

# ***Vardar Dolomit***



High Quality Dolomite Bricks And Mixes

"Vardar Dolomit is a manufacturer of sinter dolomite, dolomite bricks and monolithics, located in Gostivar, North Macedonia.

Having direct access and control of the main raw material through the high-grade dolomite mines owned by the company, Vardar attains a competitive advantage against other dolomite producers in the world. Processing the materials that are attained from the adjacent mine, this highly efficient production method minimizes ecological impact and enhances the sustainability of the business.

Dolomite usage in the steelmaking industry has been rapidly increasing in the past fifteen years as a result of its favorability in the making of clean steel with clean environment. Dolomite's high degree of refractoriness, inertness to steel, great service performance and low cost make it a more conscious and reasonable preference for the steelmakers of the 21st century.

With an annual manufacturing capacity over 60,000 tons, Vardar Dolomit is proud to supply the highest quality of dolomite refractories and customized & accelerated installation and maintenance services to ensure our customers' superior performance and productivity."

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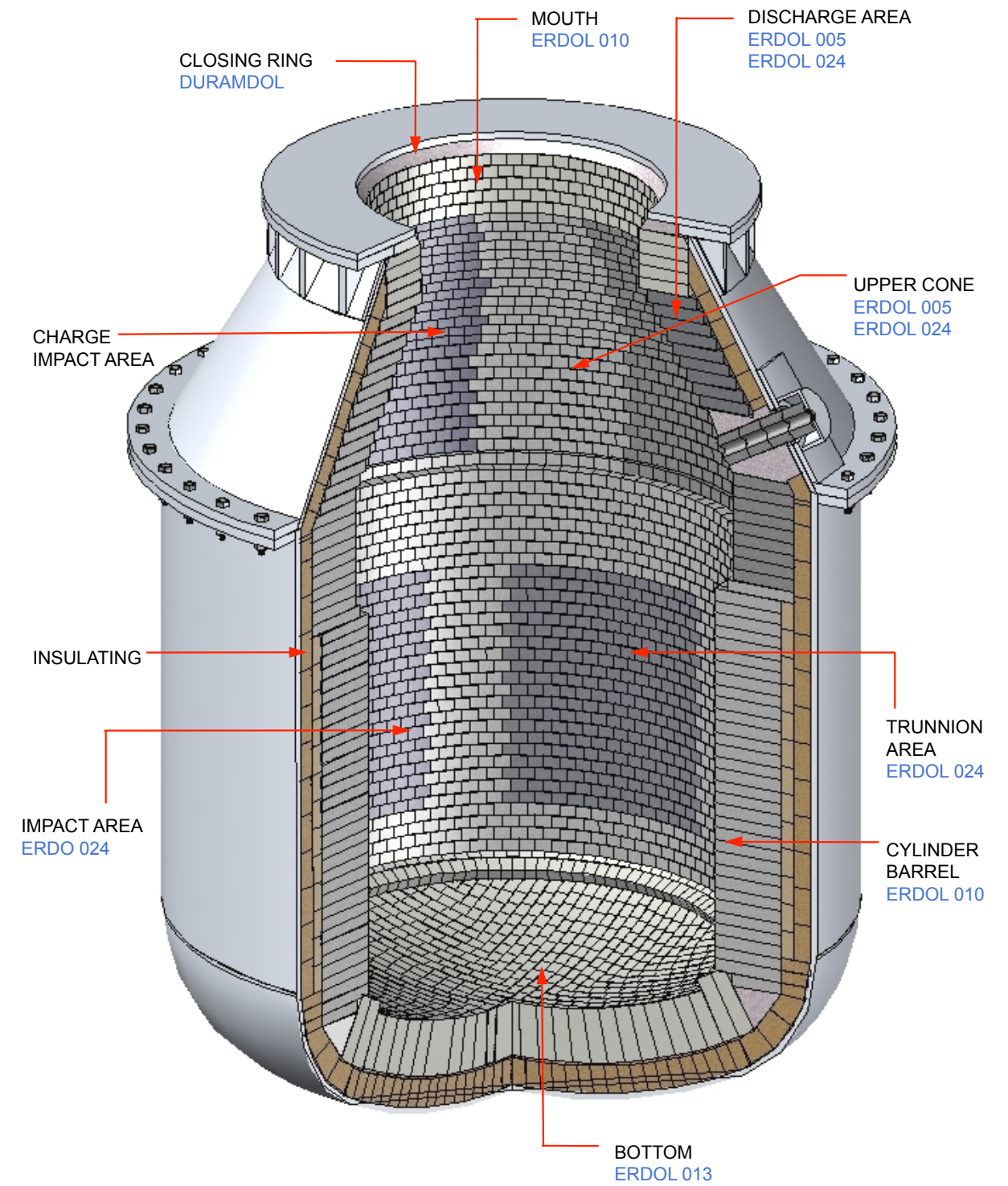




