HASLE REFRACTORIES

ISO 9001 : 2015
Management System Certification
BUREAU VERITAS
Certification Denmark A/S

| | Max. recomm. Temp. (˚C) | Main component | Density (kg/m³) | Max. grain size (mm) | Chemical composition | | | | | Thermal conductivity (W/mK) | | MOR/CCS after firing at 1000°C (MPa) | Hot MOR at 900°C (MPa) | Open porosity at 1000°C (%) | Abrasion at 1000 ˚C, angle 90° (cm³ loss) | Resistance to alkali attack (scale 0-10; 0 is best) | Resistance to thermal shock |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $Al_2O_3$ | $SiO_2$ | SiC | $Fe_2O_3$ | CaO | 800°C | 1200°C | | | | | | |
| **Low Cement Castables (LCC)** | | | | | | | | | | | | | | | | | |
| **D39A** | 1500 | Chamotte | 2250 | 10 | 39 | 56 | - | 1.4 | 1.6 | 1.85 | 2.00 | 18/130 | 20 | 11-12 | 4.3 | 0 | Low |
| **D52A** | 1550 | Chamotte, Mullite | 2400 | 10 | 50 | 45 | - | 1.1 | 1.6 | 2.00 | 2.20 | 17/155 | 21 | 11-12 | 3.6 | 1 | Medium |
| **D59A** | 1650 | Andalusite, Mullite | 2500 | 10 | 62 | 33 | - | 1.1 | 1.4 | 2.35 | 2.40 | 18/155 | 19 | 11-12 | 3.2 | 1-2 | High |
| **D65TA** | 1650 | Andalusite, Corrundum | 2600 | 10 | 65 | 30 | - | 1.4 | 1.6 | 2.30 | 2.65 | 19/160 | 21 | 11-12 | 4.0 | 2 | High |
| **D66** | 1600 | Bauxite | 2550 | 5 | 66 | 29 | - | 1.4 | 1.6 | 2.32 | 2.42 | 21/170 | 29 | 12-13 | 3.0 | 2-3 | Low |
| **D1700A** | 1700 | Andalusite | 2550 | 5 | 58 | 37 | - | 1.0 | 1.9 | 2.10 | 2.15 | 14/130 | 19 | 12-13 | 4.0 | 2 | High |
| **D1500SC** | 1500 | Chamotte | 2300 | 10 | 37 | 54 | 5 | 1.2 | 1.6 | 1.95 | 1.95 | 18/130 | 20 | 13-14 | 4.9 | 1 | Medium |
| **D1550SC** | 1550 | Andalusite, Silicon carbide | 2550 | 10 | 52 | 27 | 17 | 1.1 | 1.4 | 3.50 | 3.30 | 18/125 | 27 | 12-13 | 3.5 | 1 | High |
| **D1600SC** | 1600 | Silicon carbide | 2550 | 6 | 26 | 18 | 53 | 0.6 | 1.9 | 6.75 | 6.65 | 18/120 | 24 | 14-15 | 3.5 | 2 | Extra high |
| **D1650SC** | 1650 | Silicon carbide, Mullite | 2600 | 5 | 34 | 23 | 40 | 0.6 | 1.9 | 5.40 | 5.20 | 18/120 | 27 | 14-15 | 3.5 | 2 | Extra high |
| **Low Cement Castables, Easy Flow** | | | | | | | | | | | | | | | | | |
| **D39A-EF** | 1500 | Chamotte | 2200 | 5 | 39 | 56 | - | 1.3 | 2.0 | 1.65 | 1.90 | 13/ 90 | 24 | 17-18 | 4.8 | 0 | Low |
| **D55A-EF** | 1600 | Chamotte, Corrundum | 2450 | 5 | 55 | 40 | - | 0.8 | 1.9 | 2.00 | 2.20 | 19/130 | 32 | 14-15 | 2.6 | 0 | Medium |
| **D59A-EF** | 1600 | Andalusite, Mullite | 2450 | 5 | 62 | 33 | - | 1.1 | 1.4 | 1.95 | 2.10 | 14/100 | 24 | 16-17 | 4.7 | 2 | High |
| **D1600SC-EF** | 1600 | Silicon carbide | 2550 | 6 | 31 | 21 | 45 | 0.6 | 2.2 | 5.3 | 5.5 | 15/100 | 24 | 19-20 | 3-4 | 2 | Extra high |
| **Low Cement Gunning mixes** | | | | | | | | | | | | | | | | | |
| **GUN39A** | 1400 | Chamotte | 2050 | 5 | 44 | 50 | - | 1.0 | 2.0 | 1.48 | 1.77 | 10/45 | - | 22-24 | 12-15 | 1 | Low |
| **GUN59A** | 1600 | Andalusite, Mullite | 2250 | 5 | 60 | 35 | - | 1.0 | 2.0 | 1.48 | 1.77 | 7/45 | - | 20-22 | 10-13 | 3 | Medium |
| **GUN20SC** | 1300 | Chamotte, Silicon carbide | 2040 | 6 | 35 | 41 | 20 | 1.0 | 2.0 | 1.90 | 2.00 | 4/28 | 13 | 24-26 | 15-18 | 2 | Medium |
| **GUN50SC** | 1600 | Silicon Carbide | 2250 | 6 | 26 | 21 | 48 | 1.0 | 2.0 | 3.3 | 3.4 | 4/35 | - | 25-27 | 30-32 | 1 | High |

