

# **Product Brochures**

# **Wear Resistant Products**

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# Wear Resistant Products

### **Products and services**

**Background of Delta Refractories** 

### We supply the following services:

- Production of acid and basic monolithic refractories
- Design and development of own mixes in accordance with the client's needs
- Representation of a number of overseas and local suppliers
- An independent testing laboratory
- Turnkey project management
- Design and estimation, including CAD drawings
- Refractory consultation and arbitration

### Our production facility:

- Is situated in Vereeniging, 60 km south of Johannesburg
- Has a capacity of ~1600 ton per month for single shift production
- Employs ~30 permanent staff

### **Products and services range:**

- Ramming, gunning, plaster, pumpable, mortars and others.
- Dense and light weight castables (acid and basic)
- Special monolithics for continuous casting
- Special monolithic refractory materials on request
- Imported products:
  - Fusion cast refractories from Motim in Hungary.
  - Magnesia chrome, SiC, magnesia carbon, magnesia alumina carbon and others direct from Wonjin in Korea and China
- Installation services and supervision over product application are available
- Consultancy services with regards to process development in pyro-metallurgical industries

| Product Range                   | Description   |
|---------------------------------|---|
| Delta Cast <sup>®</sup>         | LCC, ULCC and NCC range 1300 to 2000 OC                                     |
| Delta Crete <sup>®</sup>        | Conventional castable range 900 to 2000 OC                                  |
| Delta Gun <sup>®</sup>          | Acid and basic gunning, hot/cold, 1200 to 2000 OC                           |
| Delta Ram <sup>®</sup>          | Acid and basic ramming for ladles and furnaces                              |
| Delta Plast <sup>®</sup>        | Acid and basic plaster materials 1300 to 1800 OC                            |
| Delta Flow <sup>®</sup>         | Free flow acid range 1300 to 2000 OC  |
| Delta Fiber Crete®              | Stainless steel fiber and ceramic matrix composite materials                |
| Delta Floc <sup>®</sup>         | Slag coagulant range  |
| Delta Cover <sup>®</sup>        | Ladle and tundish insulating cover materials                                |
| Delta Thermo Cover <sup>®</sup> | Range of refractory paints for protection of carbon containing refractories |
| Delta Chem®                     | A cement free chemically bonded range 1300 to 2000 OC                       |
| Delta Pump <sup>®</sup>         | Range of pumpable materials 1300 to 2000 OC                                 |
| Delta Set®                      | Acid and basic mortar ranges 1300 to 2000 OC                                |
| Delta Fill®                     | Ladle well filler and furnace taphole fillers                               |
| Delta Melt®                     | Slag viscosity modifiers  |
|                                 |   |

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## **Product Information**

These products all have the following important properties:

- High density for the raw materials employed in the make-up of the product
- High mechanical strength at room temperature and up to 1200°C
- High resistance to abrasion

| Groups                       | Brand name       | Remarks                            |  |  |  |  |  |  |  |  |  |
|------------------------------|------------------|------------------------------------|--|--|--|--|--|--|--|--|--|
| Castables                    | Delta Cast® 202  | Tabular alumina based              |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 208  | Tabular and Fused alumina based    |  |  |  |  |  |  |  |  |  |
| Delta Cast® 217              |                  | Fused alumina based                |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 222  | Fused alumina based                |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 427  | Tab and SiC based                  |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 430  | Tab and SiC based                  |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 453  | Chamotte based                     |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 517  | SiC based                          |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 802  | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 803  | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 804  | Brown Fused Alumina based          |  |  |  |  |  |  |  |  |  |
| Delta Cast® 805              |                  | Brown Fused Alumina based          |  |  |  |  |  |  |  |  |  |
| Delta Cast® 806              |                  | White Fused Alumina based          |  |  |  |  |  |  |  |  |  |
|                              | Delta Cast® 807  | Fused silica based                 |  |  |  |  |  |  |  |  |  |
| Delta Chem <sup>®</sup> 550  |                  | Tabular alumina and zirconia based |  |  |  |  |  |  |  |  |  |
| Delta Crete <sup>®</sup> 511 |                  | Chamotte based                     |  |  |  |  |  |  |  |  |  |
| Gunning                      | Delta Gun® 802   | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Gun® 803   | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Gun® 804   | Brown Fused Alumina based          |  |  |  |  |  |  |  |  |  |
|                              | Delta Gun® 805   | Brown Fused Alumina based          |  |  |  |  |  |  |  |  |  |
| Plaster                      | Delta Plast® 217 | Fused alumina based                |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 303 | Brown Fused Alumina based          |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 453 | Chamotte based                     |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 802 | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 803 | Bauxite based                      |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 804 | Brown Fused Alumina                |  |  |  |  |  |  |  |  |  |
|                              | Delta Plast® 805 | White Fused Alumina                |  |  |  |  |  |  |  |  |  |