## APPLICATION AREAS

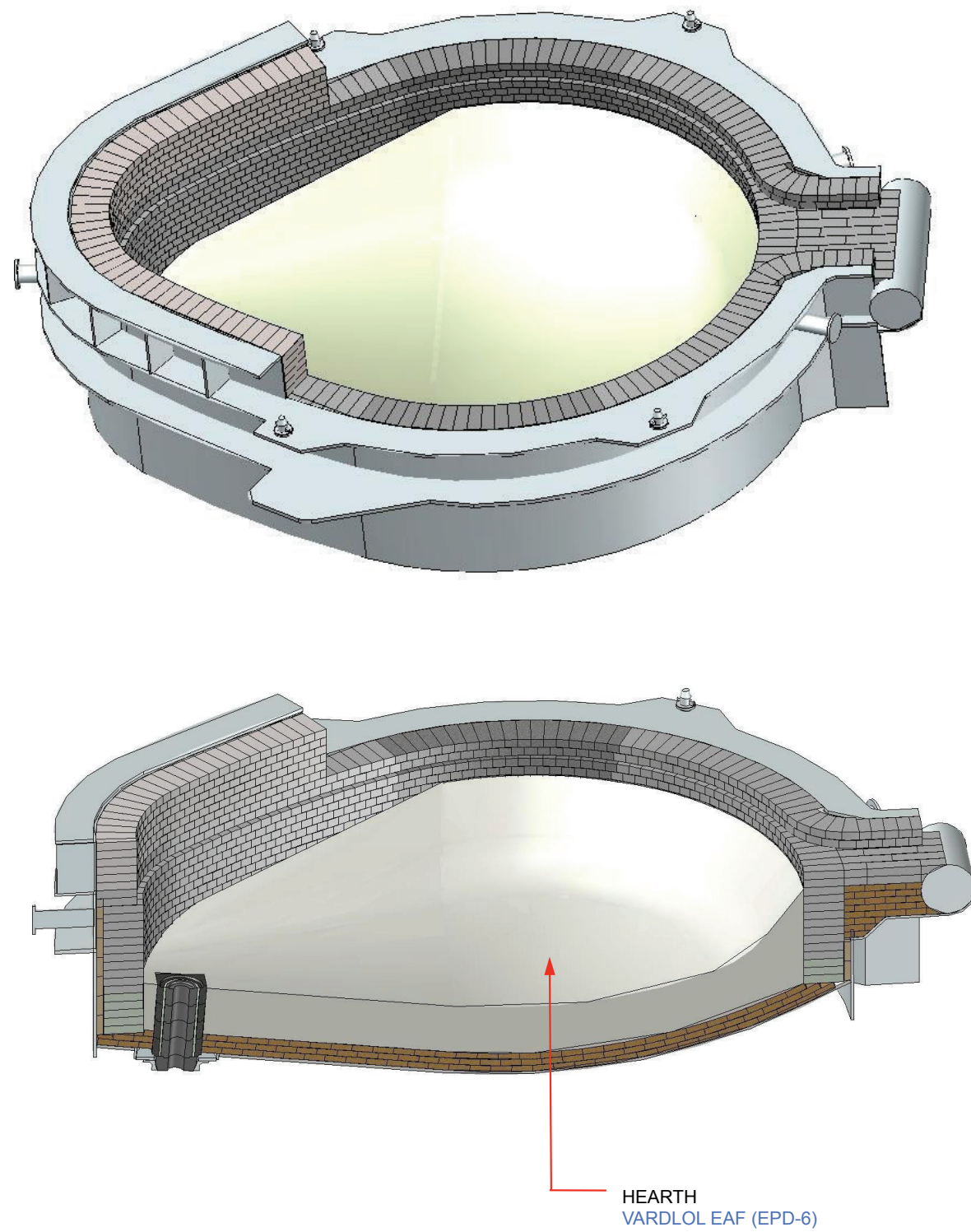


## BOF CONVERTER LINING CONCEPT

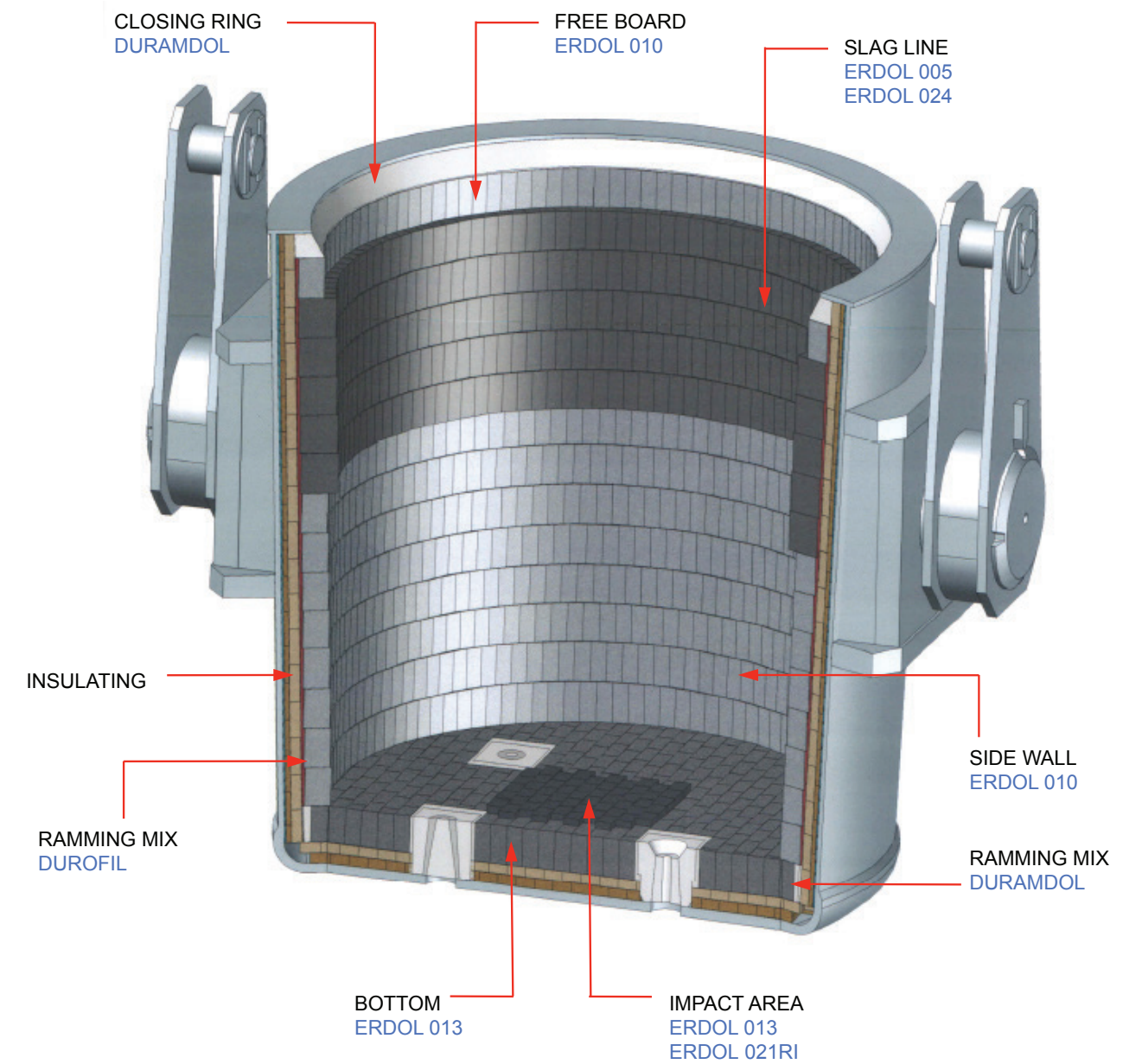




## ELECTRIC ARC FURNACE LINING CONCEPT



## LADLE LINING CONCEPT



PRODUCTS



RESIN BONDED DOLOMITE BRICKS

| Product Name  | Chemical Analysis |     |                  |                                |                                |   | Physical Properties |               |                    |
|---------------|-------------------|-----|------------------|--------------------------------|--------------------------------|---|---------------------|---------------|--------------------|
|               |                   |     |                  |                                |                                |   | Bulk Density        | APP. Porosity | C.C.Strenght       |
|               | MgO               | CaO | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | C | g/cm <sup>3</sup>   | vol. %        | kg/cm <sup>2</sup> |
| ERDOL 005 R   | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 8 | 2,75                | 10,5          | 650                |
| ERDOL 010 R   | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 4 | 2,77                | 10            | 700                |
| ERDOL 013 R   | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 6 | 2,77                | 10            | 650                |
| ERDOL 021 R   | 41                | 57  | 0,5              | 0,5                            | 0,5                            | 4 | 2,82                | 9             | 750                |
| ERDOL 021 R I | 54                | 45  | 0,2              | 0,3                            | 0,5                            | 4 | 2,85                | 9             | 1200               |
| ERDOL 022 R   | 48                | 50  | 0,5              | 0,5                            | 0,5                            | 4 | 2,84                | 9             | 750                |
| ERDOL 024 R   | 48                | 50  | 0,5              | 0,5                            | 0,5                            | 7 | 2,83                | 9,3           | 700                |
| ERDOL 028 R   | 66,5              | 32  | 0,4              | 0,3                            | 0,6                            | 9 | 2,84                | 9             | 700                |
| ERDOL 105 R   | 39                | 60  | 0,3              | 0,3                            | 0,4                            | 8 | 2,77                | 11            | 650                |
| ERDOL 110 R   | 39                | 60  | 0,3              | 0,3                            | 0,4                            | 4 | 2,79                | 10            | 700                |
| ERDOL 114 R   | 47                | 52  | 0,2              | 0,2                            | 0,5                            | 1 | 2,87                | 9,3           | 700                |

