

JSCE-E 701-2010

Test method for the resistance of metal sheath for prestressed concrete under concentrated loading (draft)

1 Scope

This standard specifies the requirements for carrying out the test for the resistance under concentrated loading of a metal sheath used to form a duct for inner cables of prestressed concrete structures. The metal sheath considered in this standard uses cold-rolled steel plate, zinc coated steel plate or a metal material with the same or higher performance than those.

2 References

By being cited herein, the following standards constitute part of the definition of this standard. This standard is based on the latest versions of these cited documents.

JIS G 3109 Steel bars for prestressed concrete

JIS G 3112 Steel bars for concrete reinforcement

JIS G 3536 Steel wires and strands for prestressed concrete

3. Definitions

The following terminology is used in this standard:

Sheath specimen: Specimen made by cutting the sheath

4 Outline of test

4.1 Purpose of test

This test method is used to confirm the resistance under concentrated loading of a metal sheath used for PC steel bars specified by JIS G 3109, and PC steel wires and strands specified by JIS G 3536.

4.2 Conditions of testing room

The standard temperature of the testing room is 23 ± 5 °C unless otherwise specified. The relative humidity is not specified.

4.3 Specimens

The number of sheath specimens is three unless otherwise specified. The length of the sheath specimen is at least four times as large as the inner diameter (nominal diameter) of the sheath.

4.4 Test apparatus

The testing machine should be such that can measure loads with accuracy with a margin of error of no more than $\pm 5\%$.

5 Test method

a) Put on a plane a sheath specimen with a round rebar or a steel bar with a diameter of 0.8 times the inner diameter of the sheath inserted. Place a round rebar (JIS G 3112) of 9-mm diameter on the sheath specimen in the perpendicular direction of the sheath specimen, and apply a load of 1kN for 30 seconds (see Fig.1). The load does not include the mass of a round rebar.

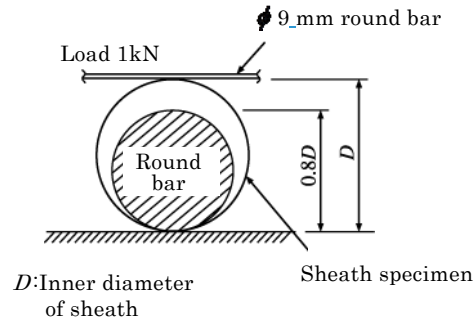


Fig.1 Outline of test

b) After the test described in a), embed the bottom end of the sheath specimen into a stand block of rubber or clay as shown in Fig.2 so that cement paste or water would not leak from the embedment position. Pour cement paste⁽¹⁾ with a water-cement ratio of 50% up to 5 to 10 mm from the top end. Then check if there is a leak of cement paste and water for 30 minutes after pouring. The temperature of poured cement paste is not specified.

Note ⁽¹⁾: Ordinary Portland cement is used for the cement of the cement paste. No additive is used for the cement paste. Cement paste should be mixed by the same method as for the grout. The cement paste should be poured into the sheath specimen promptly after mixing.

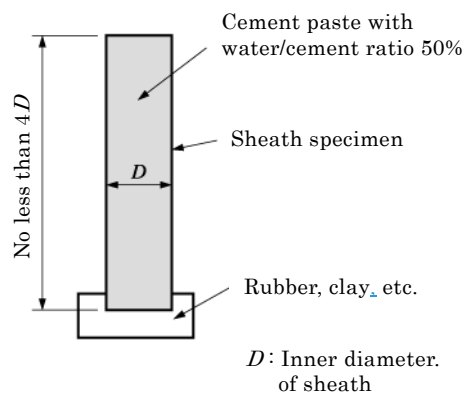


Fig.2 Sheath specimen setting method

6 Report

6.1 Compulsory reporting

The report must provide the following information:

- a) Date of test
- b) Name, type and capacity of testing machine
- c) Material, inner diameter, outer diameter, shape and brand of sheath

- d) Number of sheath specimens
- e) Temperature of testing room and poured cement paste at pouring
- f) Quality of cement paste
- g) Leak condition of cement paste and water

6.2 As-needed reporting

The report should provide the following information where relevant:

- a) Name of testing organization
- b) Relative humidity of testing room