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| | Max. recomm. Temp. (˚C) | Main component | Density (kg/m3) | Max. grain size (mm) | Chemical composition | | | | | Thermal conductivity (W/mK) | | MOR/CCS after firing at 1000°C (MPa) | Hot MOR at 900°C (MPa) | Open porosity at 1000°C (%) | Abrasion at 1000 ˚C, angle 90° (cm3 loss) | Resistance to alkali attack (scale 0-10; 0 is best) | Resistance to thermal shock |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Al2O3 | SiO2 | SiC | Fe2O3 | CaO | 800°C | 1200°C | | | | | | |
| **Ultra Low Cement Castables (ULCC)** | | | | | | | | | | | | | | | | | |
| **D37NC SC** | 1600 | Mullite, SiC | 2570 | 10 | 37 | 30 | 30 | 1 | <1 | 5.10 | 4.68 | 14/138 | 23 | 12-14 | 3.1 | 2 | High |
| **Traditional Castables** | | | | | | | | | | | | | | | | | |
| **Bs 1200** | 1200 | Chamotte | 2000 | 10 | 42 | 46 | - | 4.0 | 6.0 | 1.20 | 1.35 | 3/25 | 8 | 27-28 | 11.5 | 9 | Medium |
| **Bs 1300** | 1300 | Chamotte | 2000 | 10 | 46 | 36 | - | 6.0 | 10.0 | 1.25 | 1.50 | 4/35 | 8 | 24-25 | 11.3 | 9 | Medium |
| **B1500** | 1500 | Chamotte | 2100 | 5 | 49 | 41 | - | 1.0 | 6.0 | 1.15 | 1.35 | 5/35 | 10 | 24-25 | 11.0 | 9 | High |
| **Traditional Gunning Mix** | | | | | | | | | | | | | | | | | |
| **Cs1500** | 1500 | Andalusite | 2100 | 3 | 55 | 33 | - | 2.0 | 6.0 | 1.15 | 1.35 | 4/30 | 8 | 25-30 | 15.0 | 10 | High |
| **Insulating Gunning Mixes** | | | | | | | | | | | | | | | | | |
| **Csi 1050** | 1050 | Perlite | 800 | 6 | 17 | 47 | - | 3.5 | 25.0 | 0.20 | 0.3* | N/A / 2-3 | - | - | - | - | - |
| **Csi 1300** | 1300 | Light-weight fire clay | 1500 | 6 | 35 | 42.5 | - | 6.8 | 12.0 | 0.50 | 0.50 | N/A / 15 | - | - | - | - | - |

*) at 1000°C

**Insulating Castables, for pouring and vibration**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bhi 1200** | 1200 | Chamotte, Vermiculite | 850 | 2 | 37 | 37 | - | 7.0 | 14.0 | 0.33 | 0.47 | 1-2 / 2.5 | - | >50 | - | 10 | - |
| **Di 1300A** | 1300 | Light-weight Chamotte | 1500 | 4 | 25 | 66 | - | 2.0 | 3.0 | 0.94 | 1.06 | 6/30 | 10 | 35-40 | 20.0 | 2-3 | - |
| **Csi 1300** | 1300 | Light-weight fire clay | 1500 | 6 | 35 | 42.5 | - | 6.8 | 12.0 | 0.50 | 0.50 | N/A / 15 | - | - | - | - | - |

**Mortars**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Universal** | 1700 | Mullite, Bauxite | 2300 | 0.5 | 59 | 34 | - | 1.5 | 0 | - | - | 1.2/- | Air setting mortar with sodium silicate. Supplied in buckets ready to use |
| **KM** | 1500 | Chamotte | 1550 | 1 | 40 | 52 | - | 1.5 | 0 | - | - | - | Ceramic bonded mortar with hardening during firing |
| **Fireplace** | 1200 | Chamotte | 1800 | 1 | 40 | 36 | - | 6.0 | 13.0 | - | - | - | Hydraulic setting and hardening mortar |

The technical data provided represent average reference values established by ASTM- DIN- and EN-test procedures. The values are determined in a laboratory and serve to give general information. Values are liable to natural deviations and are not to be cited as guaranteed properties or guaranteed values.

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