

EDS

Engineering,
GM DAEWOO Auto & Technology
Standards

METHOD OF TEST PIECE PREPARATION FOR SINTERED MATERIALS

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1. PURPOSE

The inspection of internal structure of sintered materials aims at finding out types and dimensions of the used powder, distribution of blowholes by portion, shapes of blowholes, microcracks, etc. as well as microstructure. As the preparation of test piece for this test varies considerably according to appliances used or each person's skill, technical details cannot be standardized. But general method of test piece preparation shall be specified so that an exact inspection of internal structure is performed.

2. SCOPE

This standard specifies the method of test piece preparation for sintered materials and applies mainly to sintered ferrous materials.

3. TEST METHOD

3.1. Sampling of test piece

3.1.1. When general inspections of internal structure are performed, the test piece shall be cut along the section parallel to the rolling direction. In case of measuring surface hardening depth of gears, however, it may be cut in transverse direction.

3.1.2. In case of fractured sample, it shall be observed in the vicinity of the fractured surface or fracture origin if possible.

3.1.3. In case of newly-developed products, it is desirable to examine every part equally.

3.2. Sectioning

3.2.1. The test piece shall be cut by means of a soft abrasive wheel or low-speed diamond wheel.

3.2.2. The appropriate dimensions of test piece is 12 × 12 mm.

3.2.3. The cut section shall be cooled by cooling water containing rust preventive as it is likely to be overheated when sectioned.

3.3. Washing

3.3.1. In the machining of the sectioned test piece, cooling water is contaminated during sectioning, oil during machining or heating, lubricant during sizing, and rust preventive during barreling, therefore the contaminants shall be removed.

3.3.2. In case the quantity of contamination is small and heating is allowed, the contaminants shall be evaporated by heating test sample on a heating plate for one minute or more until its color changes to light blue. It shall be performed in hood.

3.3.3. When heating is not allowed, the contaminants shall be removed by the soxhlet extractor (Refer to ASTM B