



Kitemark[®] Licence

No. KM 20173

The British Standards Institution hereby grants to:

**Naylor Drainage Limited
Clough Green
Cawthorne
Barnsley
S75 4AD
United Kingdom**

In respect of:

BS EN 295

Vitrified clay pipes & fittings & pipe joints for drains and sewers

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For and on behalf of The British Standards Institution:

David W. Ford, Executive Director, Healthcare & Testing Services

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**BS EN 295 –
Vitrified clay pipes and fittings and joints for drains and sewers.**

GENERAL:

PIPES AND FITTINGS DETAILED IN THIS SCHEDULE MAY BE SUPPLIED WITH OR WITHOUT SOCKETS. PIPE DIAMETERS ARE DESCRIBED BY NOMINAL BORE (DN) SIZE AND CRUSHING STRENGTHS (FN) AND INCLUDE LENGTHS UP TO AND INCLUDING 2.0 METRES.

PART 1 - REQUIREMENTS FOR VITRIFIED CLAY PIPES AND FITTINGS.

A - PIPES

1. SOCKET CONTROLLED JOINTING SYSTEM D KNOWN AS DENSEAL

| NOMINAL SIZE DN | CRUSHING STRENGTH (FN) kN/m |
|----------------------------|--|
| 100 | 34 |
| 150 | 34 |
| 200 | 40 |
| 225 | 36 |
| 250 | 40 |
| 300 | 48 |
| 400 | 64 |
| 450 | 54 |
| 500 | 60 |
| 600 | 72 |

2. SOCKET CONTROLLED JOINTING SYSTEM N KNOWN AS DENSEAL

| NOMINAL SIZE DN | CRUSHING STRENGTH (FN) kN/m |
|----------------------------|--|
| 150 | 40 |
| 200 | 48 |
| 250 | 60 |
| 300 | 72 |
| 375 | 45 |
| 375 | 64 |
| 400 | 64 |
| 450 | 72 |
| 500 | 80 |
| 600 | 96 |



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PART 1 A - PIPES - continued

3. SPIGOT CONTROLLED JOINTING SYSTEM G KNOWN AS DENSLEEVE

| NOMINAL SIZE DN | CRUSHING STRENGTH (FN) kN/m |
|----------------------------|--|
| 100 | 34 |
| 150 | 34 |
| 150 | 40 |
| 200 | 56 |
| 225 | 45 |
| 250 | 70 |
| 300 | 72 |

4. SPIGOT CONTROLLED JOINTING SYSTEM KNOWN AS SYSTEM 2000

| NOMINAL SIZE DN | CRUSHING STRENGTH (FN) kN/m |
|----------------------------|--|
| DN600 only | 72 |

5. SPIGOT CONTROLLED JOINTING SYSTEM KNOWN AS DENLOK

| NOMINAL SIZE DN | CRUSHING STRENGTH (FN) kN/m |
|----------------------------|--|
| 150 | 64 |
| 200 | 64 |
| 225 | 54 |
| 250 | 50 |
| 300 | 60 |
| 350 | 70 |
| 375 | 45 |
| 400 | 64 |
| 450 | 54 |
| 500 | 60 |
| 600 | 57 |