CARBON BONDED DOLOMITE BRIKCS

| Product Name | Chemical Analysis |     |                  |                                |                                |   | Physical Properties |               |                    |
|--------------|-------------------|-----|------------------|--------------------------------|--------------------------------|---|---------------------|---------------|--------------------|
|              |                   |     |                  |                                |                                |   | Bulk Density        | APP. Porosity | C.C.Strenght       |
|              | MgO               | CaO | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | C | g/cm <sup>3</sup>   | vol. %        | kg/cm <sup>2</sup> |
| ERDOL 005    | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 8 | 2,7                 | 11            | 350                |
| ERDOL 010    | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 4 | 2,75                | 10            | 400                |
| ERDOL 013    | 37                | 61  | 0,5              | 0,5                            | 0,5                            | 6 | 2,75                | 10,2          | 400                |
| ERDOL 021    | 41                | 57  | 0,5              | 0,5                            | 0,5                            | 4 | 2,77                | 9,6           | 500                |
| ERDOL 022    | 48                | 50  | 0,5              | 0,5                            | 0,5                            | 4 | 2,8                 | 10            | 450                |
| ERDOL 023    | 48                | 50  | 0,5              | 0,5                            | 0,5                            | 6 | 2,76                | 10            | 450                |
| ERDOL 024    | 48                | 50  | 0,5              | 0,5                            | 0,5                            | 7 | 2,75                | 10            | 450                |
| ERDOL 028    | 66,5              | 32  | 0,4              | 0,3                            | 0,6                            | 9 | 2,8                 | 10            | 550                |
| ERDOL 113    | 41                | 56  | 0,5              | 0,5                            | 0,5                            | 6 | 2,8                 | 12            | 450                |

DOLOMITE MIXES

| Product Name       | Chemical Analysis |       |                  |                                |                                |   | Physical Properties |
|--------------------|-------------------|-------|------------------|--------------------------------|--------------------------------|---|---------------------|
|                    |                   |       |                  |                                |                                |   | Grain Size          |
|                    | MgO               | CaO   | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | C | mm                  |
| DUROFIL            | 36                | 62    | 0,5              | 0,5                            | 0,5                            | - | 0-6                 |
| DURAMDOL           | 37                | 61    | 0,5              | 0,5                            | 0,5                            | - | 0-5                 |
| VARDOL EAF (EPD-6) | 37-38             | 57-60 | 0,5              | 0,5                            | 0,5                            | - | 0-6                 |
| DURPLAST           | 37                | 61    | 0,5              | 0,5                            | 0,5                            | - | 0-5                 |
| DURFRIT            | 35-38             | 56-60 | 0,2-0,6          | 0,2-0,6                        | 0,6-0,9                        | - | 0-6                 |
| DURAMDOL M         | 39                | 59    | 0,5              | 0,5                            | 0,5                            | - | 0-5                 |
| DUROFIL M          | 39                | 59    | 0,5              | 0,5                            | 0,5                            | - | 0-6                 |

