

EDS

Engineering,
GM DAEWOO Auto & Technology
Standards

ETCHING TEST ON CARBURIZED AND/OR HEAT TREATED PARTS FOR SURFACE TEMPER INSPECTION

EDS-T-7175

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1. PURPOSE

This standard aims at specifying methods of inspecting the over-heated or burned-out areas of carburized or heat-treated parts during grinding by etching them.

2. TEST EQUIPMENT AND REAGENT

- 2.1. Tank for washing solvent (tank 1) : Trichloro ethan
- 2.2. Tank for etching liquid, nitric acid-alcohol (tank 2) : Mixture of max. 4% nitric acid (69~71%) in volume, ethyl alcohol and methyl-alcohol (C.P.)
- 2.3. Tank for washing water (tank 3) : Tap water tank with drainage
- 2.4. Tank for etching liquid, hydrochloric acid-water (tank 4) : Mixture of hydrochloric acid (36~38%) and water (10% in volume)
- 2.5. Tank for washing water (tank 5) : Tap water tank with drainage
- 2.6. Tank for pre-inspection (tank 6) : Ethyl alcohol or methyl-alcohol (C.P.)
- 2.7. Inspection : Proper ventilation and illumination

3. TEST CONDITIONS

Unless specified otherwise, test samples shall be exposed to temperature of $23^{\circ}\text{C} \pm 2\text{K}$ and relative humidity of $50 \pm 5\%$ for 24 hours at least prior to test.

4. TEST PROCEDURES

- 4.1. Extract oil for the parts from trichloro ethan (tank 1).
(Note) Oil film shall be completely removed for uniform etching of the portion to inspect. Otherwise, visual inspection becomes impossible due to irregular etching and spots.
- 4.2. Under $23 \pm 2^{\circ}\text{C}$, dip the sample into etching liquid, nitric acid-alcohol (tank 2) for 10~15 seconds or for required time.
- 4.3. Under $23 \pm 2^{\circ}\text{C}$, wash the sample with clean water in tank 3.
(Note) At washing, drain shall be made at the same time and proper measures shall be provided to prevent secondary corrosion or pollution by acid.
- 4.4. Dip the sample into etching liquid, HCl-water (tank 4) for a required time (generally 4~15 seconds depending on the parts and operator).