

## SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

### F27 FURNACES; KILNS; OVENS; RETORTS

**F27B FURNACES, KILNS, OVENS, OR RETORTS IN GENERAL; OPEN SINTERING OR LIKE APPARATUS** (combustion apparatus F23; electric heating H05B)

#### Note(s)

Attention is drawn to the references and Notes following the title of class F27 and the Note (3) of section H.

#### Subclass index

##### FURNACES WITH STATIONARY CHARGE

|   |                     |
|---|---------------------|
| Shaft furnaces.....                                     | 1/00                |
| Horizontal furnaces.....                                | 3/00, 5/00          |
| Bell-type furnaces.....                                 | 11/00               |
| With progression of heating.....                        | 13/00               |
| Crucible furnaces, tank furnaces.....                   | 14/00               |
| STATIONARY FURNACES WITH MECHANICALLY-MOVED CHARGE..... | 9/00                |
| ROTARY FURNACES.....                                    | 7/00, 13/00         |
| OTHER FURNACES; COMBINATIONS.....                       | 15/00, 17/00, 19/00 |
| OPEN SINTERING OR LIKE APPARATUS.....                   | 21/00               |

|             |   |             |  |
|-------------|---|-------------|--|
| <b>1/00</b> | <b>Shaft or like vertical or substantially vertical furnaces</b> (for preheating, burning, calcining or cooling lime, magnesia or dolomite C04B 2/12) <b>[1, 2006.01]</b> | 3/02        | • of single-chamber fixed-hearth type <b>[1, 2006.01]</b>  |
| 1/02        | • with two or more shafts or chambers, e.g. multi-storey <b>[1, 2006.01]</b>  | 3/04        | • of multiple-hearth type; of multiple-chamber type; Combinations of hearth-type furnaces <b>[1, 2006.01]</b>  |
| 1/04        | • • Combinations or arrangements of shafts <b>[1, 2006.01]</b>  | 3/06        | • with movable working chambers or hearths, e.g. tiltable <b>[1, 2006.01]</b>  |
| 1/06        | • of other than up-draught type <b>[1, 2006.01]</b>   | 3/08        | • heated electrically, e.g. electric arc furnaces, with or without any other source of heat <b>[1, 2006.01]</b>  |
| 1/08        | • heated otherwise than by solid fuel mixed with charge <b>[1, 2006.01]</b>   | 3/10        | • Details, accessories, or equipment, e.g. dust-collectors, peculiar to hearth-type furnaces <b>[1, 2006.01]</b>   |
| 1/09        | • • heated electrically <b>[4, 2006.01]</b>   | 3/12        | • • Working chambers or casings; Supports therefor <b>[1, 2006.01]</b>   |
| 1/10        | • Details, accessories, or equipment peculiar to furnaces of these types <b>[1, 2006.01]</b>  | 3/14        | • • • Arrangements of linings <b>[1, 2006.01]</b>  |
| 1/12        | • • Shells or casings; Supports therefor <b>[1, 2006.01]</b>  | 3/16        | • • • Walls; Roofs <b>[1, 2006.01]</b>   |
| 1/14        | • • • Arrangements of linings (linings in general F27D 1/00) <b>[1, 2006.01]</b>  | 3/18        | • • Arrangement of devices for charging <b>[1, 4, 2006.01]</b>   |
| 1/16        | • • Arrangements of tuyères <b>[1, 2006.01]</b>   | 3/19        | • • Arrangement of devices for discharging <b>[4, 2006.01]</b>   |
| 1/18        | • • Arrangements of dust collectors <b>[1, 2006.01]</b>   | 3/20        | • • Arrangements of heating devices <b>[1, 2006.01]</b>  |
| 1/20        | • • Arrangement of devices for charging <b>[1, 4, 2006.01]</b>  | 3/22        | • • Arrangements of air or gas supply devices <b>[1, 2006.01]</b>  |
| 1/21        | • • Arrangement of devices for discharging <b>[4, 2006.01]</b>  | 3/24        | • • Cooling arrangements <b>[1, 2006.01]</b>   |
| 1/22        | • • Arrangements of heat-exchange apparatus (heat-exchangers in general F28C, F28D) <b>[1, 2006.01]</b>   | 3/26        | • • Arrangements of heat-exchange apparatus <b>[1, 2006.01]</b>  |
| 1/24        | • • Cooling arrangements <b>[1, 2006.01]</b>  | 3/28        | • • Arrangement of controlling, monitoring, alarm or like devices <b>[4, 2006.01]</b>  |
| 1/26        | • • Arrangements of controlling devices <b>[1, 2006.01]</b>   |             |  |
| 1/28        | • • Arrangements of monitoring devices, of indicators, of alarm devices <b>[1, 2006.01]</b>   |             |  |
| <b>3/00</b> | <b>Hearth-type furnaces, e.g. of reverberatory type</b> (F27B 9/00-F27B 15/00, F27B 21/00 take precedence); <b>Electric arc furnaces [1, 4, 2006.01]</b>                  | <b>5/00</b> | <b>Muffle furnaces; Retort furnaces; Other furnaces in which the charge is held completely isolated</b> (F27B 9/00 takes precedence) <b>[1, 2006.01]</b> |
|             |   | 5/02        | • of multiple-chamber type <b>[1, 2006.01]</b>   |
|             |   | 5/04        | • adapted for treating the charge in vacuum or special atmosphere <b>[1, 2006.01]</b>  |

