

Good Practice Sheet for Uses of Chromates

C1

Surface treatment with chromates¹ in open tanks or baths (e.g. passivation, conversion coating, anodize seal) without electric current

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 chromates. Working with chromates 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 chromates 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 in one or more treatment tanks. These processes (e.g. passivation, conversion coating, anodize seal) involve no electric current at the tank ('electroless'). The treatment line comprises a series of baths or tanks. The article is immersed in an aqueous solution containing chromates. The treated parts are rinsed in separate tanks.

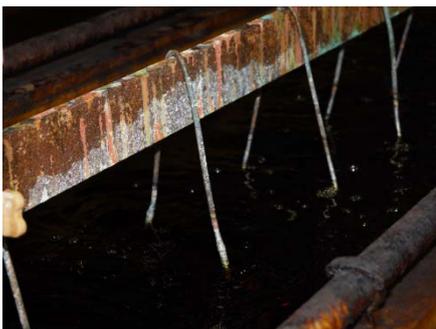
Where surface treatments involve applying an electric current at the tank (e.g. anodize), Downstream Users are referred to GPS C7.

Equipment Design and Access

The treatment tanks are open. Articles or parts with varying dimensions are fixed to and removed from hoists, racks or added to baskets at a separate station and fed manually or by a conveyor system through the surface treatment system. Parts are typically treated over short cycles. The process is normally carried out at temperatures up to 35°C and occasionally up to 95°C. The treatment system must have all of the following features:

- ✓ Articles are prepared for the treatment process at a dedicated station in an adjacent/separate area.
- ✓ No electric current is applied at the chromate tank.
- ✓ Following surface treatment, the parts are rinsed in water in separate tanks.
- ✓ LEV2 designed, dimensioned, located and maintained to capture and remove chromates is provided.

Measures relevant for ancillary tasks are also described in separate GPS. A full list of GPS is available at [Link](#).



Photographs show (left) racks of parts immersed in a surface treatment bath, (right) a basket of parts being removed from a surface treatment bath. The basket is tilted to allow better draining and to reduce dragout of process solution to the rinse tank.

¹ Chromates may include the following substances: Chromium Trioxide (S1), Dichromium tris(chromate) (S2), Potassium dichromate (S3), Sodium dichromate (S4).

² LEV may not be necessary for activities, including passivation as the final process step in batch processing (galvanizing is the process of applying a zinc coating to steel or iron by dipping into a bath of molten zinc), where the transfer of parts to and from the bath is automated such that workers are not required to carry out activities close to the bath and the concentration of CrVI in the bath is <0.2 wt.%.

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Chromates Emissions

Residual chromate solution on equipment surfaces and articles/parts might be possible after surface treatment. Residual chromate solution typically drains from the treated part and is captured in the surface treatment or rinse tank.

Risk Management Measures - Workers

- Process equipment must be regularly inspected and rinsed to remove residual chromates, which appears as colored traces on the equipment. See GPS D4.
- Implement appropriate measures (e.g. provision of local cleaning facilities and hazardous waste management bins) to prevent cross-contamination from equipment and PPE.

Risk Management Measures - Environment

- The air extraction system must discharge to atmosphere via a filtration or scrubber unit capable of removing chromates efficiently and consistent with best practice.
- 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 disposed of as hazardous waste.
- Floors, drains and equipment in process areas and chemical and waste storage areas should be sealed and regularly maintained to ensure integrity.



Photograph shows parts after surface treatment.

PPE

To minimize potential exposure to chromates, all persons accessing the treatment line must wear:

- protective eye goggles
- protective gloves
- safety clothing / footwear.

GPS E1 and your supplier's extended SDS provide relevant information on PPE.

Training and Supervision

All persons with access to the treatment process must be instructed about the risks of working with chromates, the safe way of handling chromates 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 available at all times.

Monitoring

Adequate monitoring data must be available to evidence that potential exposure of workers and potential environmental release are maintained to as low as reasonably practicable level. Expert input is advisable.

Monitoring should be carried out at least annually. Downstream users may reduce the frequency of measurements once it is demonstrated that exposure of humans and releases to the environment has been reduced to as low a level as technically and practically possible and that the risk management measures and operational conditions correspond to the exposure scenarios and function appropriately.

GPS E2 provide further information on monitoring, including reference to relevant standards.

Other Relevant Good Practice Sheets

For surface treatment processes that involve applying a current at the tank, refer to GPS C7.

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

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