cracking: No Evidence		
Accelerated Weathering (Aluminum)			<b>185°F 14 days</b>	<b>-40°F 14 days</b>	<b>185°F 85%RH 30 Days</b>
	Surface Resistance	CEPS-0002 (Q)	< .075 (Ω/Sq.)	< .075 (Ω/Sq.)	< .075 (Ω/Sq.)
	Cross Hatch Adhesion	ASTM D3359 (Q)	5B	5B	5B
	Visual Inspection	(Q)	Pass	Pass	Pass
Fluid Resistance (Aluminum and Composite)			<b>MIL-T-5624 JP-8 14 Days @ 72°F</b>		
	Surface Resistance	CEPS-0002 (Q)	< .075 (Ω/Sq.)		
	Solvent Rub Resistance	CHO-TM 95-40-6013 (Q)	Pass		
	Visual Inspection	Q	Pass		
			<b>MIL-H-5606 Hydraulic Fluid 7 Days @ 160°F</b>		
	Surface Resistance	CEPS-0002 (Q)	< .075 (Ω/Sq.)		
	Solvent Rub Resistance	CHO-TM 95-40-6013 (Q)	Pass		
	Visual Inspection	Q	Pass		
			<b>MIL-L-7808 Lubricating Oil 7 Days @ 160°F</b>		
	Surface Resistance	CEPS-0002 (Q)	< .075 (Ω/Sq.)		
	Solvent Rub Resistance	CHO-TM 95-40-6013 (Q)	Pass		
	Visual Inspection	Q	Pass		

## Ordering Information

**Table 3**

Part Numbering System			
WW	XX	XXXX	YYYY
52	03	4994	0000
52	03	4998	0000