

# Norton Rokide Coatings

**Table I - Physical Properties**

TYPES OF COATINGS	COLOR	CRYSTAL FORM	BULK DENSITY	CRYSTAL HARDNESS	POROSITY	PERMEABILITY
Units of Measure			Average gm/cc	Knoop Scale (Monolithic) (Crystal)	%	
ROKIDE A Aluminum Oxide	White	Gamma Type	3.3	2000	8 (7% open)	Slight
ROKIDE Z Zirconium Oxide	Light Tan	Cubic	5.2	1000	8 (7% open)	Slight
ROKIDE ZS Zirconium Silicate	Light Tan	Cubic ZrO <sub>2</sub> In Siliceous Glass	3.8	1000	8 (4% open)	Slight
ROKIDE C Chrome Oxide	Black	Hexagonal	4.6	1900	4 (2% open)	Very Slight
ROKIDE MA Magnesium Aluminate	White	Cubic	3.3		6 (4% open)	Slight
Stainless Steel 304			8	400 approx.	0	None

**Table II - Mechanical Properties**

TYPES OF COATINGS	COMPRESSIVE STRENGTH	ADHERENCE TO STEEL	MINIMUM PROFILOMETER SURFACE FINISH	ABRASION RESISTANCE	COEFFICIENT OF FRICTION	STRAIN	VIBRATION
Units of Measure	psi at Ambient Temp.	psi (approx.)	RMS Range (Microinches)	Rubbing Wear Impact Abras.		% Elongation Per Unit of Lgth. (.020" Thk. Coat.)	Cycles
ROKIDE A Aluminum Oxide	37,000	Steel 1000 Non Ferrous 600	As Coated 200-300 As Ground 30-50 As Lapped 25-45	Very Good	.10 Against 440-C SS	.7	200,000,000 Cycles Without Failure (15,000-16,000 psi Cyclic Stress)
ROKIDE Z Zirconium Oxide	21,000	Steel 1000 Non Ferrous 600	As Coated 200-300 As Ground 30-50 As Lapped 25-45	Good	.10 Against 440-C SS	1.4	
ROKIDE ZS Zirconium Silicate		Steel 1000 Non Ferrous 600	As Coated 200-300 As Ground 30-50 As Lapped 25-45	Good	.10 Agaomst 440-C SS	.7	
ROKIDE C Chrome Oxide	105,000		As Coated 200-300 as Ground 15-25 As Lapped 10-20	Very Good	.11 Against Brass	1.3	
ROKIDE MA Magnesium Aluminate			As Coated 200-300 As Ground 30-50 As Lapped 25-45	Good			
Stainless Steel 304	70,000 to 100,000					.2	

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## Table III-Electrical Properties

TYPES OF COATINGS	CONDUCTIVITY	ELECTRICAL RESISTIVITY	DIELECTRIC STRENGTH	DIELECTRIC CONSTANT	DISSIPATION FACTOR	LOSS FACTOR
Units of Measure		OHM - Inch	AC Volts Per Mil Thk.	at 0-600°F	at 0-600°F	
ROKIDE A Aluminum Oxide	Nonconductor	4.5 x 10 <sup>6</sup> at 500°F 1.2 x 10 <sup>5</sup> at 800°F	.005" Thk. - 160 .010" Thk. - 120 .020" Thk. - 65 .030" Thk. - 48+	10	.05	.5
ROKIDE Z Zirconium Oxide	Nonconductor (Amb. Temp.) Increase Rapidly at 1200°C	2.7 x 10 <sup>4</sup> at 500°F 2.1 x 10 <sup>2</sup> at 800°F		35	.15	5.25
ROKIDE ZS Zirconium Silicate	Nonconductor	1.1 x 10 <sup>6</sup> at 500°F 4 x 10 <sup>2</sup> at 800°F		15	.08	1.20
ROKIDE C Chrome Oxide	Nonconductor					
ROKIDE MA Magnesium Aluminate	Nonconductor					
Stainless Steel 304	Conductor	28.3 x 10 <sup>-6</sup> at 68°F 45.6 x 10 <sup>-6</sup> at 1200°F				

## Table IV - Thermal and Chemical Properties

TYPES OF COATINGS	MELT TEMP.	MEAN SPECIFIC HEAT	COEFFICIENT OF EXPANSION	CONDUCTIVITY	TOTAL EMITTANCE	THERMAL SHOCK RESISTANCE	CHEMICAL	
							COMPOSITION	RESISTANCE TO ACIDS ALKALIS†
Units of Measure	°F	BTU/LB/°F	IN/IN/°F	BTU/HR/FT <sup>2</sup> -Inch/°F (Coating Only)			%	
ROKIDE A Aluminum Oxide	3600	.28 (90°-3100°F)	4.1 x 10 <sup>-6</sup> (70°-2250°F)	19 (1000-2000°F)	.8-.4 (200-1000°C)	Good	Pure Aluminum Oxide 98.6 Al <sub>2</sub> O <sub>3</sub>	Good Good (Except Hot)†
ROKIDE Z Zirconium Oxide	4500	.175 (80°-2550°F)	5.4 x 10 <sup>-6</sup> (70°-2250°F)	8 (1000-2000°F)	.7-.3 (200-1000°C)	Very Good	• ZrO <sub>2</sub> + HfO <sub>2</sub> + CaO	Good (Except HF) Good†
ROKIDE ZS Zirconium Silicate	3000	.15 Est	4.2 x 10 <sup>-6</sup> (70°-1100°F)	15 (1000-2000°F)	.7-.3 (200-1000°C)	Good	65 ZrO <sub>2</sub> 34 SiO <sub>2</sub>	Fair (Except HF) Good† (Except Hot)
ROKIDE C Chrome Oxide	3000	.2 (60°-2700°F)	5.0 x 10 <sup>-6</sup> (70°-2000°F)	18 (Est) (1000-2000°F)	.8-.9 (100-1200°C)	Moderate	85 Cr <sub>2</sub> O <sub>3</sub>	Good (Except HF) Good† (Except Hot)
ROKIDE MA Magnesium Aluminate	3500	.25 (70°-1832°F)	4.5 x 10 <sup>-6</sup> (70°-2000°F)	18	.7-.3 (100-1200°C)	Good	98 MgO-Al <sub>2</sub> O <sub>3</sub>	Good (Except HF) Good† (Except Hot)
Stainless Steel 304	2600	.12 (32-212°F)	10.5 - 11.5 x 10 <sup>-6</sup> (32°-1800°F)	150 (1000°F)	.45 (as Rolled)			Good (Except Hot) Good†

\*(HfO<sub>2</sub>) about 2% by Wt.)  
\*(CaO) 3.5-5.0% by Wt.)

NOTE: The above data is a compilation of the most accurate information available from reported tests at Norton Company, reliable concerns, federal agencies, plus standard reference sources.



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