JSCE-E 707-2010
Test method for the leak tightness for plastic sheath of prestressed concrete (draft)

1 Scope

This standard specifies the requirements for carrying out the test to check the water leak tightness of a plastic sheath used to form a duct to arrange inner cables of prestressed concrete structures. The plastic sheath considered in this standard should use high-density polyethylene or a material with performance not lower than that of high-density polyethylene.

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 B 7505-1 Aneroid pressure gauges - Part 1: Bourdon tube pressure gauges

JIS G 3109 Steel bars for prestressed concrete

JIS G 3536 Steel wires and strands for prestressed concrete

JSCE-E 705 Test method for resistance of plastic sheath for prestressed concrete under uniform compressive loading (draft)

JSCE-E 706 Test method for flexibility of plastic sheath for prestressed concrete (draft)

3 Definitions

The following terminology is used in this standard:

Sheath specimen: specimen made by cutting the sheath or specimen of the sheath joint part

4 Outline of test

4.1 Purpose of test

The water leak tightness under hydrostatic pressure of a plastic sheath used for PC steel bars specified by JIS G 3109 and PC steel wires and PC steel strands specified by JIS G 3536 is examined.

4.2 Conditions of testing room

The standard temperature of the testing room is 23 ± 5 ^{o}C unless otherwise specified. The relative humidity is not specified.

4.3 Specimens

The specimen is either a part of the sheath or a sheath joint part. For the sheath specimen, testing for the resistance under concentrated loading (JSCE-E 704) or under uniform compressive loading (JSCE-E 705) should have been completed. In the case of a test for resistance under concentrated loading, the steel bar should be removed. The number of specimens is three for the test for the resistance under concentrated loading and under uniform compressive loading, or six in total.

4.4 Test apparatus

The test apparatus should be such that can apply hydraulic pressure of no less than 0.05 MPa([1]) either by external hydraulic pressure or by internal hydraulic pressure for 5 minutes continuously to examine the water leak tightness of the sheath. The water temperature should be set at the room temperature.

An outline of the apparatus is shown in Fig.1 for the case of external hydraulic pressure and in Fig.2 for the case of internal hydraulic pressure. The pressure gage used should have performance not lower than that specified in JIS B 7505-1.

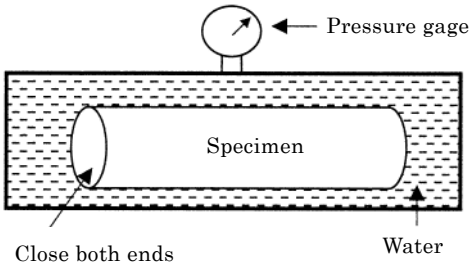

Fig.1 Outline of applying external hydraulic pressure (example)

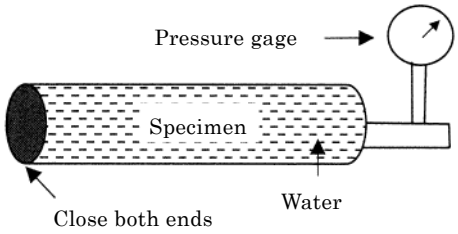

Fig.2 Outline of applying internal hydraulic pressure (example)

5 Test method

The test should be conducted according to the procedure described in 5.1 or 5.2.

5.1 Test by external hydraulic pressure

a) Both ends of the specimen either of the sheath itself or sheath joint part are properly closed to immerse the specimen into water.

b) An external hydraulic pressure of 0.05 MPa is applied to the specimen by a proper method. The external hydraulic pressure may be applied by reducing the internal pressure of the specimen and adjusting to give the same pressure. The pressured condition should be kept for 5 minutes.

c) After the lapse of 5 minutes, the condition of water leak of the sheath specimen is checked.

5.2 Test by internal hydraulic pressure

a) Water is poured into the specimen either of the sheath itself or sheath joint part after closing both ends of the specimen properly.

b) An internal hydraulic pressure of 0.05 MPa is applied to the specimen by a proper method. The pressured condition should be kept for 5 minutes.

c) After the lapse of 5 minutes, the condition of water leak of the sheath specimen is checked.

6 Report

6.1 Compulsory reporting

The report must provide the following information:

a) Date of test

b) Method to apply hydrostatic pressure

c) Type and accuracy of pressure gage

d) Material, inner diameter, outer diameter, shape and brand of sheath and joint part

e) Number of specimens

f) Temperature of testing room and water

g) Condition of water leak

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