Additional information in support for an exemption on Hexavalent chromium (CrVI) passivation coatings

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Background

The European Commission received information from certain domestic appliances manufacturers claiming that there is no need for an exemption for hexavalent chromium (CrVI) passivation coatings as alternatives are available. Hewlett-Packard was asked to provide further information as to whether specific conditions exist which make it more difficult for Hewlett-Packard to find alternatives for its applications than domestic appliances manufacturers.

Justification for an exemption on CrVI for IT equipment

Unlike the domestic appliances industry, the coated sheet metal used for computer and printer enclosures must provide corrosion protection and Electromagnetic Interference (EMI) shielding. The sheet metal used in electronics enclosures is unpainted, and the frequencies at which the products operate require very careful product design and testing to meet EMI regulations. Although we have established a supply of hexavalent Cr-free coating to replace the previously used conversion coatings for steel sheet, we are finding that the replacement coatings are challenged to simultaneously meet our corrosion and electrical requirements. These two requirements tend to be opposing in that efforts to protect the surface from corrosion usually reduce the surface conductivity and thereby degrade EMI performance.

The hexavalent chromium conversion coatings tended to perform better than the replacements; furthermore they tended to be uniform in performance from supplier to supplier. Unfortunately adding to the challenge of the hex Cr-free conversion is a global supply with at least two distinct families of materials being used for the replacement coatings. The primary offering by the Asian suppliers has been an organic coating with ingredients that are considered proprietary, while the other prevalent offering in the global supply uses trivalent chromium coatings. It is expected that these two families have process capabilities and challenges that will be different.

Qualification testing, including acceptability metrics and process capability monitoring is still in development. Qualification testing efforts have been slowed by the lack of materials available for testing from the worldwide supply base until quite recently, and the resulting delay in discovering the issue regarding corrosivity vs. EMI shielding properties of the alternative coatings. HP is now refining an internally standardized test method for the measurement of surface resistivity on RoHS compliant coated steel sheet which we hope to map to product level performance. We are working with industry partners to drive this material supply to become more commodity-like, through the development of common test methods and metrics. It is expected that this process will not be complete before 1 July 2006.

Conclusion

The IT industry has significantly different requirements for passivation coatings than the domestic appliances industry. These differences are explained by the fact that sheet metal used in the IT sector is unpainted and simultaneously needs to meet both corrosion protection and electromagnetic interference criteria. We therefore maintain our request for a temporary exemption on hexavalent chromium (CrVI) passivation coatings.