Revised: 2018/10/31

# Product datasheet for the Wear Resistant Products

|                     | Legend:             | Delta Plast <sup>®</sup> 805 | Delta Plast <sup>®</sup> 804 | Delta Plast <sup>®</sup> 803 | Delta Plast <sup>®</sup> 802 | Delta Plast <sup>®</sup> 453 | Delta Plast® 303 | Delta Plast <sup>®</sup> 217 | Delta Gun <sup>®</sup> 805 | Delta Gun <sup>®</sup> 804 | Delta Gun <sup>®</sup> 803 | Delta Gun <sup>®</sup> 802 | Delta Crete <sup>®</sup> 511 | Delta Chem <sup>®</sup> 550 | Delta Cast <sup>®</sup> 807 | Delta Cast <sup>®</sup> 806 | Delta Cast <sup>®</sup> 805 | Delta Cast <sup>®</sup> 804 | Delta Cast <sup>®</sup> 803 | Delta Cast <sup>®</sup> 802 | Delta Cast <sup>®</sup> 517 | Delta Cast <sup>®</sup> 453 | Delta Cast <sup>®</sup> 430 | Delta Cast <sup>®</sup> 427 | Delta Cast <sup>®</sup> 222 | Delta Cast <sup>®</sup> 217 | Delta Cast <sup>®</sup> 208 | Delta Cast <sup>®</sup> 202 | Description                    |
|---------------------|---------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------|------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------|
| BFA                 | WFA                 | WFA                          | BFA                          | Bauxite                      | Bauxite                      | Chamotte                     | BFA              | Fused alumina                | BFA                        | BFA                        | Bauxite                    | Bauxite                    | Chamotte                     | Bauxite                     | Fused silica                | WFA                         | BFA                         | BFA                         | Bauxite                     | Bauxite                     | SiC                         | Chamotte                    | Tab and SiC                 | Tab and SiC                 | Fused alumina               | Fused alumina               | Tab and Fused alumina       | Tab alumina based           | Remarks                        |
| Brown Fused Alumina | White Fused Alumina | 1200                         | 1200                         | 1200                         | 1200                         | 1300                         | 1250             | 1400                         | 1200                       | 1200                       | 1200                       | 1200                       | 1500                         | 1550                        | 1200                        | 1200                        | 1200                        | 1200                        | 1200                        | 1200                        | 1600                        | 1550                        | 1600                        | 1600                        | 1850                        | 1400                        | 1800                        | 1800                        | Max temp °                     |
| d Alumina           | Alumina             | 3                            | ω                            | 3                            | 3                            | 5                            | ω                | З                            | သ                          | သ                          | သ                          | သ                          | ω                            | ဝ                           | 6                           | З                           | ω                           | ω                           | ω                           | ω                           | ω                           | 6                           | ω                           | ω                           | 6                           | 6                           | 6                           | >6                          | Max grain size mm              |
|                     |                     | 8.0                          | 8.0                          | 11.0                         | 10.0                         | 46.4                         | <10              | 7.0                          | 8.0                        | 8.0                        | 11.0                       | 11.0                       | 44.0                         | 55.0                        | 75.0                        | 10.0                        | 6.0                         | 6.0                         | 10.0                        | 10.0                        |                             | 43.0                        | 6.3                         | 7.0                         |                             | 10.0                        | ~5                          | 6.5                         | SiO <sub>2</sub>               |
|                     |                     | 73.0                         | 80.0                         | 68.0                         | 78.3                         | 43.0                         | >80              | >80                          | 73.0                       | 80.0                       | 68.0                       | 75.0                       | 64.0                         | 43.0                        | 18.0                        | 82.0                        | 80.0                        | 85.0                        | 74.0                        | 78.3                        | 23.0                        | 52.0                        | 41.5                        | 30.0                        | >85                         | >80                         | ~92                         | 90.4                        | Al <sub>2</sub> O <sub>3</sub> |
|                     |                     | 17.0                         | 10.0                         | 17.0                         | 7.7                          | 8.0                          | <10              | 9.0                          | 17.0                       | 10.0                       | 17.0                       | 10.0                       | 7.6                          |                             | 7.0                         | 9.0                         | 12.4                        | 7.5                         | 12.5                        | 7.7                         | 4.8                         | 2.3                         | 5.9                         | 7.7                         | <2.5                        | 9.0                         | 1.6                         | 3.1                         | CaO + MgO                      |
|                     |                     | 1.0                          | 1.0                          | 3.4                          | 3.9                          |                              | 1.0              |                              | 1.0                        | 1.0                        | 3.4                        | 3.4                        | 1.8                          | 1.9                         |                             |                             | 1.0                         | 1.0                         | 3.9                         | 3.9                         |                             | 1.6                         |                             |                             |                             |                             | 0.2                         | 0.1                         | CaO + MgO Fe2O3 + TiO2         |
|                     |                     |                              |                              |                              |                              |                              |                  |                              |                            |                            |                            |                            |                              |                             |                             |                             |                             |                             |                             |                             | 72.0                        |                             | 46.0                        | 55.0                        |                             |                             |                             |                             | SiC                            |
|                     |                     | >130                         | >130                         | >100                         | >130                         | >85                          | >130             | >190                         | >130                       | >130                       | >100                       | >130                       | >80                          | >50                         | >140                        | >130                        | >130                        | >130                        | >130                        | >130                        | >135                        | >100                        | >180                        | >180                        | >80                         | >150                        | >120                        | >150                        | CCS Mpa<br>110C                |
|                     |                     | 2.75                         | 2.75                         | 2.60                         | 2.75                         | 1.80                         | >2.8             | 2.80                         | 2.75                       | 2.75                       | 2.60                       | 2.75                       | 2.20                         | 2.20                        | 2.00                        | 2.80                        | 2.75                        | 2.80                        | 2.70                        | 2.75                        | 2.70                        | 2.40                        | 2.60                        | 2.70                        | >3.20                       | >2.80                       | >3.15                       | 3.00                        | BD g/cm <sup>3</sup>           |