

# Special High Alumina Bricks

| BRAND NAME   |  | ALEX  |   |   |   |   |   |   |   |     |
|--|--|---|---|---|---|---|---|---|---|-----|
| ITEMS  | AL-85  | AL-C85  | AL-C85CR                                  | AL-90   | AL-C90  | AL-C90LD  | AL-95   | AL-C95  | AL-98   |     |
| Refractoriness (SK)                                      | 40≤  | 40  | 40  | 40≤   | 40≤   | 40≤   | 40≤   | 40≤   | 40≤   |     |
| Bulk Density   | 2.95   | 3.05  | 3.1                                       | 3.1   | 3.15  | 3.05  | 3.15  | 3.2   | 3.2   |     |
| Apparent Porosity (%)                                    | 18   | 15  | 14  | 16  | 13  | 16  | 16  | 14  | 16  |     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             | 900  | 1400  | 1500                                      | 1000  | 1600  | 1100  | 1000  | 1500  | 900   |     |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) | 1700   | 1700  | 1700                                      | 1700  | 1700  | 1700  | 1750≤   | 1750  | 1750≤   |     |
| Permanent Linear Change (%) (1500°C×2h)                  | 0  | 0   | 0   | 0   | 0   | 0.5   | 0   | 0   | 0   |     |
| Thermal Expansion (%) at 1000°C                          | 0.7  | 0.7   | 0.7                                       | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   |     |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub>                     | 85  | 85  | 85  | 90  | 90  | 90  | 95  | 95  | 98  |
|  | SiO <sub>2</sub>                                   | -   | -   | -   | 8   | 8   | 8   | -   | -   | -   |
|  | Fe <sub>2</sub> O <sub>3</sub>                     | 0.5   | 0.5                                       | 0.5   | 0.5   | 0.5   | 0.5   | 0.2   | 0.2   | 0.2 |
| Applications   | * Steel Refining Furnace<br>* Carbon Black Furnace | * Steel Refining Furnace<br>* Holding Furnace | * Waste Incinerator<br>* Coal Incinerator | * Hot Chamber<br>* Non Ferrous Metals Furnace | * Special Steel Refining Furnace<br>* Holding Furnace | * Special Steel Refining Furnace<br>Nozzle Seat | * Sodium Silicate Tank<br>* Glass Tank<br>* Hot Chamber | * Holding Furnace<br>* Non Ferrous Metals Furnace | * Ammonia Plant<br>* Glass Tank<br>* Non Ferrous Metals Furnace |     |

# Special High Alumina Bricks

| BRAND NAME   |                                | ALEX    |                  |              |     |
|--|--------------------------------|---------|------------------|--------------|-----|
| ITEMS  | AL-55HS                        | AL-65HS | AL-75HS          | AL-85BF      |     |
| Refractoriness (SK)                                      | 36                             | 37      | 38               | 40≤          |     |
| Bulk Density   | 2.40                           | 2.45    | 2.50             | 3.15         |     |
| Apparent Porosity (%)                                    | 18                             | 20      | 20               | 13           |     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             | 500                            | 500     | 800              | 1800         |     |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) | 1600                           | 1650    | 1700             | 1700         |     |
| Permanent Linear Change (%) (1500°C x2h)                 | -                              | -       | 0.85             | 0.1          |     |
| Thermal Expansion (%) at 1000°C                          | 0.8                            | 0.6     | At 1500°C<br>0.8 | 0.7          |     |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub> | 55      | 65               | 75           | 85  |
|  | Fe <sub>2</sub> O <sub>3</sub> | 1.0     | 1.0              | 0.5          | 1.0 |
| Applications   | * Hot Blast                    |         |                  | * Tuyere Set |     |

# Special High Alumina Bricks

| BRAND NAME   |                                | MULEX |        |                              |                                |   |  |   |        |
|--|--------------------------------|-------|--------|------------------------------|--------------------------------|---|--|---|--------|
| ITEMS  |                                | ML50  | ML-50S | ML-60                        | ML-60R                         | ML-60S  | ML-70  | ML-75   | ML-70S |
| Refractoriness (SK)                                      |                                | 36    | 36     | 37                           | 37                             | 37  | 38   | 38  | 38     |
| Bulk Density   |                                | 2.4   | 2.45   | 2.55                         | 2.53                           | 2.55  | 2.6  | 2.65  | 2.7    |
| Apparent Porosity (%)                                    |                                | 18    | 16     | 18                           | 19                             | 16  | 18   | 17  | 16     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             |                                | 500   | 500    | 600                          | 600                            | 600   | 600  | 900   | 900    |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) |                                | 1550  | 1550   | 1600                         | 1600                           | 1650  | 1650   | 1750  | 1750   |
| Permanent Linear Change (%) (1500°C×2h)                  |                                | 0     | 0      | 0                            | 0.1                            | 0   | 0.1  | 0   | 0      |
| Thermal Expansion (%) at 1000°C                          |                                | 0.6   | 0.6    | 0.6                          | 0.6                            | 0.5   | 0.6  | 0.5   | 0.5    |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub> | 50    | 50     | 60                           | 62                             | 62  | 70   | 75  | 72     |
|  | SiO <sub>2</sub>               | 46    | 46     | 36                           | 34                             | 34  | 26   | 23  | 25     |
|  | Fe <sub>2</sub> O <sub>3</sub> | 2.8   | 2.8    | -                            | -                              | 1.2   | -  | 0.3   | -      |
| Applications   |                                | -     | -      | * Lime Kiln<br>* Cement Kiln | * Incinerator<br>* Cement Kiln | * Incinerator Hot Chamber<br>* Reheating Furnace<br>* Plate Support | * Incinerator Hot Chamber<br>* Carbon Black Furnace<br>* Alkali Recovery Furnace | * Incinerator Hot Chamber<br>* Carbon Black Furnace<br>* Cement Kiln<br>* Lime Kiln |        |

# Special High Alumina Bricks

| BRAND NAME  |                                | MULEX                                    |               |
|---|--------------------------------|--|---------------|
| ITEMS   |                                | ML-70BF                                  | ML-70PR       |
| Refractoriness (SK)   |                                | 38                                       | 38            |
| Bulk Density  |                                | 2.65                                     | 2.55          |
| Apparent Porosity (%)                                       |                                | 16                                       | 15            |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 1050                                     | 1250          |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1650                                     | 1650          |
| Permanent Linear Change (%)<br>(1500°C x 2h)                |                                | 0.1                                      | 0.1           |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.6                                      | 0.6           |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 70                                       | 70            |
|   | SiO <sub>2</sub>               | 25                                       | 25            |
|   | Fe <sub>2</sub> O <sub>3</sub> | 1.0                                      | 1.0           |
| Applications  |                                | * Blast Furnace Ceramic Cup Pad & Hearth | * Main Runner |

# Special High Alumina Bricks

| BRAND NAME   |                                | COREX                |   |        |               |  |   |                                     |                            |
|--|--------------------------------|----------------------|---|--------|---------------|--|---|-------------------------------------|----------------------------|
|  |                                | CR-50                | CR-60   | CR-60S | CR-60P        | CR-70                                      | CR-C70  | CR-80                               | CR-C80                     |
| Refractoriness(SK)                                       |                                | 35                   | 37  | 37     | 37            | 38   | 38  | 40                                  | 40                         |
| Bulk Density   |                                | 2.2                  | 2.48  | 2.55   | 2.6           | 2.75                                       | 2.62  | 2.8                                 | 2.9                        |
| Apparent Porosity (%)                                    |                                | 21                   | 24  | 20     | 16            | 20   | 20  | 20                                  | 18                         |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             |                                | 500                  | 700   | 800    | 1400          | 800  | 800   | 800                                 | 1200                       |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) |                                | 1430                 | 1530  | 1530   | 1530          | 1550                                       | 1550  | 1800                                | 1580                       |
| Permanent Linear Change (%) (1500°C×2h)                  |                                | at1400x2h<br>-0.2    | -0.2  | -0.2   | -0.2          | -0.2                                       | 0.5   | 0.3                                 | 0.3                        |
| Thermal Expansion (%) at 1000°C                          |                                | 0.4                  | 0.5   | 0.5    | 0.5           | 0.6  | 0.7   | 0.7                                 | 0.6                        |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub> | 41                   | 66  | 65     | 65            | 75   | 70  | 80                                  | 83                         |
|  | SiO <sub>2</sub>               | -                    | -   | -      | -             | -  | -   | -                                   | -                          |
|  | Fe <sub>2</sub> O <sub>3</sub> | 3.1                  | 2.5   | 2      | 2             | 2.2  | 2.2   | 2.2                                 | 1.8                        |
| Applications   |                                | * Cement Rotary Kiln | * Cement Rotary Kiln<br>* Burner Tile<br>* Ceramic Anchor |        | * CFBC Boiler | * Cement Rotary Kiln<br>* Cement Kiln Hood | * Special Steel Refining Furnace<br>Wear Lining | * Cement Rotary Kiln<br>* Lime Kiln | * Aluminum Melting Furnace |

