

## Qualitative Analysis of Cr-VI in Layers on Metal Parts

### Principle of the Method

Under strong acid conditions, Cr-VI reacts in a series of steps which lead to the formation of a violet complex when tested with ChromateCheck™ Swabs. All the reagents required for the test are contained in two ampoules inside a ChromateCheck™ Swab. One ampoule contains the acid reagent; the other contains the reactive dye.

### Surface Preparation

The surface of the part to be tested should be clean, free of dirt, finger prints and other impurities. If the surface is contaminated with oil, it should be cleaned before the test with a suitable solvent at room temperature and dried with oil free compressed air.

Once cleaned, the testing surface must be scored with a sharp object (such as a blade or a glass cutter). Cut a minimum of 1 X 1 centimeter square into the surface. Make 10 to 15 diagonal cuts diagonally (left to right) within the square. Then make another 10 to 15 cuts across the first set this time at a right angle to the first set, and again 10 to 15 times across the other diagonal. This step might destroy existing top coats.

### Testing

1. Crushing at two points on the barrel of the swab (marked A and B).
2. Shake vigorously for about thirty seconds to ensure mixing of the reagents.
3. While squeezing the swab, rub the prepared surface (be sure to keep pressure on the barrel of the swab to prevent reagent "suck back").
4. After two to three minutes a pink to purple color appears on the tip of the swab if Chrome VI is present.
5. The intensity of the color provides an estimation of the Cr (VI) content inside the layer.

### Interpretation:



This piece of plated metal was positive for hexavalent chromium.

## Description

- Colorless indicates no Cr (VI) is detectable (<0.02 µg/sq cm) and the part is considered Cr (VI) free.
- Very little pink/purple indicates < 1 µg/sq cm and suggests that further analysis might be necessary.
- Light pink/purple (clearly visible) indicates >5 µg/sq cm and the part contains Cr (VI).
- Intense pink/purple indicates >10 µg/sq cm and the part contains Cr (VI).

## Interferences

No other metals react and Cr (III) does not react with ChromateCheck™ Swabs.

Trivalent chromium (Chrome III) DOES NOT react with the ChromateCheck™ Swabs to give a pink/purple color.