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Permeable sintered metal materials - Determination of average pore size of medium flow

可渗透性烧结金属材料 中流量平均孔径的测定

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Permeable sintered metal materials - Determination of average pore size of medium flow

1 Scope

This Standard specifies the method for determining the average pore size of medium flow of permeable sintered metal materials, including the requirements for samples, instruments, test procedures, test data processing and test report.

This Standard applies to the determination of average pore size of medium flow of permeable sintered metal materials.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 5163, Sintered metal materials, excluding hardmetals - Permeable sintered metal materials - Determination of density, oil content, and open porosity

GB/T 5249, Permeable sintered metal materials - Determination of bubble test pore size

GB/T 31909, Permeable sintered metal materials - Determination of the air permeability

3 Principle

The average pore size of medium flow is an extension and combination of the bubble test pore size and the gas permeability test method. Call the sample that is not wetted by liquid dry sample, and the sample that is wetted by liquid wet sample.

First, test the flow-differential pressure curve of the dry sample; then, use liquid to completely soak the sample; test the flow-differential pressure curve of the wet sample. During the test of the wet sample, when the first bubble appears, continue to increase the gas pressure; as the liquid that is immersed in the pore is gradually pushed out, the gas flow rate will gradually increase. When the differential pressure through the sample reaches a certain value, the gas flow

to different flow rates. Generally, depending on the flow range of the instrument, roughly divide the flow rate into at least 5 points within its range, to respectively measure the corresponding differential pressure values.

6.2 Measurement of wet sample flow-differential pressure

According to the requirements of GB/T 5249, soak the sample; place the soaked sample on the fixture and seal. For the convenience of observation, pour a small amount of soaking liquid on the surface of the clamped sample; the height of the liquid level is less than 1 mm. Then, open the control valve; ventilate slowly; gradually increase the gas flow. When the flow meter of the lowest range has a display value, record the corresponding pressure; continue to increase the gas flow. At this time, the differential pressure value also increases. Record the differential pressure value corresponding to each flow value, until the liquid that soaks the sample is completely blown dry by gas.

7 Test data processing

According to the recorded data, draw the sample dry curve (straight line) and wet curve; then, draw the angle bisector of the dry curve and the abscissa (differential pressure). The intersection of the angle bisector and the wet curve is the medium flow differential pressure point. Read the differential pressure value at this point on the graph, which is the medium flow differential pressure value. See Figure 3.

Notes:

Q -- the gas flow through the sample;

p -- the differential pressure that is generated after the gas passes through the sample.

Figure 3 -- Diagram of flow-differential pressure curve

After determining the medium flow differential pressure value, calculate the average pore size of medium flow according to Formula (1). When the average

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