# Special High Alumina Bricks

| BRAND NAME  |                                | BAMULEX                            |   |  |
|---|--------------------------------|------------------------------------|---|--|
| ITEMS   |                                | BM-50                              | BM-60   | BM-70  |
| Refractoriness (SK)   |                                | 36                                 | 37  | 38   |
| Bulk Density  |                                | 2.25                               | 2.35  | 2.5  |
| Apparent Porosity (%)                                       |                                | 22                                 | 23  | 24   |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 450                                | 450   | 500  |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1450                               | 1500  | 1580   |
| Permanent Linear Change (%)<br>(1500°Cx2h)                  |                                | 1400°Cx2h<br>0                     | 0   | 0  |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.5                                | 0.6   | 0.7  |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 51                                 | 63  | 72   |
|   | SiO <sub>2</sub>               | 46                                 | 34  | 26   |
|   | Fe <sub>2</sub> O <sub>3</sub> | -                                  | -   | -  |
| Applications  |                                | * General Kiln<br>* Steel Industry | * Incinerator<br>* Holding Furnace<br>* Reheating Furnace<br>* Plate Support<br>* Lime Shaft Kiln<br>* Steel Industry | * Cement Kiln Hood<br>* Incinerator<br>* Electric Arc Furnace Roof<br>* Reheating Furnace<br>* Holding Furnace<br>* Lime Shaft Kiln, etc |

# High Alumina Bricks

| BRAND NAME   |  | H           |           |           |           |           |
|--|--|-------------|-----------|-----------|-----------|-----------|
| ITEMS  |  | HS          | H1        | H2        | H3        | H4        |
| Refractoriness (SK)                                      |  | 39          | 38        | 37        | 36        | 35        |
| Bulk Density   |  | 2.65        | 2.55      | 2.35      | 2.2       | 2.2       |
| Apparent Porosity (%)                                    |  | 20          | 20        | 20        | 20        | 20        |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             |  | 500         | 500       | 500       | 450       | 400       |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) |  | 1600        | 1550      | 1480      | 1460      | 1430      |
| Permanent Linear Change (%) (1500°C x 2h)                |  | 0 +0.3~-0.5 | +0.3~-0.6 | +0.2~-0.6 | +0.2~-0.6 | +0.2~-0.6 |
| Thermal Expansion (%) at 1000°C                          |  | 0.7         | 0.7       | 0.6       | 0.6       | 0.5       |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub>                             | 80          | 70        | 60        | 50        | 45        |
|  | SiO <sub>2</sub>   | 17          | 27        | 37        | 47        | 52        |
| Applications   | * Brick in accordance with K.S<br>* Various Kiln & Furnace |             |           |           |           |           |

# Fire Clay Bricks

| BRAND NAME  |                                | N  |          |          |          |                        |                        |                        |                        |                        |
|---|--------------------------------|--|----------|----------|----------|------------------------|------------------------|------------------------|------------------------|------------------------|
| ITEMS   |                                | N1-1   | N1-2     | N2-1     | N2-2     | N3-1                   | N3-2                   | N4-1                   | N4-2                   | N5                     |
| Refractoriness (SK)   |                                | 34   | 34       | 33       | 33       | 32                     | 32                     | 31                     | 31                     | 30                     |
| Bulk Density  |                                | 2.15   | 2.1      | 2.1      | 2.05     | 2                      | 2                      | 2                      | 2                      | 2                      |
| Apparent Porosity (%)                                       |                                | 20   | 22       | 20       | 23       | 21                     | 23                     | 23                     | 24                     | 24                     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 400  | 350      | 300      | 250      | 300                    | 250                    | 300                    | 200                    | 200                    |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1350≤  | 1300≤    | 1350≤    | 1300≤    | 1350≤                  | 1280≤                  | 1300≤                  | 1280≤                  | 1280≤                  |
| Permanent Linear Change (%)<br>(1400°C×2h)                  |                                | 0.1~-0.5   | 0.1~-0.5 | 0.1~-0.6 | 0.1~-0.6 | at 1350°C × 2h<br>±0.5 | at 1350°C × 2h<br>±0.5 | at 1350°C × 2h<br>±0.5 | at 1350°C × 2h<br>±0.5 | at 1350°C × 2h<br>±0.5 |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.5  | 0.5      | 0.5      | 0.5      | 0.5                    | 0.5                    | 0.5                    | 0.5                    | 0.5                    |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 38   | 38       | 33       | 33       | 30                     | 30                     | 28                     | 28                     | 26                     |
|   | SiO <sub>2</sub>               | 61   | 61       | 66       | 66       | 69                     | 69                     | 71                     | 71                     | 73                     |
| Applications  |                                | * Brick in accordance with K.S.L<br>* Various Kiln & Furnace |          |          |          |                        |                        |                        |                        |                        |



# Special Fire Clay Bricks

| BRAND NAME   |   | HADEX                  |  |   |                        |   |   |   |                                |
|--|---|------------------------|--|---|------------------------|---|---|---|--------------------------------|
| ITEMS  | HX-32   | HX-32R                 | HX-34  | HX-34HD   | HX-34R                 | HX-35   | HX-35HD   | HX-ACR  |                                |
| Refractoriness (SK)                                      | 32  | 32                     | 34   | 34  | 34                     | 35  | 35  | 33  |                                |
| Bulk Density   | 2.1   | 2.1                    | 2.2  | 2.25  | 2.2                    | 2.25  | 2.3   | 2.3   |                                |
| Apparent Porosity (%)                                    | 16  | 16                     | 16   | 14  | 16                     | 16  | 14  | 15  |                                |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             | 500   | 500                    | 500  | 600   | 500                    | 500   | 600   | 600   |                                |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) | 1410  | 1380                   | 1450   | 1480  | 1420                   | 1480  | 1500  | -   |                                |
| Permanent Linear Change (%) (1500°C x 2h)                | at 1350°C x 2h<br>0                                 | at 1350°C x 2h<br>-0.2 | at 1450°C x 2h<br>-0.2   | at 1450°C x 2h<br>0   | at 1450°C x 2h<br>-0.2 | 0   | 0   | at 1350°C x 2h<br>0   |                                |
| Thermal Expansion (%) at 1000°C                          | 0.5   | 0.5                    | 0.5  | 0.5   | 0.5                    | 0.6   | 0.6   | 0.5   |                                |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub>                      | 34                     | 33   | 41  | 43                     | 41  | 45  | 47  | 35                             |
|  | SiO <sub>2</sub>                                    | 63                     | 64   | 56  | 54                     | 56  | 53  | 51  | 62                             |
| Applications   | * Lime Kiln<br>* Various Kiln & Furnace<br>* Boiler |                        | * Glass Melting Tank<br>* Non Ferrous Metals Furnace<br>* Incinerator<br>* Holding Furnace<br>* Checkers | * Glass Melting Tank<br>* Non Ferrous Metals Furnace<br>* Blast Furnace<br>* Lime Rotary Kiln |                        | * Boiler<br>* Incinerator<br>* Lime Rotary Kiln | * Glass Melting Tank<br>* Carbon Black Furnace<br>* Incinerator<br>* Non Ferrous Metals Furnace<br>* Checkers<br>* Others | * Glass Melting Tank<br>* Non Ferrous Metals Furnace<br>* Blast Furnace | * TiO <sub>2</sub> Rotary Kiln |