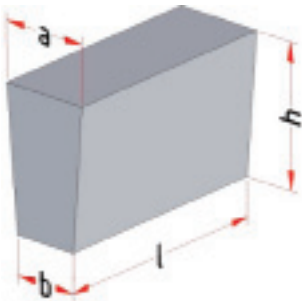


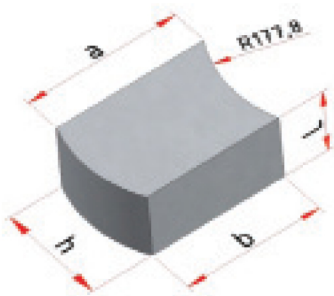
STANDARD BRICK SHAPES



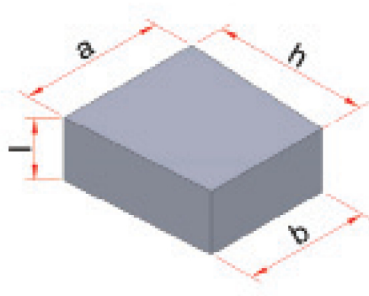
LADLE BRICKS P - FORMAT

| Shape     | Dimensions (mm) |     |     |     |         | Volume | Radius |
|-----------|-----------------|-----|-----|-----|---------|--------|--------|
|           | a               | b   | h   | l   | k (a-b) | dm³    | r (mm) |
| 1P 0      | 125             | 125 | 90  | 250 |         | 2,81   |        |
| 1P 8      | 129             | 121 | 90  | 250 | 8       | 2,81   | 1.384  |
| 1P 18     | 134             | 116 | 90  | 250 | 18      | 2,81   | 590    |
| 1P 26     | 138             | 112 | 90  | 250 | 26      | 2,81   | 395    |
| 1P 37     | 143             | 106 | 90  | 250 | 37      | 2,80   | 263    |
| 1P 8-2/3  | 86              | 78  | 90  | 250 | 8       | 1,85   |        |
| 1P 8-3/4  | 97              | 89  | 90  | 250 | 8       | 2,09   |        |
| 2P 0      | 125             | 125 | 124 | 250 |         | 3,88   |        |
| 2P 10     | 130             | 120 | 124 | 250 | 10      | 3,88   | 1.513  |
| 2P 24     | 137             | 113 | 124 | 250 | 24      | 3,88   | 594    |
| 2P 10-2/3 | 87              | 77  | 124 | 250 | 10      | 2,54   |        |
| 2P 10-3/4 | 98              | 88  | 124 | 250 | 10      | 2,88   |        |
| 3P 0      | 100             | 100 | 155 | 250 |         | 3,88   |        |
| 3P 8      | 104             | 96  | 155 | 250 | 8       | 3,88   | 1.899  |
| 3P 10     | 105             | 95  | 155 | 250 | 10      | 3,88   | 1.504  |
| 3P 20     | 110             | 90  | 155 | 250 | 20      | 3,88   | 713    |
| 3P 26     | 113             | 87  | 155 | 250 | 26      | 3,88   | 525    |
| 3P 10-2/3 | 70              | 60  | 155 | 250 | 10      | 2,52   |        |
| 3P 10-3/4 | 79              | 69  | 155 | 250 | 10      | 2,87   |        |
| 4P 0      | 100             | 100 | 187 | 250 |         | 4,68   |        |
| 4P 8      | 104             | 96  | 187 | 250 | 8       | 4,68   |        |
| 4P 12     | 106             | 94  | 187 | 250 | 12      | 4,68   |        |
| 4P 22     | 111             | 89  | 187 | 250 | 22      | 4,68   |        |
| 4P 12-2/3 | 71              | 59  | 187 | 250 | 12      | 3,04   |        |
| 4P 12-3/4 | 80              | 68  | 187 | 250 | 12      | 3,46   |        |
| 5P 0      | 100             | 100 | 220 | 250 |         | 5,50   |        |
| 5P 8      | 104             | 96  | 220 | 250 | 8       | 5,50   | 2.695  |
| 5P 16     | 108             | 92  | 220 | 250 | 16      | 5,50   | 1.293  |
| 5P 22     | 111             | 89  | 220 | 250 | 22      | 5,50   | 8      |
| 5P16-2/3  | 72              | 56  | 220 | 250 | 16      | 3,52   |        |
| 5P 16-3/4 | 81              | 65  | 220 | 250 | 16      | 4,02   |        |





| Shape   | Dimensions (mm) |       |       |     | Volume<br>dm³ | Diameter<br>D (mm) |
|---------|-----------------|-------|-------|-----|---------------|--------------------|
|         | a               | b     | h     | l   |               |                    |
| S U 430 | 210             | 188,7 | 101,6 | 100 | 2,03          | 1500 - 2500        |
| S U 445 | 210             | 195,8 | 101,6 | 100 | 2,06          | 2100 - 3400        |
| S U 530 | 210             | 183,4 | 127   | 100 | 2,50          | 1500 - 2500        |
| S U 545 | 210             | 192,3 | 127   | 100 | 2,55          | 2100 - 3400        |
| S U 560 | 210             | 196,7 | 127   | 100 | 2,58          | 2800 - 4500        |
| S U 630 | 210             | 178,1 | 152,4 | 100 | 2,96          | 1500 - 2500        |
| S U 645 | 210             | 188,7 | 152,4 | 100 | 3,04          | 2100 - 3400        |
| S U 660 | 210             | 194   | 152,4 | 100 | 3,08          | 2800 - 4500        |
| S U 745 | 210             | 185,2 | 177,8 | 100 | 3,51          | 2100 - 3400        |
| S U 760 | 210             | 191,4 | 177,8 | 100 | 3,57          | 2800 - 4500        |
| S U 830 | 210             | 168   | 203,2 | 100 | 3,78          | 1500 - 2500        |
| S U 845 | 210             | 181,6 | 203,2 | 100 | 3,98          | 2400 - 3600        |
| S U 860 | 210             | 188,7 | 203,2 | 100 | 4,05          | 3400 - 4600        |
| S U 930 | 210             | 163   | 228,6 | 100 | 4,20          | 1500 - 2500        |
| S U 945 | 210             | 178,1 | 228,6 | 100 | 4,44          | 2100 - 3400        |
| S U 960 | 210             | 186,1 | 228,6 | 100 | 4,53          | 2800 - 4500        |

