



Product Data

10/05: 5283

EMPIRE[®] S

Classification: High Duty, Dry Press Fireclay Brick

EMPIRE S is an economical high duty fireclay brick meeting ASTM regular type classification. It is suitable for boilers, dense brick backup linings, air heaters, and other areas encountering moderate operating temperatures. Not suggested for abrasive conditions.

Chemical Analysis - Calcined Basis

Silica	(SiO ₂)	58.1%
Alumina	(Al ₂ O ₃)	36.0%
Iron Oxide	(Fe ₂ O ₃)	1.7%
Lime	(CaO)	0.3%
Magnesia	(MgO)	0.4%
Titania	(TiO ₂)	2.0%
Alkalies	(Na ₂ O + K ₂ O)	1.5%

Pyrometric Cone Equivalent

Orton Standard Cones	32	
Temperature Equivalent	3123°F	1717°C

Reheat (Permanent Linear Change)

Contraction or Expansion at 2550°F (1400°C)	0.3% contr.
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Hot Load Test

Deformation at 2460°F (1350°C)	1.3%
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Panel Spalling Test

Preheat at 2910°F (1600°C) - Spalling Loss	2.0%
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Apparent Porosity

19.0%

Bulk Density	<u>lb/ft³</u>	<u>g/cm³</u>
	133	2.13
Modulus of Rupture	<u>lb/in²</u>	<u>MPa</u>
	1100	7.6
Cold Crushing Strength	3500	24.1
Thermal Conductivity		
At a Mean Temperature of	<u>Btu-in/hr-ft²-°F</u>	<u>W/m-°C</u>
400°F (205°C)	8.2	1.18
800°F (425°C)	8.5	1.23
1200°F (650°C)	9.0	1.30
1600°F (870°C)	9.2	1.33
2000°F (1095°C)	9.5	1.37
2400°F (1315°C)	9.8	1.41

The test data shown are based on average results on production samples and are subject to normal variation on individual tests. The test data cannot be taken as minimum or maximum values for specification purposes. ASTM test procedures used when applicable.