# Special Fire Clay Bricks

| BRAND NAME  |                                | HADEX                   |                                      |
|---|--------------------------------|-------------------------|--------------------------------------|
| ITEMS   |                                | HX-34HDK                | HX-45BF                              |
| Refractoriness (SK)   |                                | 34                      | 35                                   |
| Bulk Density  |                                | 2.30                    | 2.35                                 |
| Apparent Porosity (%)                                       |                                | 16                      | 14                                   |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 650                     | 680                                  |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1450                    | 1500                                 |
| Permanent Linear Change (%)<br>(1500°C×2h)                  |                                | at1400°C×2h<br>±0.2     | 0                                    |
| Thermal Expansion (%)<br>at 1000°C                          |                                | at1400°C<br>0.8         | 0.6                                  |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 46                      | 45                                   |
|   | SiO <sub>2</sub>               | 51                      | -                                    |
|   | Fe <sub>2</sub> O <sub>3</sub> | -                       | 10                                   |
| Applications  |                                | * Glass Melting Furnace | * Blast Furnace Ceramic Cup & Hearth |

# Special Fire Clay Bricks

| BRAND NAME  |                                | HADEL                     |       |       |                        |
|---|--------------------------------|---------------------------|-------|-------|------------------------|
| ITEMS   |                                | HL-30HS                   | HL-32 | HL-33 | HL-34                  |
| Refractoriness (SK)   |                                | 30                        | 32    | 33    | 34                     |
| Bulk Density  |                                | 2.15                      | 2.1   | 2.14  | 2.15                   |
| Apparent Porosity (%)                                       |                                | 18                        | 18    | 18    | 18                     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 300                       | 350   | 450   | 450                    |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | -                         | 1350  | 1380  | 1400                   |
| Permanent Linear Change (%)<br>(1300°C x 2h)                |                                | -                         | -0.2  | -0.2  | at 1400°C x 2h<br>-0.2 |
| Thermal Expansion (%)<br>at 1000°C                          |                                | -                         | 0.5   | 0.5   | 0.5                    |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 30                        | 32    | 38    | 40                     |
|   | SiO <sub>2</sub>               |                           | 65    | 59    | 57                     |
|   | Fe <sub>2</sub> O <sub>3</sub> | 1.5                       | -     | -     | -                      |
| Applications  |                                | * Hot Stove Checker Brick | -     | -     | -                      |

# High Silica Brick

| BRAND NAME  |                                | HASIL               |   |                           |                         |
|---|--------------------------------|---------------------|---|---------------------------|-------------------------|
| ITEMS   |                                | HSL-LD              | HSL-TD                                    | HSL-90HS                  | HSL-96                  |
| Refractoriness (SK)   |                                | 29                  | 28  | 31                        |                         |
| Bulk Density  |                                | 2.2                 | 2.15                                      | 1.82                      | 1.85                    |
| Apparent Porosity (%)                                       |                                | 15                  | 16  | 21                        | 21                      |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 300                 | 250                                       | 300                       | 450                     |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1500                | 1420                                      | 1650                      | -                       |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.6                 | 0.6                                       | 1.1                       | -                       |
| Chemical<br>Composition<br>(%)                              | SiO <sub>2</sub>               | 78                  | 75  | 95                        | 96                      |
|   | Fe <sub>2</sub> O <sub>3</sub> | 0.6                 | 0.9                                       | 0.3                       | -                       |
| Applications  |                                | * General Steel L/D | * Tundish<br>* Cupolar<br>* General Steel | * Hot Stove Checker Brick | * Glass Melting Furnace |

# High Silica Brick

| BRAND NAME                                   |                                | SILEX |  |       |
|--|--------------------------------|-------|--|-------|
| ITEMS  |                                | SL-92 | SL-95  | SL-99 |
| Refractoriness (SK)                          |                                | 32    | 32   | 33    |
| Bulk Density                                 |                                | 1.85  | 1.9  | 1.92  |
| Apparent Porosity (%)                        |                                | 20    | 19   | 10    |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 320   | 350  | 300   |
| Chemical Composition (%)                     | SiO <sub>2</sub>               | 85    | 96   | 99    |
|  | Fe <sub>2</sub> O <sub>3</sub> | 0.8   | 0.4  | 0.4   |
| Applications                                 |                                | -     | * Glass melting Furnace<br>* Crown<br>* Regenerator Wall |       |

# Zirconia Bricks

| BRAND NAME   |                                | ZIRCON          |                                |  |        |
|--|--------------------------------|-----------------|--------------------------------|--|--------|
| ITEMS  |                                | ZC-SEM          | ZC-55                          | ZC-65  | ZC-65P |
| Refractoriness (SK)                                      |                                | 33              | 35                             | 38   | 38     |
| Bulk Density   |                                | 3.1             | 3.4                            | 3.7~3.75   | 3.75   |
| Apparent Porosity (%)                                    |                                | 16              | 16                             | 20   | 20     |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             |                                | 600             | 600                            | 1000   | 1000   |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T 2 °C) |                                | 1500≤           | 1500≤                          | 1650≤  | 1650≤  |
| Thermal Expansion (%) at 1000 °C                         |                                | 0.7             | 0.4                            | 0.4  | 0.4    |
| Chemical Composition (%)                                 | Al <sub>2</sub> O <sub>3</sub> | 12              | -                              | -  | -      |
|  | ZrO <sub>2</sub>               | 50              | 55                             | 65   | 65     |
|  | SiO <sub>2</sub>               | 35              | -                              | 33   | 33     |
|  | Fe <sub>2</sub> O <sub>3</sub> | -               | -                              | 0.4  | 0.4    |
| Applications   |                                | * General Steel | * General Steel<br>* Slag Line | * Regenerator Wall<br>* Port Neck<br>* Subpaving | -      |

# Zirconia Bricks

| BRAND NAME  |                                | AZAREX  |       |        |
|---|--------------------------------|---|-------|--------|
| ITEMS   |                                | AZ-20   | AZ-25 | AZ-25P |
| Refractoriness (SK)   |                                | 34  | 34    | 34     |
| Bulk Density  |                                | 3.15  | 3.2   | 3.34   |
| Apparent Porosity (%)                                       |                                | 16  | 14    | 6      |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 1200  | 1500  | 2000   |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1680  | 1650  | 1700   |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 25  | 25    | 25     |
|   | SiO <sub>2</sub>               | 0.4   | 0.4   | 0.4    |
| Applications  |                                | * Glass Melting Furnace<br>* Regenerator Checker Brick<br>* Port Neck<br>* Paving |       |        |

# Chromia-Zirconia Bricks

| BRAND NAME  |                                | CRAZIA   |       |       |
|---|--------------------------------|--|-------|-------|
| ITEMS   |                                | CZ-30  | CZ-50 | CZ-70 |
| Refractoriness (SK)   |                                | 40   | 40    | 40    |
| Bulk Density  |                                | 3.55   | 3.70  | 4.00  |
| Apparent Porosity (%)                                       |                                | 16   | 16    | 16    |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 1600   | 1400  | 1500  |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | 1700≤  | 1700≤ | 1700≤ |
| Permanent Linear Change (%)<br>(1500°C×2h)                  |                                | 0  | 0     | 0     |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.77   | 0.76  | 0.74  |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 64   | 44    | 24    |
|   | Cr <sub>2</sub> O <sub>3</sub> | 30   | 50    | 70    |
| Applications  |                                | * Mineral Wool Melting Electronic Arc Furnace<br>* Noble Metal Melting Furnace |       |       |