- 5/05 • • in vacuum [5, 2006.01]
- 5/06 • Details, accessories, or equipment peculiar to furnaces of these types [1, 2006.01]
- 5/08 • • Arrangements of linings [1, 2006.01]
- 5/10 • • Muffles [1, 2006.01]
- 5/12 • • Arrangement of devices for charging [1, 4, 2006.01]
- 5/13 • • Arrangement of devices for discharging [4, 2006.01]
- 5/14 • • Arrangements of heating devices [1, 2006.01]
- 5/16 • • Arrangements of air or gas supply devices [1, 2006.01]
- 5/18 • • Arrangement of controlling, monitoring, alarm or like devices [4, 2006.01]
  
- 7/00 Rotary-drum furnaces, i.e. horizontal or slightly inclined [1, 2006.01]**
- 7/02 • of multiple-chamber or multiple-drum type [1, 2006.01]
- 7/04 • • with longitudinal divisions [1, 2006.01]
- 7/06 • adapted for treating the charge in vacuum or special atmosphere [1, 2006.01]
- 7/08 • externally heated [1, 2006.01]
- 7/10 • internally heated, e.g. by means of passages in the wall [1, 2006.01]
- 7/12 • tiltable [1, 2006.01]
- 7/14 • with means for agitating or moving the charge [1, 2006.01]
- 7/16 • • the means being fixed relatively to the drum (F27B 7/04 takes precedence) [1, 2006.01]
- 7/18 • • the means being movable within the drum [1, 2006.01]
- 7/20 • Details, accessories, or equipment peculiar to rotary-drum furnaces [1, 2006.01]
- 7/22 • • Rotary drums; Supports therefor [1, 2006.01]
- 7/24 • • • Seals between rotary and stationary parts [1, 2006.01]
- 7/26 • • Drives [1, 2006.01]
- 7/28 • • Arrangements of linings [1, 2006.01]
- 7/30 • • Arrangements of partitions [1, 2006.01]
- 7/32 • • Arrangement of devices for charging [1, 4, 2006.01]
- 7/33 • • Arrangement of devices for discharging [4, 2006.01]
- 7/34 • • Arrangements of heating devices [1, 2006.01]
- 7/36 • • Arrangements of air or gas supply devices [1, 2006.01]
- 7/38 • • Arrangements of cooling devices [1, 2006.01]
- 7/40 • • • Planetary coolers [4, 2006.01]
- 7/42 • • Arrangement of controlling, monitoring, alarm or like devices [4, 2006.01]
  
- 9/00 Furnaces through which the charge is moved mechanically, e.g. of tunnel type (F27B 7/14 takes precedence); Similar furnaces in which the charge moves by gravity [1, 2006.01]**
- 9/02 • of multiple-track type; of multiple-chamber type; Combinations of furnaces [1, 2006.01]
- 9/04 • adapted for treating the charge in vacuum or special atmosphere [1, 2006.01]
- 9/06 • heated without contact between combustion gases and charge; electrically heated [1, 2006.01]
- 9/08 • • heated through chamber walls [1, 2006.01]
- 9/10 • • heated by hot air or gas [1, 2006.01]
- 9/12 • with special arrangements for preheating or cooling the charge [1, 2006.01]
  
- 9/14 • characterised by the path of the charge during treatment; characterised by the means by which the charge is moved during treatment (F27B 9/28 takes precedence; travelling or movable supports or containers for the charge F27D 3/12) [1, 2006.01]
- 9/16 • • the charge moving in a circular or arcuate path [1, 2006.01]
- 9/18 • • • under the action of scrapers or pushers [1, 2006.01]
- 9/20 • • the charge moving in a substantially straight path [1, 2006.01]
- 9/22 • • • under the action of scrapers or pushers (F27B 9/26 takes precedence) [1, 2006.01]
- 9/24 • • • being carried by a conveyor [1, 2006.01]
- 9/26 • • • on or in trucks, sleds, or containers [1, 2006.01]
- 9/28 • for treating continuous lengths of work [1, 2006.01]
- 9/30 • Details, accessories, or equipment peculiar to furnaces of these types [1, 2006.01]
- 9/32 • • Casings [1, 2006.01]
- 9/34 • • • Arrangements of linings [1, 2006.01]
- 9/36 • • Arrangements of heating devices [1, 2006.01]
- 9/38 • • Arrangement of devices for charging [1, 4, 2006.01]
- 9/39 • • Arrangement of devices for discharging [4, 2006.01]
- 9/40 • • Arrangements of controlling or monitoring devices [1, 2006.01]
  
