

# EDS

Engineering,  
GM DAEWOO Auto & Technology  
Standards

## METHOD OF HYDROGEN EMBRITTLEMENT INSPECTION FOR PLATED PRODUCTS

### EDS-T-7140

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## 1. PURPOSE

This standard aims at helping test personnel perform the test in an appropriate method by describing the method of hydrogen embrittlement test for plated products.

## 2. SCOPE

This standard specifies the test to confirm whether a dehydrogenation treatment(baking treatment) to remove the hydrogen embrittlement is performed or not for metal-plated bolts, nuts, screws and other products(HRC 35 or more).

## 3. DEFINITION

3.1. Hydrogen embrittlement: : The hydrogen molecules generated during plating remain in crystalline of base material and make the products brittle, thus causing brittle fracture by load during use afterwards.

3.2. Dehydrogenation treatment: : A treating method where the product is kept at 200°C or less for a long time to remove the hydrogen molecules which cause hydrogen embrittlement.

## 4. TEST PIECE

4.1. For the test piece, the product as it is shall be used.

4.2. Impurities and blowholes on the surface shall be removed with ultrasonic cleansing device prior to the test.

## 5. TEST METHOD

### 5.1. Method of using the paraffin oil

5.1.1. Fill a beaker with paraffin oil sufficiently enough to soak the product in and heat it to approx. 150°C using heater.

5.1.2. Soak the products in heated paraffin oil to examine whether blowholes are generated.

### 5.2. Method of applying the tightening torque

5.2.1. When the shank length(the length excluding head from whole length) of the bolt is 50mm or less.

- (1) After tightening the bolt to the specified tightening torque(MA), tighten it by approx. 60 ° additionally.
- (2) Examine the presence of cracks after 15 hours.

5.2.2. When the shank length(the length excluding head from whole length) is 50mm or more.

- (1) After tightening the bolt to the specified tightening torque(MA), tighten it by approx. 60 ° additionally.
- (2) For the shank length exceeding 50mm, tighten 1 ° additionally for each 1mm increase.
- (3) Examine the presence of cracks after 15 hours.