

KES

Method of High Temperature Hardness Test

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1. Scope of Application

This standard determines the high temperature hardness testing method for metal, ceramics and plastics, etc. from the room temperature to 1600°C.

2. Test Instruments

Argon Gas

Cooling Water

High Temperature Hardness Tester

3. High Temperature Hardness Tester

High Temperature Hardness Tester consists on vacuum system, hardness check system and heating system.

High Temperature Hardness Tester shall be maintained always in vacuum although it is not working. Otherwise, as the water in the air condenses on the metal surface of vacuum chamber, it will take more time to vacuum for the next test, and affect on the system inside.

The testing method from the beginning to the end for making one testing product shall be as following.

3.1 Choice for Penetrator

There are diamond and sapphire for Penetrators for high temperature hardness tester.

Use diamond for the temperature lower than 600°C, and sapphire for other than that.

3.2 Specimen Making ~ Installation

- (1) Choose the part to be checked on the product, and make it 5mm x 5mm x 10mm size.
- (2) Polish it after that.
- (3) It shall be installed in vacuum chamber. Open the gas-exhaling valve to make the chamber normal. (Close the valve after it becomes normal.)

- (4) When it becomes normal, open the upper lid of chamber, and put it on the left table.
- (5) Inside the chamber, the specimen holder in the high-temperature heating furnace is connected on the thermocouple.
Then, by opening the cock beside the heating furnace, put out the specimen holder, and change it adjusting the horizontality. (consider the + and – of heat-transffering area)
- (6) The installation shall be done by closing the upper lid after change and installation.

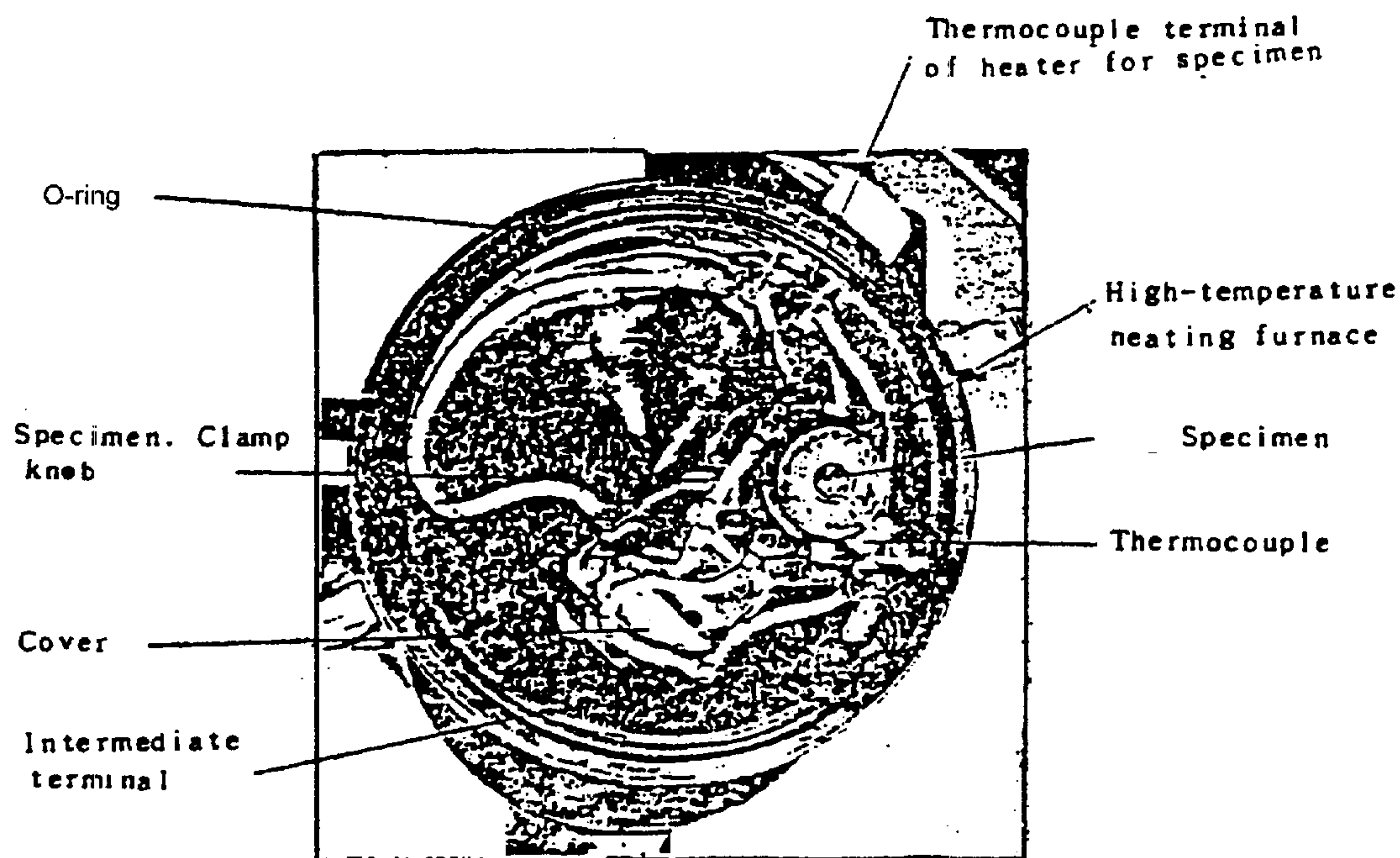


Figure 1. Inside of vacuum chamber

3.3 Vacuum

Vacuum inside the installed chamber shall be maintained. The order to vacuum shall be as following.

- (1) Turn the main switch on.
- (2) Supply cooling water (1.5 ~ 2 ℓ / min).