# Unburned Bricks

| BRAND NAME  |                                | RECOR   |       |       |       |
|---|--------------------------------|---|-------|-------|-------|
| ITEMS   |                                | RC-70C  | RC-80 | RC-85 | RC-98 |
| Refractoriness (SK)   |                                | -   | 39    | 40    | 40    |
| Bulk Density  |                                | 2.8   | 2.95  | 3     | 3.16  |
| Apparent Porosity (%)                                       |                                | 11  | 17    | 16    | 13    |
| Cold Crushing Strength (kg/cm <sup>2</sup> )                |                                | 550   | 750   | 850   | 900   |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T 2 °C) |                                | -   | 1530  | 1600  | 1600  |
| Permanent Linear Change (%)<br>(1500°C×2h)                  |                                | 1   | 1.5   | 2     | 1.7   |
| Thermal Expansion (%)<br>at 1000°C                          |                                | 0.6   | 0.6   | 0.6   | 0.6   |
| Chemical<br>Composition<br>(%)                              | Al <sub>2</sub> O <sub>3</sub> | 70  | 83    | 85    | 88    |
|   | SiO <sub>2</sub>               | 15  | 15    | 13    | 10    |
| Applications  |                                | * Special Steel Refining Furnace<br>* Ladle Furnace<br>* Electric Arc Furnace Roof<br>* Ladle Bottom, Wall, Slag Line |       |       |       |

# Precast Refractories

| BRAND NAME                                   |                                | RESIST  |                     |                     |  |                     |                     |
|--|--------------------------------|---|---------------------|---------------------|--|---------------------|---------------------|
| ITEMS  |                                | RESIST-50   | RESIST-75           | RESIST-85           | RESIST-85S   | RESIST-90           | RESIST-95           |
| Refractoriness (SK)                          |                                | 35  | 38                  | 39                  | 40   | 40                  | 40                  |
| Bulk Density                                 |                                | 2.3   | 2.55                | 3                   | 3.05   | 3.05                | 3.1                 |
| Apparent Porosity (%)                        |                                | 15  | 17                  | 12                  | 10   | 11                  | 10                  |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 600   | 700                 | 700                 | 700  | 700                 | 800                 |
| Permanent Linear Change (%)<br>(1500°C×2h)   |                                | 0   | at 1600°C × 2h<br>0 | at 1600°C × 2h<br>0 | at 1600°C × 2h<br>0  | at 1700°C × 2h<br>0 | at 1700°C × 2h<br>0 |
| Thermal Expansion (%)<br>at 1000°C           |                                | 0.5   | 0.5                 | 0.6                 | 0.7  | 0.7                 | 0.7                 |
| Chemical<br>Composition<br>(%)               | Al <sub>2</sub> O <sub>3</sub> | 50  | 75                  | 83                  | 85   | 95                  | 95                  |
|  | SiO <sub>2</sub>               | 48  | 22                  | 14                  | 3  | 3                   | 3                   |
| Applications                                 |                                | * Tundish Lining<br>* Reheating Furnace Bottom<br>* Burner Tile<br>* Kiln Car |                     |                     | * STEEL : Delta Section, E.A.F Roof,Ladle Bottom,<br>Tundish Lining,Bubbling Cone Seat,Nozzle Seat,<br>E.A.F. Spout Block<br>* Aluminum : Reverbroof and Wall,Hearth<br>* Rock Products : Burner Pipers. Chutes, Nose Rings<br>* etc : Skid Rail |                     |                     |

# Acid Proof Bricks

| BRAND NAME                                   |                                | ACID PROOF   |      |      | ACID & HEAT PROOF |       |
|--|--------------------------------|--|------|------|-------------------|-------|
| ITEMS  |                                | AP-S   | AP-1 | AP-2 | APH-3             | APH-4 |
| Water Absorption (%)                         |                                | 0.5≥   | 1.5≥ | 3.0≥ | 5.0≥              | 8.0≥  |
| Bulk Density                                 |                                | 2.2  | 2.2  | 2.15 | 2.1               | 2.05  |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 1300   | 1100 | 900  | 800               | 500   |
| Thermal Expansion (%)<br>at 1000°C           |                                | -  | -    | -    | 0.5               | 0.5   |
| Chemical<br>Composition<br>(%)               | SiO <sub>2</sub>               | 72   | 71   | 69   | 67                | 65    |
|  | Fe <sub>2</sub> O <sub>3</sub> | 1.4  | 1.5  | 1.5  | -                 | -     |
| Acid Proof<br>Resistance(%)                  |                                | 0.2  | 0.3  | 0.5  | 0.8               | 1.5   |
| Applications                                 |                                | <ul style="list-style-type: none"> <li>* Acid tank</li> <li>* Chemical plant</li> <li>* Stack</li> <li>* Pulp industry</li> <li>* Digester</li> <li>* Accumulator</li> <li>* Reclaimer tank</li> </ul> |      |      |                   |       |

# Cordierite Bricks

| BRAND NAME                                   |                                | CORDIERITE   |        |        |         |        | MULCORDIERITE |       |       |       |
|--|--------------------------------|--|--------|--------|---------|--------|---------------|-------|-------|-------|
| ITEMS  |                                | CD-125   | CD-130 | CD-135 | CD-135S | CD-140 | CD-140S       | CM-50 | CM-60 | CM-75 |
| Max. Service Temperature (°C)                |                                | 1350   | 1300   | 1300   | 1350    | 1400   | 1400          | 1250  | 1250  | 1300  |
| Bulk Density                                 |                                | 2.1  | 2      | 2      | 1.95    | 2.13   | 2.25          | 2     | 2.05  | 2.1   |
| Apparent Porosity                            |                                | 21   | 22     | 22     | 29      | 22     | 28            | 25    | 24    | 23    |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 350  | 300    | 300    | 450     | 350    | 450           | 600   | 600   | 800   |
| Thermal Expansion (%)<br>at 1000°C           |                                | 0.35   | 0.2    | 0.2    | 0.3     | 0.35   | 0.4           | 0.33  | 0.33  | 0.35  |
| Chemical<br>Composition<br>(%)               | Al <sub>2</sub> O <sub>3</sub> | 39   | 29     | 39     | 45      | 42     | 55            | 31    | 45    | 62    |
|  | MgO                            | -  | -      | -      | -       | -      | -             | 4     | 3.4   | 2.4   |
| Applications                                 |                                | * Sagger<br>* Setter<br>* Plates<br>* Kiln Furniture |        |        |         |        |               |       |       |       |

# SiC Bricks

| BRAND NAME   |                  | CARUX  |                  |                  |                    |                  |                  |                  |
|--|------------------|--|------------------|------------------|--------------------|------------------|------------------|------------------|
| ITEMS  |                  | SC-70  | SC-80            | SC-90            | SC-90W             | SC-S             | SC-N             | SC-95            |
| Quality  |                  | Silicate Bonded SiC  |                  |                  | Special Bonded SiC |                  |                  |                  |
| Bulk Density   |                  | 2.45   | 2.5              | 2.55             | 2.6                | 2.6              | 2.65             | 2.6              |
| Apparent Porosity (%)                                  |                  | 15   | 16               | 16               | 13                 | 14.5             | 14               | 16               |
| Cold Crushing Strength (kg/cm <sup>2</sup> )           |                  | 800  | 800              | 800              | 1500               | 1000             | 1800             | 1000             |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2°C) |                  | 1560   | 1580             | 1600             | 1600               | 1650             | -                | 1650             |
| Thermal Expansion(%) at 1000°C                         |                  | 0.45   | 0.45             | 0.4              | 0.45               | 0.47             | 0.35             | 0.4              |
| Thermal Conductivity(Kcal/mh°C) at 350°C               |                  | 10   | 12               | 14               | 14                 | 15               | 15               | 14.5             |
| Spalling test at 1000°C by Water Cooling               |                  | 20Cycles no less   | 20Cycles no less | 30Cycles no less | 30Cycles no less   | 30Cycles no less | 30Cycles no less | 30Cycles no less |
| Chemical Composition (%)                               | SiC              | 70   | 80               | 88(87)           | 88                 | 90               | 78               | 95               |
|  | SiO <sub>2</sub> | 17   | 13               | 9                | 8                  | -                | -                | 3                |
| Applications   |                  | * Skid Rail Setter<br>* Blast Furnace<br>* Heat Treatment Furnace<br>* Cupolar<br>* Non Ferrous Metal Furnace<br>* Incinerator<br>* Setter |                  |                  |                    |                  |                  |                  |