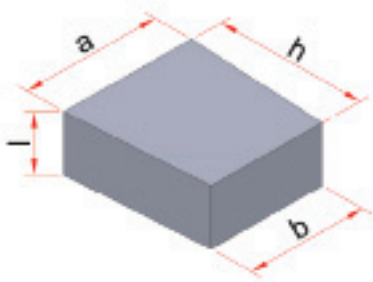


| Shape          | Dimensions (mm) |     |     |     |        | Volume<br>dm³ | Radius<br>r (mm) |
|----------------|-----------------|-----|-----|-----|--------|---------------|------------------|
|                | a               | b   | h   | l   | k(a-b) |               |                  |
| 12/11 - 10     | 211             | 200 | 125 | 100 | 11     | 2,57          | 2282             |
| 12/21 - 10     | 221             | 200 | 125 | 100 | 21     | 2,63          | 1207             |
| 12/33 - 10     | 233             | 200 | 125 | 100 | 33     | 2,71          | 784              |
| 12/50 - 10     | 250             | 200 | 125 | 100 | 50     | 2,81          | 539              |
| 15/13 - 10     | 213             | 200 | 150 | 100 | 13     | 3,10          | 2308             |
| 15/25 - 10     | 225             | 200 | 150 | 100 | 25     | 3,19          | 1200             |
| 15/40 - 10     | 240             | 200 | 150 | 100 | 40     | 3,30          | 750              |
| 15/60 - 10     | 260             | 200 | 150 | 100 | 60     | 3,45          | 540              |
| 18/16 - 10     | 216             | 200 | 180 | 100 | 16     | 3,74          | 2250             |
| 18/30 - 10     | 230             | 200 | 180 | 100 | 30     | 3,87          | 1200             |
| 18/48 - 10     | 248             | 200 | 180 | 100 | 48     | 4,03          | 750              |
| 18/72 - 10     | 272             | 200 | 180 | 100 | 72     | 4,25          | 540              |
| 22/19 - 10     | 219             | 200 | 220 | 100 | 19     | 4,61          | 2300             |
| 22/37 - 10     | 237             | 200 | 220 | 100 | 37     | 4,81          | 1200             |
| 22/59 - 10     | 259             | 200 | 220 | 100 | 59     | 5,05          | 750              |
| 22/16 - 10     | 216             | 200 | 250 | 100 | 16     | 5,20          | 3131             |
| 25/30 - 10     | 230             | 200 | 250 | 100 | 30     | 5,38          | 1670             |
| 25/16 - 10_2/3 | 149             | 133 | 250 | 100 | 16     | 3,53          | 2087             |
| 25/30 - 10_2/3 | 163             | 133 | 250 | 100 | 30     | 3,71          | 119              |
| 25/16 - 10_3/4 | 166             | 150 | 250 | 100 | 16     | 3,95          | 2348             |
| 25/30 - 10_3/4 | 180             | 150 | 250 | 100 | 30     | 4,13          | 1258             |

