

Good Practice Sheet for Use of Chromium Trioxide

C8 Surface treatment with chromium trioxide by touch-up with a brush using electric current applied to the system

This sheet will help employers to comply with the requirements of EU Directive 2004/37 and the terms of the REACH authorizations for uses of chromium trioxide. Working with chromium trioxide may cause cancer. This sheet describes good practice to reduce exposure. It covers the points that should be followed to reduce exposure. It is important to follow all the points, or use equally effective measures. This document should be made available to all persons who may be exposed to chromium trioxide in the workplace so that they make the best use of the control measures available.

The Process

This GPS covers the industrial surface treatment of articles by touching up small areas. i.e. a creation of a protective oxide layer (for example on aluminum the layer is aluminum oxide) using an electrolyte containing chromium trioxide and traversed by an electric current.

The resulting surface has improved properties critical for function of the article (e.g. corrosion resistance, adhesion).

Equipment Design and Access

Workers use a small brush (as supplied by the formulator) to apply a surface treatment containing chromium trioxide to small areas, typically during quality control, maintenance or repair.

The Selective Electrolysis Brush plating process can be practiced in a closed glove box or not. Specific local ventilation must be established in order to control the exposure risks of operators at these work stations.

The process needs an electrical installation able to deliver direct and reverse current (0-50V).



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Chromium Trioxide Emissions

Chromium trioxide may spill during brush operations. Residual chromium trioxide on equipment surfaces might be possible. Brushes are specifically designed to minimise exposure and release during use.

Appropriate risk management measures should be adopted, as necessary.

Risk Management Measures – Workers

- The Selective Electrolysis Brush plating process can be practiced in a closed glove box or not. Specific local ventilation must be established in order to control the exposure risks of operators at these work stations.
- The parts should be placed into the box for the whole treatment.
- The process is completely manual.
- The oxidation solutions are working typically at room temperature.
- Process equipment must be regularly inspected and rinsed to remove residual chromium trioxide, which appears as dark red traces on the equipment. See GPS D4.
- Implement appropriate measures to prevent cross-contamination from equipment and PPE.

Risk Management Measures – Environment

- It is important that the drying phase of the treatment to be performed into the glove box avoid any drops on the floor in the workshop.
- Wastewater containing hexavalent chromium should not be discharged to surface or groundwater, but treated to effectively remove hexavalent chromium prior to release to the environment or managed as a hazardous waste.
- Floors, drains, equipment in process, chemicals and waste storage areas should be sealed and regularly maintained to ensure integrity.

PPE

To minimize potential exposure to chromium trioxide, all persons carrying out touch up operations must wear:

- Protective eye goggles.
- Protective gloves.
- Acid-resistant clothing.

GPS E7 and your supplier's extended SDS provide relevant information on PPE.

Training and Supervision

All persons carrying out these operations must be instructed about the risks of working with chromium trioxide, the safe way of handling chromium trioxide and use of PPE and other control equipment. Workers must be properly trained and equipped to carry out their duties, and to safely cease such duties as needed. Adequate supervision must be provided at all times.

Monitoring

Adequate monitoring data must be available to evidence absence of worker exposure and evaluate environmental release. GPS E1-E4 provide further information on monitoring. Expert input is advisable to ensure an appropriate monitoring program that also meets regulatory requirements.

A typical worker exposure monitoring program will include personal monitoring during a normal production cycle.

Monitoring should be carried out annually until there is adequate evidence that exposure is minimized. Monitoring may be reintroduced following significant changes to the system.

Other Relevant Good Practice Sheets

Other GPS are also likely to be applicable. A full list can be accessed at [link](#).