# SiC Bricks

| BRAND NAME   |                                | CARUX                               |   |                                     |
|--|--------------------------------|-------------------------------------|---|-------------------------------------|
| ITEMS  |                                | SC-10                               | SC-SN1  | SC-SN2                              |
| Quality  |                                | Al <sub>2</sub> O <sub>3</sub> -SiC | Silicon Nitride Bonded SiC                      |                                     |
| Bulk Density   |                                | 2.70                                | 2.80  | 2.70                                |
| Apparent Porosity (%)                                  |                                | 13                                  | 13  | 14                                  |
| Cold Crushing Strength (kg/cm <sup>2</sup> )           |                                | 1500                                | 1350  | 1100                                |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2°C) |                                | 1500                                | 1700  | 1700                                |
| Thermal Expansion (%) at 1000°C                        |                                | 0.5                                 | 0.4   | 0.4                                 |
| Thermal Conductivity (Kcal/mh°C) at 350°C              |                                | 1.6                                 | 14  | 12                                  |
| Spalling test at 1000°C by Water Cooling               |                                | -                                   | 30Cycles no less                                | 30Cycles no less                    |
| Chemical Composition (%)                               | SiC                            | 10                                  | 77  | 87                                  |
|  | Al <sub>2</sub> O <sub>3</sub> | 56                                  | Si <sub>3</sub> N <sub>4</sub> : 18             | Si <sub>3</sub> N <sub>4</sub> : 10 |
| Applications   |                                | * Cement Rotary Kiln, Preheater     | * Blast Furnace<br>* Non Ferrous Metals Furnace | * Copper Melting Furnace            |

# SiC Bricks

| BRAND NAME  |                                | CARUX                                       |   |   |   |                      |
|---|--------------------------------|---|---|---|---|----------------------|
| ITEMS   |                                | SC-SC20PR                                   | SC-SC70PR                                   | SC-SC75BF                                       | SC-SC90PR                                   | SC-SC90BF            |
| Quality   |                                | Silicate Bonded SiC                         |   |   |   |                      |
| Bulk Density  |                                | 2.78  | 2.70  | 2.75  | 2.70  | 2.65                 |
| Apparent Porosity (%)                                   |                                | 17  | 15  | 12  | 14  | 13                   |
| Cold Crushing Strength (kg/cm <sup>2</sup> )            |                                | 1150  | 2000  | 2200  | 1800  | 2100                 |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2 °C) |                                | 1650  | 1700  | 1570  | 1650  | 1600                 |
| Thermal Expansion (%) at 1000 °C)                       |                                | 0.5   | 0.45  | 0.45  | 0.4   | 0.4                  |
| Thermal Conductivity (Kcal/mh °C) at 350 °C             |                                | -   | 10  | 11  | 15  | 15                   |
| Spalling test at 1000 °C by Water Cooling               |                                | -   | 20Cycles no less                            | 20Cycles no less                                | 30Cycles no less                            | 30Cycles no less     |
| Chemical Composition (%)                                | SiC                            | 20  | 70  | 75  | 90  | 90                   |
|   | Al <sub>2</sub> O <sub>3</sub> | 75  | -   | -   | -   | -                    |
| Applications  |                                | * Cast House Runner<br>* Cement Rotary Kiln | * Cast House Runner<br>* Cement Rotary Kiln | * Blast Furnace<br>Copper Stave Insert<br>Brick | * Cast House Runner<br>* Cement Rotary Kiln | * Blast Furnace Bosh |

# SiC Bricks

| BRAND NAME  |                                | CARUX                               |                                   |                                   |
|---|--------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|
| ITEMS   |                                | SC-10                               | SC-SN1                            | SC-SN2                            |
| Quality   |                                | Al <sub>2</sub> O <sub>3</sub> -SiC | Silicon Nitride Bonded SiC        |                                   |
| Bulk Density  |                                | 2.70                                | 2.80                              | 2.70                              |
| Apparent Porosity (%)                                 |                                | 13                                  | 13                                | 14                                |
| Cold Crushing Strength(kg/cm <sup>2</sup> )           |                                | 1500                                | 1350                              | 1100                              |
| Refractoriness Under Load (2kg/cm <sup>2</sup> ,T2°C) |                                | 1500                                | 1600                              | 1600                              |
| Thermal Expansion (%) at 1000°C                       |                                | -                                   | -                                 | -                                 |
| Thermal Conductivity (Kcal/mh°C) at 350°C             |                                | 1.6                                 | 14                                | 12                                |
| Spalling test at 1000°C by Water Cooling              |                                |                                     | 30Cycles no less                  | 30Cycles no less                  |
| Chemical Composition (%)                              | SiC                            | 10                                  | 77                                | 87                                |
|   | Al <sub>2</sub> O <sub>3</sub> | 56                                  | Si <sub>3</sub> N <sub>4</sub> 20 | Si <sub>3</sub> N <sub>4</sub> 10 |
| Applications  |                                | * Cement Rotary Kiln, Preheater     | * Copper Melting Furnace          | * Copper Melting Furnace          |



# Special Insulating fire Bricks

| BRAND NAME                                   | KL   |       |       |       |
|--|--|-------|-------|-------|
| ITEMS  | KL-20  | KL-22 | KL-24 | KL-26 |
| Temp.(°C) Reheating Shrinkage less than 0.5% | 1100   | 1200  | 1300  | 1400  |
| Bulk Density                                 | 0.55≥  | 0.55≥ | 0.55≥ | 0.55≥ |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) | 10≤  | 15≤   | 20≤   | 25≤   |
| Thermal Conductivity (Kcal/mh °C) at 350°C   | 0.16≥  | 0.17≥ | 0.18≥ | 0.19≥ |
| Applications                                 | <ul style="list-style-type: none"> <li>* Crude Heater</li> <li>* Hot Chamber</li> <li>* Glass Melting Tank</li> <li>* Reheating Furnace</li> <li>* Cokes Furnace</li> <li>* Various Kiln &amp;Furnace</li> </ul> |       |       |       |

# Special Insulating fire Bricks

| BRAND NAME                                      |                                | LBI   |        |        |        |        |        |
|---|--------------------------------|---|--------|--------|--------|--------|--------|
| ITEMS   |                                | LBI-22  | LBI-24 | LBI-26 | LBI-28 | LBI-30 | LBI-32 |
| Temp.(°C) Reheating<br>Shrinkage less than 0.5% |                                | 1200  | 1300   | 1400   | 1500   | 1600   | 1700   |
| Bulk Density                                    |                                | 0.65≥   | 0.70≥  | 0.80≥  | 0.90≥  | 1.00≥  | 1.20≥  |
| Cold Crushing Strength (kg/cm <sup>2</sup> )    |                                | 10≤   | 15≤    | 20≤    | 25≤    | 30≤    | 50≤    |
| Thermal Conductivity(Kcal/mh°C)<br>at 350°C     |                                | 0.18≥   | 0.20≥  | 0.23≥  | 0.27≥  | 0.40≥  | 0.53   |
| Chemical<br>Composition<br>(%)                  | Fe <sub>2</sub> O <sub>3</sub> | 1.0≥  | 1.0≥   | 1.0≥   | 1.0≥   | 1.0≥   | 1.0≥   |
| Applications                                    |                                | <ul style="list-style-type: none"> <li>* Various Heat Treatment Furnace</li> <li style="padding-left: 20px;">* Carburizing Furnace</li> <li style="padding-left: 20px;">* Sintering Furnace</li> <li style="padding-left: 20px;">* Hot Chamber</li> <li style="padding-left: 20px;">* Holding Furnace</li> <li style="padding-left: 20px;">* Reheating Furnace</li> <li style="padding-left: 20px;">* Annealing Furnace</li> <li style="padding-left: 40px;">* Incinerator</li> <li style="padding-left: 40px;">* Crude Heater</li> <li style="padding-left: 20px;">* Deoxidation Atmospher Furnace</li> <li>* Various Kiln &amp; Furnace Outside &amp; Inside</li> </ul> |        |        |        |        |        |

