

KES

Method of Measuring
Decarburized Depth for Steel

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Quoted Standard

Commentary

1. Scope of Application

This standard determines the method that measures the depth of steel part whose surface's carbon concentration is reduced due to hot working or heat processing and the decarburized depth with a microscope.

2. Terminology

(1) Decarburized Layer

Steel part whose surface's carbon concentration is reduced due to hot working or heat processing

(2) Total Decarburized Layer

Distance from the surface of decarburized layer to the part whose chemical or physical characteristic cannot be distinguished with the decarburized layer. (Chemical and physical characteristics here shall be judged by a microscope and hardness for each.)

(3) Ferrite Decarburized Depth

For the surface of steel, the depth from the surface to the layer that consists only on the ferrite created by decarburization.

(4) Decarburized Depth of Specific Carbon Residing Rate

Distance from the surface to the part that has a certain carbon residing rate (Residing carbon concentration rate for the ash carbon concentration)

This kind of carbon residing rate shall be judged by its structure.

(5) Practical Decarburized Depth

Distance from the surface to the part where you can get practically useful hardness.

3. Test Instruments

(1) Metal Microscope

- (2) Veacker's Hardness Tester
- (3) Ruler with mm
- (4) Processor for microscope specimen

4. Testing (Measuring) Method and Order

(1) Measuring Method by Microscope

- (a) After choosing the measuring part by comparing the product with the blueprint, cut the testing product.
- (b) Forming the testing product as its surface cut vertically is to be tested → paper grinding → polishing ; Make a specimen with this order.

[Here, be cautious with that the surface to be tested shall not be affected by hardness (Heat) when cutting and grinding. And, be cautious with that the surface to tested shall not become round.]
- (c) With an appropriate etching method according to steel types, etch the surface to be test. Judge the stated of decarburization by area rate of ferrite, pearlite or carburized part with a microscope. Measure the depth.
- (d) Magnifying rate shall be 100 ~ 400 times. Using an ocular with deciphering size (mm ruler) measure the decarburized depth.
- (e) This method shall be applied for the things that are in casted, forged and rolled normalizing and annealing state.
- (f) Decarburized depth can be measured by photographing the structure other than the item (d).