

## **7. QC PLANS (METHOD OF STATEMENT)**

# WORK INSTRUCTION

## INSTRUCTIONS FOR TESTING OF FIRED PIPES AND FITTINGS

1 **PURPOSE:**

To describe the method of collecting and testing of fired pipes and fittings against EN 295 requirements.

2 **SCOPE:**

Testing and inspection of fired ware before jointing.

3 **REFERENCE:**

As per ISO 9001 (2008) Clause 8.2.4  
Quality Manual 8.2.4

4 **RESPONSIBILITY:**

Quality Control Inspector



5 **PROCESS REFERENCE:**

5.1 Sample pipes and fittings shall be collected for testing and inspection to the requirements of EN 295 after unloading and before jointing.

5.2 **FOR ROUTINE TESTING:**

5.2.1 **Continuous Kilns** - (Tunnel Kilns) - not greater than the production drawn from one kiln, within a week period, sub-divided according to nominal size and strength class.

5.2.2 **Intermittent Kilns** - (Shuttle Kilns) - total production from one kiln per firing, sub-divided according to nominal size and strength class.

5.2.3 After the correct number of pipes and fittings have been collected the following checks and inspections will be carried out, Filling the correct form in one each individual test, check and inspection as been carried out.

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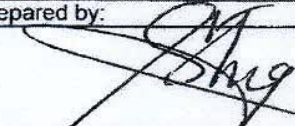

**5.3 PIPES:**

- 5.3.1 Minimum Bore - The minimum bore will be checked against Table 1 of page 5 EN 295-1, "FM:QC:022".
- 5.3.2 Length - will be checked as per the requirement of 2.3 on Page 5 of EN 295-1. " FM:QC:022".
- 5.3.3 Squareness of ends - will be checked as per the requirements of 2.4 on page 5 EN 295-1 and using the equipment shown in Section 2 on Page 8 of EN 295-3, "FM:QC:022".
- 5.3.4 Straightness - Deviation from straightness will be checked against Table 3 on page 6 of EN 295-1, using the method and dimensions shown in Figure 2 on Page 8 of EN 295-3 "FM:QC:022".
- 5.3.5 Crushing Strength - prior to crushing strength test sample pipes or pipe section shall be pre-conditioned as per Table 1 on Page 9 of EN 295-3. After the crushing test has been carried out, " FM:QC:023" will be completely filled in.
- 5.3.6 Water tightness of pipes - shall be checked for water tightness as per Clause 2.14 on Page 7 of EN 295-3 using the method in Section 9 on Page 16 of EN 295-3 "FM:QC:004".
- 5.3.7 Air tightness of pipes - shall be checked for air tightness as per clause 2.15 of EN 295-2 using the method in Section 10 of EN 295-4 "FM:QC:005".

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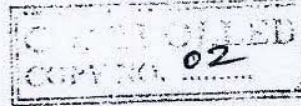
**6 FITTINGS:**


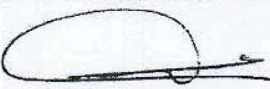
- 6.1 All pipe fittings will be sample as per the method used for pipes.
- 6.2 All types of fittings will be checked for dimensional and performance requirements as per EN 295-1 clause:
  - 2.2 Minimum bore
  - 2.3 Length
  - 2.6 Water seal

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- 2.7 Angle of curvative and radius of bends
- 2.8 Branch of junctions
- 2.9 Impermeability

6.3 The test are required to be carried out on every type of fittings as shown in Table 2 on page 8 of EN 295-2.



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# WORK INSTRUCTION

## INSTRUCTIONS FOR TESTING OF JOINTED PIPES AND FITTINGS

1 **PURPOSE:**

To describe the method of checking and testing of jointed pipes and fittings to EN 295 requirements.

2 **SCOPE:**

Checking and testing of all jointed ware.

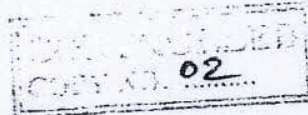
3 **REFERENCE:**

As per ISO 9001 (2008) Clause 8.2.4  
Quality Manual 8.2.4

4 **RESPONSIBILITY:**

Quality Control Inspector

5 **PROCESS REFERENCE:**



- 5.1 Sample pipes and fittings shall be collected for testing and inspection to the requirements of EN 295 after jointing.
- 5.2 Test shall be carried out to check the jointability of pipes and fittings.
- 5.3 Two pipes which are flexibly jointed shall be placed on test apparatus which support them in such a way that they can move in relation to each other to the limits required. The tests with water at a temperature not exceeding 30 degrees centigrade; expel all air before the test pressure is applied.

6 **WATER TIGHTNESS JOINTS:**

- 6.1 **Internal Pressure:** The joint assembly shall withstand a pressure of 50 kPa (0.5 bar) for 15 minutes, without visible leakage.

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- 6.2 **Angular Deflection:** One pipe in a joint assembly shall be deflected by the method described in Clause 18 of EN 295-3 "Deflection" is defined as the distance from the extended longitudinal axis of one pipe to the longitudinal axis of the other pipe at its free end.

Fully engage the pipes in the joint axially align them and then separate them on the longitudinal axis with their ends restrained to prevent further longitudinal movement. The separation shall be 5 mm for pipes of less than 300 DN. For pipes of 300 DN and larger the separation shall be the minimum to permit the deflection given in Table 9 of EN 295-1 to be applied.



When so deflected the joint shall withstand a constant pressure of 50 kPa (0.5 bar) for 5 minutes without visible leakage.

- 6.3 **Shear Resistance** - A joint assembly shall be tested by the methods describe in Clause 18 of EN 295-3. " The level of external loading to be applied to one pipe to produce a shear load at the joint assembly of 25 N per mm of nominal size".

- 6.4 **Invert Conformity:** When tested in accordance with Clause 19 of EN 295-3. " The difference in invert levels  $\Delta$  a joint for assemblies shall be determined using dimensions Asp and am" (Invert Conformity [top marked pipes]).

The difference in invert levels of adjacent pipes and fittings shall not exceed the following values:

- 5mm up to and including DN 300
- 6mm for greater than DN 300 up to and including DN600
- 1% of the nominal size in mm above DN 600

- 6.5 **Joint Intechangeability:** Joint dimension d4 shall be measured on 3 samples for each nominal size and joint design at six monthly intervals. These measurments shall be checked againts the requirements of Table 10 EN 295-1, Page No. 10.

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