# Special Insulating fire Bricks

| BRAND NAME                                      |   | HIST    |         |  |
|---|---|---------|---------|--|
| ITEMS   | HIST 22   | HIST 24 | HIST 26 |  |
| Temp.(°C) Reheating<br>Shrinkage less than 0.5% | 1200  | 1300    | 1400    |  |
| Bulk Density                                    | 1.10≥   | 1.15≥   | 1.20≥   |  |
| Cold Crushing Strength (kg/cm <sup>2</sup> )    | 100≤  | 150≤    | 200≤    |  |
| Thermal Conductivity (Kcal/mh °C)<br>at 350°C   | 0.48≥   | 0.51≥   | 0.53≥   |  |
| Applications                                    | <ul style="list-style-type: none"> <li>* Glass melting Tank</li> <li>* Tunnel Kiln</li> <li>* Rotary Kiln, etc</li> <li>* High strength Part</li> </ul> |         |         |  |

# Insulating Fire Bricks

| BRAND NAME                                   | Class A                                      |       |       |       |       |       |       | Class B |       |       |       |       |       |       | Class C |       |       |
|--|--|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| ITEMS  | A-1  | A-2   | A-3   | A-4   | A-5   | A-6   | A-7   | B-1     | B-2   | B-3   | B-4   | B-5   | B-6   | B-7   | C-1     | C-2   | C-3   |
| Temp.(°C) Reheating Shrinkage less than 2.0% | 900  | 1000  | 1100  | 1200  | 1300  | 1400  | 1500  | 900     | 1000  | 1100  | 1200  | 1300  | 1400  | 1500  | 1300    | 1400  | 1500  |
| Bulk Density                                 | 0.50≥  | 0.50≥ | 0.50≥ | 0.55≥ | 0.60≥ | 0.70≥ | 0.75≥ | 0.70≥   | 0.70≥ | 0.75≥ | 0.80≥ | 0.80≥ | 0.90≥ | 1.00≥ | 1.10≥   | 1.20≥ | 1.25≥ |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) | 5≤   | 5≤    | 5≤    | 8≤    | 8≤    | 10≤   | 10≤   | 25≤     | 25≤   | 25≤   | 25≤   | 25≤   | 30≤   | 30≤   | 50≤     | 70≤   | 100≤  |
| Thermal Conductivity at 350°C (Kcal/mh °C)   | 0.13≥  | 0.14≥ | 0.15≥ | 0.16≥ | 0.17≥ | 0.20≥ | 0.22≥ | 0.17≥   | 0.18≥ | 0.20≥ | 0.22≥ | 0.23≥ | 0.27≥ | 0.31≥ | 0.30≥   | 0.38≥ | 0.45≥ |
| Applications                                 | Insulating Fire Brick in Accordance with KSL |       |       |       |       |       |       |         |       |       |       |       |       |       |         |       |       |

# Alumina-Carbon Bricks

| BRAND NAME   |                                | AGREX   |        |        |          |        |        |        |
|--|--------------------------------|---|--------|--------|----------|--------|--------|--------|
| ITEMS  |                                | AGR-50  | AGR-60 | AGR-70 | AGR-70EF | AGR-75 | AGR-80 | AGR-90 |
| Bulk Density   |                                | 2.64  | 2.75   | 2.9    | 3.20     | 2.95   | 3      | 3.05   |
| Apparent Porosity (%)                                    |                                | 14  | 12     | 12     | 5.0      | 10     | 9      | 8      |
| Cold Crushing Strength(kg/cm <sup>2</sup> )              |                                | 400   | 400    | 400    | 400      | 400    | 400    | 1000   |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> ,T2°C) |                                | 1600  | 1630   | 1700   | 1700≤    | 1700   | 1700   | 1700   |
| Thermal Expansion (%)<br>at 1000°C                       |                                | 0.5   | 0.5    | 0.5    | 0.5      | 0.5    | 0.5    | 0.5    |
| Chemical<br>Composition<br>(%)                           | Al <sub>2</sub> O <sub>3</sub> | 51  | 60     | 71     | 10       | 78     | 82     | 92     |
|  | SiO <sub>2</sub>               | -   | -      | -      | 70       | -      | -      | -      |
|  | C+SiC                          | 16  | 18     | 8      | 15       | 13     | 14     | 5      |
| Applications   |                                | * Special Steel & General Steel<br>* General Steel Refining Furnace |        |        |          |        |        |        |

# Alumina-Carbon Bricks

| BRAND NAME  |                                | AGREX                            |                  |                               |
|---|--------------------------------|----------------------------------|------------------|-------------------------------|
| ITEMS   |                                | AGR-60TP                         | AGR-65TP         | AGR-67TP                      |
| Bulk Density  |                                | 2.85                             | 2.95             | 3.00                          |
| Apparent Porosity (%)                                     |                                | 10                               | 8                | 7                             |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              |                                | 450                              | 500              | 500                           |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) |                                | 1630                             | 1660             | 1680                          |
| Thermal Expansion (%)<br>at 1000°C                        |                                | 0.5                              | 0.5              | 0.5                           |
| Chemical<br>Composition<br>(%)                            | Al <sub>2</sub> O <sub>3</sub> | 60                               | 65               | 67                            |
|   | SiC                            | 11                               | 10               | 9                             |
| Applications  |                                | * TLC Side Wall Safety<br>Lining | * TLC Metal Zone | * TLC Slag Line & Impact Zone |

# Alumina-Carbon Bricks

| BRAND NAME  |                                | AMAREX |        |        |        |        |
|---|--------------------------------|--------|--------|--------|--------|--------|
| ITEMS   |                                | AMR-55 | AMR-60 | AMR-70 | AMR-75 | AMR-80 |
| Refractoriness (SK)                                       |                                | 40≤    | 40≤    | 40≤    | 40≤    | 40≤    |
| Bulk Density  |                                | 3.03   | 3.05   | 2.98   | 3.07   | 3.1    |
| Apparent Porosity (%)                                     |                                | 7      | 7      | 7      | 6      | 5      |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              |                                | 450    | 450    | 500    | 500    | 600    |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) |                                | 1650≤  | 1650≤  | 1700≤  | 1700≤  | 1700≤  |
| Thermal Expansion (%)<br>at 1000°C                        |                                | 0.7    | 0.8    | 1.1    | 1      | 1      |
| Chemical<br>Composition<br>(%)                            | Al <sub>2</sub> O <sub>3</sub> | 57     | 61     | 70     | 76     | 80     |
|   | MgO                            | 23     | 23     | 11     | 10     | 8      |
|   | FC                             | 11     | 8      | 7      | 7      | 6      |

# Alumina-Carbon Bricks

| BRAND NAME                                   |                                | AMAREX   |          |
|--|--------------------------------|----------|----------|
| ITEMS  |                                | AMR-55TL | AMR-65TL |
| Bulk Density                                 |                                | 3.25     | 3.30     |
| Apparent Porosity (%)                        |                                | 3.5      | 3.5      |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 450      | 450      |
| Chemical Composition (%)                     | Al <sub>2</sub> O <sub>3</sub> | 55       | 65       |
|  | MgO                            | 30       | 20       |
|  | F.C                            | 10       | 10       |



# Alumina-Carbon Bricks

| BRAND NAME  |     | MAGREX   |         |         |        |        |         |        |
|---|-----|--|---------|---------|--------|--------|---------|--------|
| ITEMS   |     | MGR-15   | MGR-15S | MGR-15F | MGR-17 | MGR-20 | MGR-20F | MGR-25 |
| Refractoriness (SK)                                     |     | 40≤  | 40≤     | 40≤     | 40≤    | 40≤    | 40≤     | 40≤    |
| Bulk Density  |     | 2.87   | 2.95    | 2.94    | 2.94   | 2.84   | 2.86    | 2.82   |
| Apparent Porosity (%)                                   |     | 3  | 3       | 3       | 3      | 3      | 3       | 3      |
| Cold Crushing Strength (kg/cm <sup>2</sup> )            |     | 400  | 400     | 400     | 400    | 350    | 350     | 300    |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2 °C) |     | 1700≤  | 1700≤   | 1700≤   | 1700≤  | 1700≤  | 1700≤   | 1700≤  |
| Thermal Expansion(%) at 1000 °C                         |     | 1.1  | 1.1     | 1       | 1.1    | 1      | 1       | 1      |
| Chemical Composition (%)                                | MgO | 78   | 80      | 79      | 78     | 74     | 75      | 70     |
|   | F.C | 14   | 16      | 14      | 17     | 19     | 19      | 23     |
| Applications  |     | * Electric Arc Furnace<br>* Special Steel Refining Furnace |         |         |        |        |         |        |