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B - FITTINGS

PIPELINE CONNECTIONS OF ALL SIZES UP TO AND INCLUDING DN 500

| FITTINGS GROUP | NOMINAL LENGTH | ANGLE OF CURVATURE OF BRANCH ANGLE DEGREES |
|---|-----------------------------|---|
| TAPER AND SPLAY PIPES | UP TO AND INCLUDING 1.0m | --- |
| ACCESS AND INSPECTION PIPES AND CHAMBERS CHANNELS AND TAPER CHANNELS | UP TO AND INCLUDING 2.0m | --- |
| BENDS*, TAPER AND REST | --- | 11¼, 15, 22½*, 30, 45*, 60, 75 & 90* |
| CHANNEL BENDS, ACCESS AND INSPECTION BENDS | --- | 10, 11¼, 15, 22½, 30, 45, 50, 60, 70, 90, 115, 140 & 165 |
| SADDLES AND OBLIQUE SADDLES | --- | 45 & 90 |
| JUNCTIONS* | UP TO AND INCLUDING 2.0m | 30, 45*, 60 & 90* |
| CHANNEL JUNCTIONS ACCESS JUNCTIONS | UP TO AND INCLUDING 2.0m | 30, 45, 60 & 90 |
| TAPER CHANNEL BENDS | --- | 11¼, 15, 22½, 30, 45, 60 & 90 |
| TRAPPED GULLIES, LOW BACK TRAPS, SYPHONS AND INTERCEPTORS | --- | |
| TRAPLESS GULLIES, HOPPERS AND RAISING PIECES | --- | |
| SADDLE FITTING JOINT | DN150 | |

*BENDS AND JUNCTIONS OF THESE ANGLES WILL NORMALLY BE SUPPLIED UNPERFORATED FOR USE WITH PERFORATED PIPELINES (DENLINE – BSEN295:PT5) THEY MAY BE PERFORATED IF SPECIFICALLY REQUESTED.

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C - FLEXIBLE MECHANICAL JOINTS

WHEN USED IN CONJUNCTION WITH THE PIPES AND FITTINGS COVERED BY THIS LICENCE, THE FOLLOWING JOINTS COMPLY WITH BS EN 295.

| TRADE NAME OF JOINT/FITTING | JOINTING SYSTEM | NOMINAL BORE | RELEVANT PART OF BS EN 295 |
|-----------------------------|-----------------|------------------|----------------------------|
| DENSEAL | SYSTEM D & N | DN 100 - DN 500 | PT 1 |
| DENSLEEVE | SYSTEM G | DN 100 - 300 | PT 1 |
| SYSTEM 2000 | SYSTEM 2000 | DN 600 | PT 1 |
| BAND-SEAL ¹ | BAND-SEAL | DN 100 - DN 1000 | PT 4 |
| DENLOK | DENLOK | DN 150 - DN 600 | PTs 1 & 7 |

PART 5 - PERFORATED VITRIFIED CLAY PIPES AND FITTINGS² - DENLINE RANGE.

| NOMINAL SIZE DN | CRUSHING STRENGTH KN/m | PERFORATION AREA TYPE |
|-----------------|------------------------|-----------------------|
| 75 | 20, 22 & 28 | A |
| 100 | 20, 22 & 28 | A |
| 125 | 20, 22 & 28 | A |
| 150 | 20, 22 & 28 | A |
| 200 | 24 | A |
| 225 | 28 | A |
| 250 | 30 | A |
| 300 | 36 | A |
| 375 | 38 | A |
| 400 | 38 | A |
| 450 | 43 | A |
| 500 | 48 | A |

¹ This range includes adaptor couplings; Type 1; 2A & B; bushes.

² Fittings as per Section B on Page 4



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PART 7 - VITRIFIED CLAY PIPES AND JOINTS FOR PIPE JACKING – DENLOK RANGE.

| NOMINAL SIZE DN | MINIMUM CRUSHING STRENGTH(kN/m) CLAUSE 4.8.1 | DESIGN JACKING LOAD (kN) CLAUSE 4.8.4 |
|--------------------|--|--|
| 150 | 64 | 365 |
| 150 | 64 | 400 |
| 200 | 64 | 700 |
| 225 | 54 | 715 |
| 225 | 81 | 715 |
| 250 | 80 | 1630 |
| 300 | 96 | 1875 |
| 350 | 70 | 2429 |
| 400 | 112 | 3150 |
| 450 | 108 | 3250 |
| 500 | 100 | 3400 |
| 525 | 105 | 3560 |
| 600 | 96 | 4520 |
| 700 | 96 | 5000 |

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