

Rooftile standards main things:

BS EN 490:2011

- **5.2.1 Hanging length and squareness** -Tile hanging length (regular front edge)  $\pm 4$ mm from declared value. BS EN 491:2011 5.2
- Squareness for tiles  $< 4$ mm (between  $l_2$  and  $l_3$ ). BS EN 491:2011 5.2.2.1
- Neither of these apply for irregular front edge tiles.
- **5.2.2.2 Interlocking tiles (cover width)** – the mean cover width shall be  $\pm 5$ mm of declared value. BS EN 491:2011 5.3.3.1
- **5.2.2.3 non-interlocking tiles (cover width)** – the mean cover width shall be  $\pm 3$ mm of declared value. BS EN 491:2011 5.3.3.2
- **5.2.3 Flatness** -  $< 3$ mm or  $< cw/100$  to the nearest mm (whichever is greater) BS EN 491:2011 5.4
- **5.3 Mass** -  $\pm 0.2$ kg for tiles  $< 2$ kg declared mass,  $\pm 10\%$  for tiles  $> 2$ kg declared mass. BS EN 491:2011 5.5.
- **5.5 Mechanical resistance (transverse strength)**

Table 1 — Minimum transverse strength  $F_{min}$  of tiles

| Property       | Interlocking tiles |            |                                        |            |                  |            | Non-interlocking tiles |
|----------------|--------------------|------------|----------------------------------------|------------|------------------|------------|------------------------|
|                | Profiled           |            |                                        |            | Flat             |            |                        |
| Profile depth  | $d > 20\text{mm}$  |            | $20\text{ mm} \geq d \geq 5\text{ mm}$ |            | $d < 5\text{mm}$ |            |                        |
| $c_w$ (mm)     | $\geq 300$         | $\leq 200$ | $\geq 300$                             | $\leq 200$ | $\geq 300$       | $\leq 200$ |                        |
| $F_{\min}$ (N) | 2 000              | 1 400      | 1 400                                  | 1 000      | 1 200            | 800        | 550                    |

- Also see table 7.3
- Tiles tested  $< 28$  days shall be deemed to conform if they reach  $> 80\%$  of values specified in table 1, if it is proven they will reach the figures at 28 days. BS EN 491:2011 5.6
- For interlocking tiles between 200mm and 300mm, min transverse strength shall be determined by linear interpolation.
- **5.6 Water impermeability** – underside of the tiles may show drops of water, but no drops shall fall before completion of the test. BS EN 491:2011 5.7.
- Fittings (other than valley tiles) not required to be tested provided they conform to 5.2.4 and 5.7.2.
- **5.7 Durability** (Freeze thaw)– after testing to EN 491:2011 5.8
  - 28 days old minimum age, conditioned for a further 3 days, freeze/thaw cycles take place over a further 2 days. Samples are then stored for 7 days before water impermeability test, and then another 7 days storing before transverse strength testing.
  - Tiles shall conform with 5.6 and 5.5
  - Fittings shall not be broken, separated, or cracked
  - Valley tiles shall conform to 5.8
- **5.8 Nib Support** – Tile nib shall support the tile in the test position so that it doesn't fall. BS EN 491:2011 5.9.
- **5.9.1.2.1** – Tiles and fittings covered by this European Standard meet the requirements for external fire performance without the need for testing, providing that: they satisfy the provisions of Commission decision 96 and any external coating shall be inorganic or have a gross calorific potential  $< 4.0 \text{ MJ/m}^2$  or a mass  $< 200 \text{ g/m}^2$ .
- **5.9.2** – Fire classification

- **5.10 Release of dangerous substances** – For products used within the European Economic Area, see Annex ZA, Note to ZA.1.
- **6 AVCP**
- **6.1 General** – Compliance of roofing tile or fitting demonstrated by initial type testing and factory production control. Tiles and/or fittings may be grouped into families when a given characteristic/s are common within a family.
- **6.2 Type testing and 6.3 FPC** – All characteristics in Table 2 shall, where relevant, be subject to initial type testing

**Table 2 — Sampling plans**

| Test                          | Clause reference | Test method<br>(EN 491:2011, Clause reference) | Type test                    | Factory Production Control tests |                            |
|-------------------------------|------------------|------------------------------------------------|------------------------------|----------------------------------|----------------------------|
|                               |                  |                                                | Sample size                  | Sample size                      | Minimum frequency          |
| Hanging length and squareness | 5.2.1            | 5.2                                            | 3                            | 3                                | 1 per 7 days of production |
| Dimensions of fittings        | 5.2.4            | Coordinated fittings only                      | 3                            | 3                                | 1 per 7 days of production |
| Cover width                   | 5.2.2            | 5.3                                            | 11                           | 11                               | 1 per 7 days of production |
| Flatness                      | 5.2.3            | 5.4                                            | 3                            | 3                                | 1 per 7 days of production |
| Mass                          | 5.3              | 5.5                                            | 3                            | 3                                | 1 per 7 days of production |
| Transverse strength           | 5.5              | 5.6                                            | 3                            | 3                                | 1 per day of production    |
| Impermeability                | 5.6              | 5.7                                            | 3                            | 1                                | 1 per 7 days of production |
| Freeze/thaw                   | 5.7              | 5.8                                            | 3                            | Not to be tested                 | -                          |
| Nib support                   | 5.8              | 5.9                                            | 3                            | Not to be tested                 | -                          |
| Fire tests                    | 5.9              | EN 13501-1 and/or EN 13501-5 (where required)  | See the relevant test method | Not to be tested                 | <sup>a</sup>               |

<sup>a</sup> For coated products, the manufacturer shall control the composition and rate of application of the coating system.

- **7.3 Compliance** – If one tile or fitting does not meet the requirements then a second sample of 10 tiles or fittings (11 for cover width) shall be taken. All of these shall meet the requirements. If one of the second sample fails, then the products being evaluated shall be deemed not to satisfy the requirements of this standard
- **8 Designation system** – 8.1 tiles, 8.2 fittings.
- **9 Marking and labelling** – Tiles shall be marked with the name of the manufacturer or a TM or other equivalent means of identification.
- **10 Documents** - The following shall be indicated on the delivery not or supplier's certificate:
  - name or tm of the manufacturer
  - country of origin and (optionally) the works
  - EN 490
  - Name and colour of the product

- **Annex A** – The following surface characteristics are permissible:
  - Superficial, non-continuous cracks on unexposed surfaces or fitting which are the result of the method of production.
  - Scratches and abrasions caused by packing, loading and transport; providing they do not prejudice the other quality requirements.
  - Under the influence of natural weathering, changes in colour and appearance may occur.
  - Tiles and fittings may show slight efflorescence; it does not change the other quality requirements.
- **Annex C** – Tiles and fittings shall be capable of being fixed to the roof or wall structure, or another component, by mechanical fasteners and fixings.
- **Annex D.4 Sampling for FPC** – when the samples is to provide tiles of fittings for more than one test, the total number shall be collected together and then divided by taking products from different parts of the total sample.
- **Annex ZA.2.2 Declaration of performance (DoP)**