- 11/00 Bell-type furnaces (for treating metal strips or wire C21D 9/663) [1, 2006.01]**
  
- 13/00 Furnaces with both stationary charge and progression of heating, e.g. of ring type, of type in which segmental kiln moves over stationary charge [1, 2006.01]**
- 13/02 • of multiple-chamber type with permanent partitions; Combinations of furnaces [1, 2006.01]
- 13/04 • of single-chamber type with temporary partitions [1, 2006.01]
- 13/06 • Details, accessories, or equipment peculiar to furnaces of this type [1, 2006.01]
- 13/08 • • Casings [1, 2006.01]
- 13/10 • • • Arrangements of linings [1, 2006.01]
- 13/12 • • Arrangements of heating devices [1, 2006.01]
- 13/14 • • Arrangement of controlling, monitoring, alarm or like devices [4, 2006.01]
  
- 14/00 Crucible or pot furnaces; Tank furnaces [1, 4, 2006.01]**
- 14/02 • with tilting or rocking arrangements (F27B 14/04 takes precedence) [1, 2006.01]
- 14/04 • adapted for treating the charge in vacuum or special atmosphere [1, 2006.01]
- 14/06 • heated electrically, e.g. induction crucible furnaces, with or without any other source of heat (F27B 14/04 takes precedence) [1, 2006.01]
- 14/08 • Details peculiar to crucible, pot or tank furnaces [1, 4, 2006.01]
- 14/10 • • Crucibles [1, 2006.01]
- 14/12 • • • Covers therefor [1, 2006.01]
- 14/14 • • Arrangements of heating devices [1, 2006.01]
- 14/16 • • Arrangement of devices for charging [4, 2006.01]
- 14/18 • • Arrangement of devices for discharging [4, 2006.01]
- 14/20 • • Arrangement of controlling, monitoring, alarm or like devices [4, 2006.01]

|              |   |              |   |
|--------------|---|--------------|---|
| <b>15/00</b> | <b>Fluidised-bed furnaces; Other furnaces using or treating finely-divided materials in dispersion</b><br>(combustion apparatus in which combustion takes place in a fluidised bed of fuel or other particles F23C 10/00) <b>[1, 2006.01]</b> | <b>17/00</b> | <b>Furnaces of a kind not covered by any of groups F27B 1/00-F27B 15/00</b> (structural combinations of furnaces F27B 19/02) <b>[1, 2006.01]</b>      |
| 15/02        | • Details, accessories, or equipment peculiar to furnaces of these types <b>[1, 2006.01]</b>  | 17/02        | • specially designed for laboratory use <b>[1, 2006.01]</b>   |
| 15/04        | • • Casings; Supports therefor <b>[1, 2006.01]</b>  | <b>19/00</b> | <b>Combinations of different kinds of furnaces that are not all covered by any single one of main groups F27B 1/00-F27B 17/00</b> <b>[1, 2006.01]</b> |
| 15/06        | • • • Arrangements of linings <b>[1, 2006.01]</b>   | 19/02        | • combined in one structure <b>[1, 2006.01]</b>   |
| 15/08        | • • Arrangement of devices for charging <b>[1, 4, 2006.01]</b>  | 19/04        | • arranged for associated working <b>[1, 2006.01]</b>   |
| 15/09        | • • Arrangement of devices for discharging <b>[4, 2006.01]</b>  | <b>21/00</b> | <b>Open or uncovered sintering apparatus; Other heat-treatment apparatus of like construction</b> <b>[1, 2006.01]</b>                                 |
| 15/10        | • • Arrangements of air or gas supply devices <b>[1, 2006.01]</b>   | 21/02        | • Sintering grates or tables <b>[1, 2006.01]</b>  |
| 15/12        | • • Arrangements of dust collectors <b>[1, 2006.01]</b>   | 21/04        | • Sintering pots or sintering pans <b>[1, 2006.01]</b>  |
| 15/14        | • • Arrangements of heating devices <b>[1, 2006.01]</b>   | 21/06        | • Endless-strand sintering machines <b>[1, 2006.01]</b>   |
| 15/16        | • • Arrangements of cooling devices <b>[1, 2006.01]</b>   | 21/08        | • Details, accessories, or equipment peculiar to sintering or like apparatus <b>[4, 2006.01]</b>  |
| 15/18        | • • Arrangements of controlling devices <b>[1, 2006.01]</b>   | 21/10        | • • Arrangement of devices for charging <b>[4, 2006.01]</b>   |
| 15/20        | • • Arrangements of monitoring devices, of indicators, of alarm devices <b>[1, 2006.01]</b>   | 21/12        | • • Arrangement of devices for discharging <b>[4, 2006.01]</b>  |
|              |   | 21/14        | • • Arrangement of controlling, monitoring, alarm or like devices <b>[4, 2006.01]</b>   |