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Test method for ASTM D130 copper corrosion tester of petroleum products



Copper corrosion equipment for the determination of diesel oil, gasoline, lubricating oil or other petroleum products on the degree of corrosion of copper (this method involves flammable materials, operation should pay attention to safety)

Note: this method involves flammable materials, the operation should pay attention to the ignition point, flash point, the operation should pay attention to the safety of copper corrosion of the main components

一、 Water bath: to maintain the temperature required in the test $40,50100 + 1$ C, LED display temperature, key control

↩ Used to confirm the input value

↑ ↓ To raise and lower the number when setting the temperature

⇄ To change the number of digits when setting the temperature

二、 Test Bomb: according to the ASTM D130 standard for the production of

some oil testing (such as: aviation gasoline, etc.), there are rubber gaskets, to maintain good sealing

三、 Test tubes: according to the ASTM D130 standard for the production of some volatile oil testing (such as lubricating oil, etc.)

四、 Grinding fixture: grinding can be firmly clamped copper, and no damage to the edge.

五、 Observe the test tube and test tube fixing clip: at the end of the experiment, it can be more convenient to observe the corrosion of copper

六、 Sand paper and sand: 240 mesh, 600 mesh and other particles of different thickness of sandpaper

七、 Copper: electrolytic copper with a purity greater than 99.9%

八、 Standard: according to the standard color palette corrosion manufacturing ASTM D130 standard, the corrosion grade can refer to standard color plate corrosion of polished copper in oil after the oil to determine the corrosion of copper corrosion, standard color plate to avoid light preservation.

九、 Tubes observation: To observe the tube flat easy to observe color or signs of corrosion, except copper corrosion of equipment components, but also the need for filter paper, absorbent cotton, sample, washing solvent (at 50 DEG C, 3 hours a day to make any volatile copper, sulfur free hydrocarbon solvent can change, such as isooctane, petroleum ether etc.).

Copper preparation:

1, clamp copper, with relatively coarse sandpaper (mesh lower sandpaper thicker) to copper defects can be removed, the callback copper Clamping direction, six surfaces of the copper on all parts of the flaw and before grinding marks are removed, after grinding can be used filter paper to wipe quantitative metal scraps on copper, this can put a piece of copper into the washing solvent after cleaning and dry finish, you can also direct the final polishing, polishing of copper to take the tweezers or filter paper to take, can not touch.

2, with high mesh sandpaper dipped with copper or copper sand cotton surface grinding, grinding as far as possible along the long axis direction of copper grinding.

3, after the copper polished with cotton cloth to wipe away the metal scraps, copper wipe clean and put into the prepared sample

Test process:

1, sampling: take 30 ml of the sample into the test tube, the sample should be kept in a clean, dark glass bottle, the test tube to dry, clean

2, different samples are tested in different ways:

A, lubricating oil, solvent oil, kerosene: take 30 ml sample completely clear, no water or water containing suspended into clean, dry and with a test tube clamp test tube, will finally polished, clean the copper in the sample tube, the tube with a clamp tube into has maintained at 100. 1 C in a bath in the bath for 3 - 5 hours after the remove tube, check the copper.

B, aviation gasoline, jet fuel quantity: take 30 ml sample completely clear, no water or water containing suspended into clean, dry the tube, the tube carefully slid into the bomb, the bomb cap tightened, to completely put into the test bomb has maintained at 100 - 1 DEG C in the bath. Bath for 2 + 5 hours after laying test bomb, washed with tap water for a few minutes, open the bomb, remove tube, check the copper.

C, the amount of natural gasoline: take 30 ml sample completely clear, no water or water containing suspended into clean, dry the tube, the tube carefully slid into the bomb, the bomb cap tightened, to completely put into the test bomb has maintained at 40 - 1 DEG C in a bath for 2 + 5 small when in the

bath after removing the test bomb, washed with tap water for a few minutes, open the bomb, remove the tube, check sheet

D, diesel oil, fuel oil, gasoline car: take 30 ml sample completely clear, no water or water containing suspended into clean, dry and with a test tube clamp test tube, will finally polished, clean the copper in the sample tube, the tube with the tube into the clip has been maintained at 50. 1 C in a bath in the bath for 3 - 5 hours after the remove tube, check sheet

Copper check

1, the copper will be removed with tweezers, washing solvent can be used to wash the sample, you can also use a filter paper to wipe the sample on the copper, do not touch the copper

2, the copper into the flat observation tube, to avoid the holding of copper in the inspection and comparison to leave traces and dirty

3, the copper and corrosion standard color plate comparison, as far as possible to the copper and corrosion standard color plate on the light into 45 degrees u35282X refraction way hold, observe

4, determine the corrosion of the sample according to the classification of the standard color plate

Classification of corrosion standards

| Classification | Name | Description |
|----------------|------------------------|---|
| 1 | Mild discoloration | A light orange, almost as new as polished copper B deep orange |
| 2 | Moderate discoloration | A purple red B Lavender C with purplish blue or silver, or two are respectively covered in purple red on Multi color D Silver E brass or golden yellow |
| 3 | Deep discoloration | A magenta covered in brass on the color B has a red and green display of multi color, no gray |
| 4 | corrosion | A transparent black, dark grey or brown only with Malachite Green B graphite black or matte black C shiny black or black shiny black |

Judgment of corrosion:

- 1, when the copper plate is between the two adjacent standard color plate of the corrosion level, in accordance with the severity of the corrosion of the sample to determine the color
- 2, when the copper appears to be more than the standard color plate in the 1b of the orange is still deep, that the copper is still 1, but if there is a red, copper is judged to be level 2
- 3, grade 2 in purple copper may be mistaken for brass is completely covered with magenta color 3, in order to distinguish between these two levels, can be soaked in copper washing solvent, 2 there will be a deep orange, 3 color
- 4, the heating and leaching process, if dirty copper, need to re test
- 5, if the edge of the copper strip along the edge of the edge of a copper surface than most of the corrosion level of the corrosion level is higher, it is necessary to re test
- 6, if the repeated determination of the two results are not the same, re test, when the re test of the results of the two are still not the same, according to the severity of the corrosion to determine the sample size