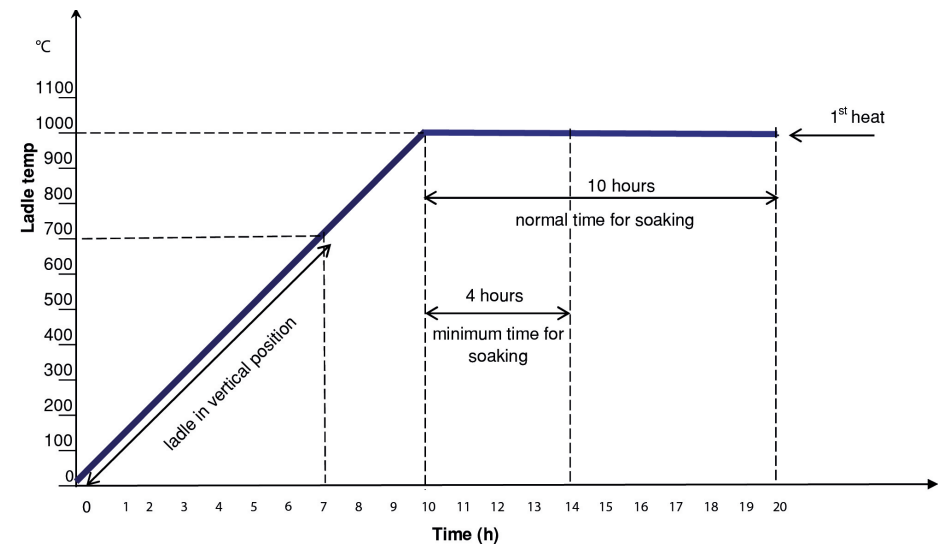


LADLE BRICKS MINI KEY

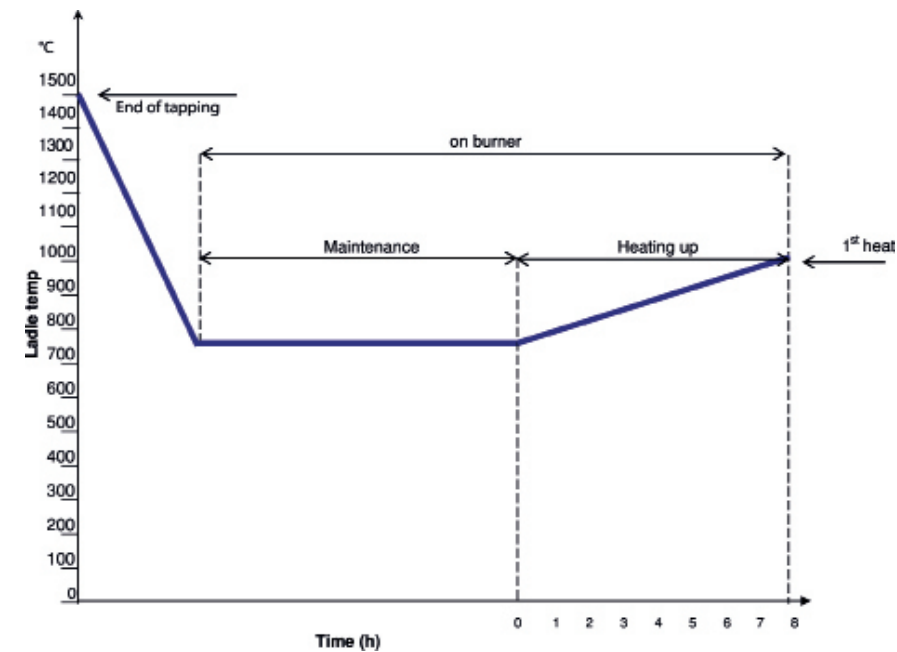
| Shape     | Dimensions (mm) |     |       |     |         | Volume<br>dm³ | Radius<br>r (mm) |
|-----------|-----------------|-----|-------|-----|---------|---------------|------------------|
|           | a               | b   | h     | l   | k (a-b) |               |                  |
| MK 4/0    | 150             | 150 | 101,6 | 100 | 0       | 1,52          |                  |
| MK 4/6    | 153             | 147 | 101,6 | 100 | 6       | 1,52          | 2496             |
| MK 4/12   | 156             | 144 | 101,6 | 100 | 12      | 1,52          | 1229             |
| MK 4/20   | 160             | 140 | 101,6 | 100 | 20      | 1,52          | 726              |
| MK 5/0    | 150             | 150 | 127   | 100 | 0       | 1,91          |                  |
| MK 5/8    | 154             | 146 | 127   | 100 | 8       | 1,91          | 2324             |
| MK 5/20   | 160             | 140 | 127   | 100 | 20      | 1,91          | 901              |
| MK 5/32   | 166             | 134 | 127   | 100 | 32      | 1,91          | 549              |
| MK 5/20 K | 130             | 110 | 127   | 100 | 20      | 1,52          | 708              |
| 120 6/0   | 150             | 150 | 152,4 | 100 | 0       | 2,29          |                  |
| MK 6/8    | 154             | 146 | 152,4 | 100 | 8       | 2,29          | 2787             |
| MK 6/13   | 157             | 144 | 152,4 | 100 | 13      | 2,29          | 1696             |
| MK 6/20   | 160             | 140 | 152,4 | 100 | 20      | 2,29          | 1077             |
| MK 6/30   | 165             | 135 | 152,4 | 100 | 30      | 2,29          | 700              |
| MK 6/40   | 170             | 130 | 152,4 | 100 | 40      | 2,29          | 513              |
| MK 6/20 K | 130             | 110 | 152,4 | 100 | 20      | 1,83          | 846              |
| 120 7/0   | 150             | 150 | 177,8 | 100 | 0       | 2,67          |                  |
| MK 7/8    | 154             | 146 | 177,8 | 100 | 8       | 2,67          | 3251             |
| MK 7/13   | 157             | 144 | 177,8 | 100 | 13      | 2,68          | 1976             |
| MK 7/16   | 158             | 142 | 177,8 | 100 | 16      | 2,67          | 1586             |
| MK 7/20   | 160             | 140 | 177,8 | 100 | 20      | 2,67          | 1254             |
| MK 7/30   | 165             | 135 | 177,8 | 100 | 30      | 2,67          | 812              |
| MK 7/40   | 170             | 130 | 177,8 | 100 | 40      | 2,67          | 593              |
| MK 7/20 K | 130             | 110 | 177,8 | 100 | 20      | 2,13          | 985              |
| 120 8/0   | 150             | 150 | 203,2 | 100 | 0       | 3,05          |                  |
| MK 8/8    | 154             | 146 | 203,2 | 100 | 8       | 3,05          | 3714             |
| MK 8/16   | 157             | 144 | 203,2 | 100 | 16      | 3,05          | 1836             |
| MK 8/20   | 160             | 140 | 203,2 | 100 | 20      | 3,05          | 1431             |
| MK 8/30   | 165             | 135 | 203,2 | 100 | 30      | 3,05          | 925              |
| MK 8/40   | 170             | 130 | 203,2 | 100 | 40      | 3,05          | 674              |
| MK 9/0    | 150             | 150 | 228,6 | 100 | 0       | 3,43          |                  |
| MK 9/8    | 154             | 146 | 228,6 | 100 | 8       | 3,43          | 4178             |
| MK 9/16   | 157             | 144 | 228,6 | 100 | 16      | 3,43          | 2064             |
| MK 9/30   | 165             | 135 | 228,6 | 100 | 30      | 3,43          | 1039             |
| MK 9/40   | 170             | 130 | 228,6 | 100 | 40      | 3,43          | 755              |
| MK 9/50   | 175             | 125 | 228,6 | 100 | 50      | 3,43          | 586              |
| 25/0      | 150             | 150 | 250   | 100 | 0       | 3,75          |                  |
| 25/8      | 154             | 146 | 250   | 100 | 8       | 3,75          | 4569             |
| 25/16     | 158             | 142 | 250   | 100 | 16      | 3,75          | 2225             |
| 25/30     | 165             | 135 | 250   | 100 | 30      | 3,75          | 1134             |
| 25/60     | 180             | 120 | 250   | 100 | 60      | 3,75          | 515              |
| 30/0      | 150             | 150 | 300   | 100 | 0       | 4,50          |                  |
| 30/8      | 154             | 146 | 300   | 100 | 8       | 4,50          | 5481             |
| 30/20     | 160             | 140 | 300   | 100 | 20      | 4,50          | 2107             |
| 30/40     | 170             | 130 | 300   | 100 | 40      | 4,50          | 985              |
| 30/70     | 185             | 115 | 300   | 100 | 70      | 4,50          | 507              |



