

EDS

Engineering,
GM DAEWOO Auto & Technology
Standards

METHOD OF RETAINED AUSTENITE MEASUREMENT FOR STEEL

EDS-T-7147

ISSUED DATE: 1994. 04. 01

REVISED DATE: 2006. 06. 19

VERSION: 2

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1. PURPOSE

This standard aims at helping test personnel perform the test in an appropriate method by describing the measuring method of retained austenite for steel.

2. SCOPE

This standard specifies the retained austenite measurement for quenched steel (whole quenching, surface hardening, etc.).

3. DEFINITIONS

3.1. Retained austenite: When quenching steel for hardening, austenite turns into martensite. In this case, some austenite does not turn into martensite and remains. It is called the retained austenite and appears white when etched. It causes deterioration of abrasion resistance in case it remains on surface due to its low hardness.

4. TEST PIECE

4.1. The test piece shall, as a rule, be taken from the product, and the one constructed from same material and with the same heat treatment may be used if necessary.

4.2. The number of test pieces shall be 3 or more for the initial approval, 1 or more for routine quality control.

5. TEST METHOD

5.1. The test piece shall be cut at right angles to the surface to be measured.

5.2. The cut surface shall be grinded and polished after mounting with resin.

5.3. The test piece shall be etched in 5% nitric-alcohol solution.

5.4. The quantity of the retained austenite shall be measured by 500 or more magnifications. In this case, it shall be determined in comparison with the attached Appendix or measured quantitatively using an appropriate image analyzer connected with the microscope.