vEN2.14MQ

User manual

MATinspired™ TK11 Chromium-6 Detection Test Kit

for surface contamination, dust particles, coatings and paint layers

Read this manual completely before performing a test, and follow the instructions described herein.

1. Introduction

Chromium-6 compounds, or 'chromium-6' in short, are harmful to health. A major application of these compounds is in anticorrosion paints.[1]

With this Chromium-6 Detection Test Kit, you can easily test if your surface contamination, dust particles, coatings or paint layers contain chromium-6. Surface contamination may occur, for example, when a (metal) surface is brought in contact with a lubricant followed by a heat treatment. Dust particles may be the result of processing steps such as welding, grinding or sanding. If these materials contain chromium-6, the test will give a red/purple result.[2] If they do not contain chromium-6, the test will give an orange result. This gives you a simple indication whether your surfaces, dust particles, coatings or paint layers are safe or not. In this user manual, chapter 3 refers to testing of coatings and paint layers, and chapter 4 deals with testing of surface contamination, (loose) dust and dirt particles.

This test kit contains: (A) 8 Dropping bottles with test fluid[3]; (B) 25 swabs (25x in a bag); (C) Test sample

2. Safety

The test fluid and swabs contain chemicals. Caution is therefore required. The enclosed safety data sheets provide further information on risks and recommendations for safe use of the test (detection) fluid and test rods. **When using this kit, always wear personal protective equipment such as safety glasses, protective clothing and gloves (for example single-use nitrile gloves).** Use the swabs only for this chromium-6 test and not for other purposes. Use each swab only once. The used swabs should be disposed of as chemical waste.

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[1] RIVM brochure 'What is chromium-6?', revised version 2016, in Dutch language.
[2] This change in colour only occurs with chromium-6 (VI), and not with other (harmless) types of chromium such as chromium-3 (III).
[3] Each bottle contains only 1mL of liquid due to international air transport mimimis quantities requirements.

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3. Testing of coatings and paint layers

A. Preparation - Cleaning of the surface

If the surface is dusty or dirty: clean it in advance with a clean moist tissue. Then dry the surface with a clean dry tissue.

B. Preparation - Cutting the paint layer with a knife

If you want to test a paint layer: make incisions in the paint layer with a clean (Stanley) utility knife to expose any primers/conversion layers. Then sand lightly with clean sandpaper.

If you want to test only the primer layers: remove the top coat of lacquer/paint by sanding with clean sandpaper, so that the respective primer layer is fully exposed.

Then dust-off the treated piece using a clean cloth or tissue.

make incisions in the paint layer

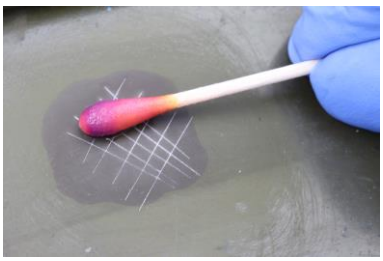
sand lightly

C. Wetting of the swab

Take a swab out of the bag, and moisten the end of the swab with a few drops (about 6 drops) of the test fluid. In order to do this, apply a light pressure to the dropping bottle of the fluid. **Make sure that the entire end of the swab has been moistened**. The swab should have a light orange colour after being moistened.

D. Rubbing over the coating or surface/paint layer

Rub for one minute with the moistened end of the swab over the coating or surface/paint layer to be examined.



E. If there is no change in colour (swab stays orange) = no chromium-6 present

If there is no change of colour, and the swab remains to have a light orange colour, the coating or paint layer does not contain chromium-6.[4]

F. In there is a change in colour to red/purple = most likely chromium-6 present

If the swab turns red or purple, your coating or surface/paint layer most likely contains chromium-6.[5] If this is the case, we recommend that the coating or surface/paint layer is further examined by a laboratory. Usually, the colour change of the swab to red/purple is immediately visible, although it can sometimes take a few minutes to happen. Sometimes not the entire swab will become red/purple, or there are white spots in the middle part.[6] This still indicates the presence of chromium-6.

If necessary, you can take a photo of the colour-changed swab to record the test result. The purple colour of the swab will disappear in about one day.

[4] There is no chromium-6 in your coating or surface/paint layer, or the dissolved amount is negligible and lies below the lowest detection limit. (~ 0.2-0.5 µg chromium-6)

[5] Change of colour to red/purple is a strong indication for the presence of chromium-6. There is however a small chance that this change of colour has been caused by a cross-reaction with molybdenum (VI). This reaction will only occur at high concentrations of molybdenum (VI). However, molybdenum (VI) is very rare in paint layers, and therefore, the chance of this cross-reaction to occur is very small. Change of colour to dark/ink blue due to molybdenum (VI) presence will occur within 3 hours, while the red/purple colour due to chromium-6 will fade after a couple of hours. In this way you can easily see if the colour change is due to molybdenum or chromium-6.

[6] These white spots can occur in the presence of large amounts of chromium-6. In this case it can also occur that the swab first turns to a red/purple colour and after a few tens of seconds a part of the swab discolours to a light or white colour.

G. Checking of the swab with a test sample

If you have tested your coating or surface/paint layer with the procedure above, and there was no change in colour visible, you can check the swab concerned using the provided test sample. On both sides of this sample there is a zinc-chromate(6) coating.

Rub one side of this test sample with the swab concerned for **one minute**. The swab is working well if it changes colour to red/purple.

You can only use each side of the test sample **once**.

H. Cleaning of coating or surface/paint layer and disposal of swabs

Remove any residue of the test fluid from the coating or surface/paint layer using a tissue. Wash away the last residues of the test fluid from the coating or surface/paint layer with a tissue moistened with water. Dispose of the used tissues and swabs as chemical waste.

4. Testing of surface contamination, dust and dirt particles

In addition to testing coatings and paint layers, this test kit is also suitable to determine the presence of chromium-6 in surface contaminations or in (loose) dust or dirt particles lying on the surface of an object. To do this, rub the moistened cotton swab over the surface on with a surface contamination is present or over the surface on which the dust or dirt particles lie in the same way as is described in chapter 3 (section C to H) of this user manual.[7]

5. Shelf life

The swabs must be stored in a dry, dark and cool place. The bag containing the swabs must be sealed well after use. The expiry date of the swabs is indicated on the packaging. The shelf life and activity of the swabs can be checked with the provided test sample.

Disclaimer

Although this product and the user manual have been compiled with the utmost care, MATinspired B.V. cannot be held liable for damage that results from the use of or contact with the product. This measurement method is only an indication, and MATinspired B.V. is not responsible for the test results.

[7] If you want to prevent the surface from coming into contact with the acid and possibly damaging it (rust or staining), you can use our mixing cups (product TK16). There is a separate manual for this test method that can be obtained at MATinspired.