# Alumina-Carbon Bricks

| BRAND NAME  |     | MAGREX             |                      |                  |                     |                         |                    |                        |
|---|-----|--------------------|----------------------|------------------|---------------------|-------------------------|--------------------|------------------------|
| ITEMS   |     | MGR-CA6CV          | MGR-CA13CV           | MGR-CA14CV       | MGR-CA15CV          | MGR-CA15TL              | MGR-CA16CV         | MGR-CA16TL             |
| Refractoriness (SK)                                     |     | 40≤                | 40≤                  | 40≤              | 40≤                 | 40≤                     | 40≤                | 40≤                    |
| Bulk Density  |     | 3.03               | 2.95                 | 2.93             | 2.94                | 3.05                    | 2.95               | 2.98                   |
| Apparent Porosity (%)                                   |     | 6.5                | 4.4                  | 4.5              | 4.5                 | 2.5                     | 4.3                | 2.7                    |
| Cold Crushing Strength (kg/cm <sup>2</sup> )            |     | 500                | 500                  | 420              | 450                 | 450                     | 450                | 400                    |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2 °C) |     | 1700≤              | 1700≤                | 1700≤            | 1700≤               | 1700≤                   | 1700≤              | 1700≤                  |
| Thermal Expansion (%) at 1000 °C                        |     | -                  | 1.2                  | 1.1              | 1.1                 | 1.0                     | 1.0                | 1.0                    |
| Chemical Composition (%)                                | MgO | 85                 | 78                   | 77               | 76                  | 77                      | 76                 | 76                     |
|   | FC  | 6                  | 13                   | 14               | 15                  | 15                      | 16                 | 16                     |
| Applications  |     | * Converter Sleeve | * Converter Charging | * Converter Cone | * Converter Tapping | * Steel Ladle Slag Line | * Converter Bottom | * Steel Lade Slag Line |

# Alumina-Carbon Bricks

| BRAND NAME  |         | MAGREX                 |            |            |
|---|---------|------------------------|------------|------------|
| ITEMS   |         | MGR-CA15EF             | MGR-CA16EF | MGR-CA17EF |
| Refractoriness (SK)                                       |         | 40≤                    | 40≤        | 40≤        |
| Bulk Density  |         | 3.00                   | 3.00       | 3.00       |
| Apparent Porosity (%)                                     |         | 4.0                    | 3.0        | 3.0        |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              |         | 400                    | 350        | 350        |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) |         | 1700≤                  | 1700≤      | 1700≤      |
| Thermal Expansion (%)<br>at 1000°C                        |         | 1.0                    | 1.0        | 1.0        |
| Chemical<br>Composition<br>(%)                            | MgO     | 77                     | 76         | 74         |
|   | C(+SiC) | 15                     | 16         | 17         |
| Applications  |         | * Electric Arc Furnace |            |            |

# Alumina-Carbon Bricks

| BRAND NAME                                   |                                | MAAREX      |    |
|--|--------------------------------|-------------|----|
| ITEMS  | MAR-MG70TL                     | MAR-MG-75TL |    |
| Refractoriness (SK)                          | 40≤                            | 40≤         |    |
| Bulk Density                                 | 3.05                           | 3.15        |    |
| Apparent Porosity (%)                        | 3.0                            | 2.5         |    |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) | 500                            | 500         |    |
| Thermal Expansion (%)<br>at 1000°C           | 0.65                           | 0.6         |    |
| Chemical<br>Composition<br>(%)               | MgO                            | 70          | 75 |
|  | Al <sub>2</sub> O <sub>3</sub> | 15          | 10 |
|  | FC                             | 10          | 10 |
| Applications                                 | * Ladle Furnace                |             |    |

# Unburned Magnesia Bricks

| BRAND NAME  |  | BROUD - U (불소성) |       |                                |  |                                |  |  |    |
|---|--|-----------------|-------|--------------------------------|--|--------------------------------|--|--|----|
| ITEMS   | BDU-1  | BDU-2           | BDU-3 | BDU-4                          | BDU-5  | BDU-6                          | BDU-7  | BDU-8  |    |
| Refractoriness (SK)                                   | 40≤  | 40≤             | 40≤   | 40≤                            | 40≤  | 40≤                            | 40≤  | 40≤  |    |
| Bulk Density  | 2.91   | 2.9             | 2.85  | 2.95                           | 2.9  | 2.95                           | 2.92   | 2.95   |    |
| Apparent Porosity (%)                                 | 13   | 13              | 13    | 13                             | 13   | 13                             | 13   | 13   |    |
| Cold Crushing Strength (kg/cm <sup>2</sup> )          | 500  | 500             | 450   | 450                            | 450  | 450                            | 450  | 500  |    |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2℃) | 1550   | 1550            | 1500  | 1500                           | 1500   | 1500                           | 1500   | 1500   |    |
| Permanent Linear Change (%) (1500℃ x 2h)              | -0.4   | -0.4            | -0.5  | -0.1                           | -0.1   | 0                              | 0.2  | 0.3  |    |
| Thermal Expansion (%) at 1000℃                        | 1.3  | 1.3             | 1.3   | 1.2                            | 1.2  | 1.2                            | 1.2  | 1.2  |    |
| Chemical Composition (%)                              | MgO  | 96              | 94    | 91                             | 74   | 71                             | 68   | 55   | 40 |
|   | Cr <sub>2</sub> O <sub>3</sub>   | -               | -     | -                              | 7.5  | 7                              | 9  | 15   | 21 |
| Applications  | * Electric Arc Furnace<br>* Non Ferrous Metals Furnace<br>* Glass Melting Tank |                 |       | * Electric Arc Furnace<br>Roof | * Electric Arc Furnace<br>Wall<br>* Vacuum Arc Degassing | * Electric Arc Furnace<br>Wall | * Electric Arc Furnace<br>* Glass Melting Tank | * Electric Arc Furnace<br>* Glass Melting Tank |    |

# Unburned Magnesia Bricks

| BRAND NAME   |     | BROUD - U (불소성)             |
|--|-----|-----------------------------|
| ITEMS  |     | BDU-MG85RH                  |
| Refractoriness (SK)                                    |     | 40≤                         |
| Bulk Density   |     | 3.20                        |
| Apparent Porosity (%)                                  |     | 6.5                         |
| Cold Crushing Strength (kg/cm <sup>2</sup> )           |     | 1400                        |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2°C) |     | 1700                        |
| Chemical Composition (%)                               | MgO | 85                          |
| Applications   |     | * RH Lower Vessel / Snorkel |