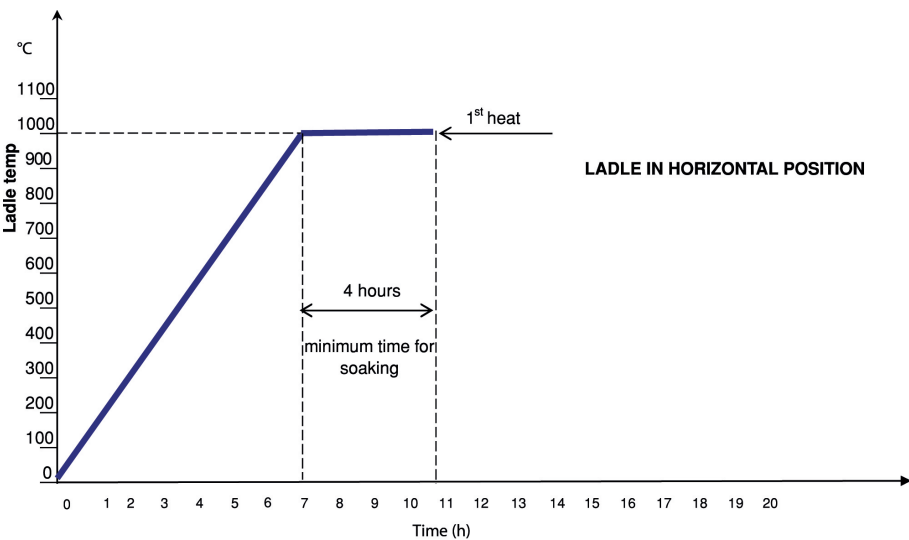
DOLOMITE LINING, LADLE PRE-HEATING CURVE



DOLOMITE LINING, LADLE MAINTENANCE CURVE



DOLOMITE LINING, LADLE RE-HEATING CURVE



CERTIFICATES







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