# Burned Magnesia Bricks

| BRAND NAME  |                                | BROUD - F (소성)                                 |                                       |  |       |                              |       |  |  |  |
|---|--------------------------------|--|---------------------------------------|--|-------|------------------------------|-------|--|--|--|
| ITEMS   |                                | BDF-1  | BDF-2                                 | BDF-3  | BDF-4 | BDF-5                        | BDF-6 | BDF-7  | BDF-8  | BDF-9                                    |
| Refractoriness (SK)                                   |                                | 40≤  | 40≤                                   | 40≤  | 40≤   | 40≤                          | 40≤   | 40≤  | 40≤  | 40≤                                      |
| Bulk Density  |                                | 2.85   | 2.85                                  | 3  | 2.9   | 2.9                          | 2.95  | 3  | 3  | 3.05                                     |
| Apparent Porosity (%)                                 |                                | 18   | 18                                    | 15   | 19    | 19                           | 19    | 20   | 21   | 21                                       |
| Cold Crushing Strength (kg/cm <sup>2</sup> )          |                                | 650  | 650                                   | 800  | 400   | 400                          | 500   | 400  | 400  | 400                                      |
| Refractoriness Under Load (2kg/cm <sup>2</sup> , T2℃) |                                | 1670   | 1650                                  | 1650   | 1580  | 1560                         | 1560  | 1550   | 1550   | 1550                                     |
| Permanent Linear Change (%) (1500℃ x 2h)              |                                | -0.1   | -0.1                                  | -0.1   | 0.2   | 0.2                          | 0.2   | 0.3  | 0.3  | 0.3                                      |
| Thermal Expansion (%) at 1000℃                        |                                | 1.3  | 1.3                                   | 1.3  | 1.2   | 1.2                          | 1.2   | 1.1  | 1.1  | 1  |
| Chemical Composition (%)                              | MgO                            | 95   | 94                                    | 91   | 75    | 70                           | 62    | 48   | 41   | 33                                       |
|   | Cr <sub>2</sub> O <sub>3</sub> | -  | -                                     | -  | 7.5   | 9                            | 12    | 19   | 21   | 25                                       |
| Applications  |                                | * Electric Arc Furnace<br>* Glass Melting Tank | * Electric Arc Furnace<br>* Lime Kiln | * Non Ferrous Metals Furnace<br>* Glass Melting Tank |       | * Cement Kiln<br>* Lime Kiln |       | * Glass Melting Tank<br>* Non Ferrous Metals Furnace | * Glass Melting Tank<br>* Non Metals Furnace | * Reheating Furnace<br>* Holding Furnace |

# Burned Magnesia Bricks

| BRAND NAME  |                                | BROUD - F (소성) |  |          |                                     |          |                               |                    |                          |    |
|---|--------------------------------|----------------|--|----------|-------------------------------------|----------|-------------------------------|--------------------|--------------------------|----|
| ITEMS   | BDF-AS                         | BDF-MH1        | BDF-CR20   | BDF-CR25 | BDF-5B                              | BDF-CR18 | BDF-MG97                      | BDF-MG90<br>RH     | BDF-MG95<br>CV           |    |
| Refractoriness (SK)                                       | 40≤                            | 40≤            | 40≤  | 40≤      | 40≤                                 | 40≤      | 40≤                           | 40≤                | 40≤                      |    |
| Bulk Density  | 3.00                           | 2.96           | 3.17   | 3.35     | 3.05                                | 3.30     | 3.10                          | 3.00               | 2.94                     |    |
| Apparent Porosity (%)                                     | 15                             | 16             | 12   | 12       | 16                                  | 12       | 14                            | 15.0               | 14.5                     |    |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              | 650                            | 800            | 610  | 1100     | 650                                 | 900      | 800                           | 900                | 700                      |    |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) | 1,700                          | 1,700          | 1,700  | 1,700    | 1,650                               | 1,700    | 1,670                         | 1650≤              | 1650≤                    |    |
| Permanent Linear Change (%)<br>(1500°C x 2hr)             |                                | 0.05           |  |          |                                     |          |                               | -0.1               | -0.1                     |    |
| Thermal Expansion (%)<br>at 1000°C                        | 1.0                            | 1.2            |  | 1.0      | 1.1                                 |          |                               | 1.3                | 1.3                      |    |
| Chemical<br>Composition<br>(%)                            | Al <sub>2</sub> O <sub>3</sub> | 20             | 4  | -        | -                                   | -        | -                             | -                  | 90                       | 95 |
|   | MgO                            | 76             | 89   | 62       | 56                                  | 75       | 69                            | 97                 | -                        | -  |
|   | Cr <sub>2</sub> O <sub>3</sub> | -              | -  | 20       | 25                                  | 10       | 18                            | -                  | -                        | -  |
| Applications  | * Cement Kiln                  |                | * Mineral Wool Melting<br>Electronic Arc Furnace |          | * Secondary Lead<br>Melting Furnace |          | * Glass<br>Melting<br>Furnace | * RH<br>Alloy part | * Converter<br>Permanent |    |



# Burned Magnesia Bricks

| BRAND NAME   |                                | BROUD - HF<br>(고온소성) |               |               |
|--|--------------------------------|----------------------|---------------|---------------|
| ITEMS  |                                | BDHF-1               | BDHF-2        | BDHF-3        |
| Refractoriness (SK)                                      |                                | 40≤                  | 40≤           | 40≤           |
| Bulk Density   |                                | 3                    | 3             | 3.05          |
| Apparent Porosity (%)                                    |                                | 17                   | 17            | 16            |
| Cold Crushing Strength (kg/cm <sup>2</sup> )             |                                | 500                  | 500           | 400           |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2℃) |                                | 1700                 | 1700          | 1700          |
| Permanent Linear Change (%)<br>(1500℃ x 2h)              |                                | 0.1                  | 0.2           | 0.2           |
| Thermal Expansion(%)<br>at 1000℃                         |                                | 1.2                  | 1.1           | 1             |
| Chemical<br>Composition<br>(%)                           | MgO                            | 79                   | 74            | 71            |
|  | Cr <sub>2</sub> O <sub>3</sub> | 8                    | 10            | 12            |
| Applications   |                                | * Cement Kiln        | * Cement Kiln | * Cement Kiln |

# Burned Magnesia Bricks

| BRAND NAME  |                                | BROUD - HF<br>(고온소성) |              |                           |
|---|--------------------------------|----------------------|--------------|---------------------------|
| ITEMS   |                                | BDF-CR20RH           | BDF-CR23RH   | BDF-CR25RH                |
| Refractoriness (SK)                                       |                                | 40≤                  | 40≤          | 40≤                       |
| Bulk Density  |                                | 3.17                 | 3.30         | 3.35                      |
| Apparent Porosity (%)                                     |                                | 16.0                 | 12.5         | 11.8                      |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              |                                | 610                  | 1,000        | 1,100                     |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) |                                | 1680                 | 1700         | 1700                      |
| Permanent Linear Change (%)<br>(1500°C x 2h)              |                                | +0.2                 | +0.2         | +0.2                      |
| Thermal Expansion (%)<br>at 1000°C                        |                                | 1.0                  | 1.0          | 1.0                       |
| Chemical<br>Composition<br>(%)                            | MgO                            | 62                   | 59           | 56                        |
|   | Cr <sub>2</sub> O <sub>3</sub> | 20                   | 23           | 25                        |
| Applications  |                                | * RH Permanent       | * RH Snorkel | * RH Upper / Lower Vessel |

# Fused Cast Bricks

| BRAND NAME                                   |                                | Fused Cast-AZS          |           |           |
|--|--------------------------------|-------------------------|-----------|-----------|
| ITEMS  |                                | FC-AZS 33               | FC-AZS 36 | FC-AZS 41 |
| Bulk Density                                 |                                | 3.75                    | 3.80      | 4.00      |
| Apparent Porosity (%)                        |                                | 1.5                     | 1.0       | 1.0       |
| Cold Crushing Strength (kg/cm <sup>2</sup> ) |                                | 3500                    | 3500      | 3500      |
| Chemical Composition (%)                     | Al <sub>2</sub> O <sub>3</sub> | 50                      | 48        | 43        |
|  | ZrO <sub>2</sub>               | 33                      | 36        | 41        |
|  | SiO <sub>2</sub>               | 15                      | 13        | 12        |
| Applications                                 |                                | * Glass Melting Furnace |           |           |

# Magnesia-Zirconia Bricks

| BRAND NAME  |                  | MGZ (MgO-ZrO <sub>2</sub> ) |
|---|------------------|-----------------------------|
| ITEMS   |                  | MGZ-78                      |
| Bulk Density  |                  | 3.30                        |
| Apparent Porosity (%)                                     |                  | 10                          |
| Cold Crushing Strength (kg/cm <sup>2</sup> )              |                  | 1500                        |
| Refractoriness Under Load<br>(2kg/cm <sup>2</sup> , T2°C) |                  | 1700                        |
| Permanent Linear Change (%)<br>(1500°C x 2h)              |                  | -                           |
| Thermal Expansion(%)<br>at 1400°C                         |                  | 1.8                         |
| Chemical<br>Composition<br>(%)                            | MgO              | 78                          |
|   | ZrO <sub>2</sub> | 13                          |
| Applications  |                  | * Glass Melting Furnace     |