

Souriau announces a range of REACH-compliant composite connectors for aeronautics

The goal of European REACH regulation is to improve health and environmental protection by banning the use of SVHC (Substance of Very High Concern) chemicals and at the same time promoting the competitiveness of the European Union's chemical industries. Souriau, like most manufacturers, uses hexavalent chromium, one of the substances listed as hazardous, in the surface treatment processes for many of its connectors. Although the European Chemicals Agency has granted derogations of up to 12 years depending on the application, Souriau wished to anticipate this deadline. Souriau's R&D has been working for several years on the implementation and validation of this change to its composite connectors, which affected both the products and the production lines. The first REACH connectors in the D38999 composite range were launched during 2019 and by next December, the entire range will be manufactured without the use of hexavalent chromium.

An increasingly important part of Souriau's D38999 range incorporates composite materials either with a nickel-plated finish or with no finish and is mainly intended for civil and military aeronautics applications. The advantage of the PEEK composite used, is that it offers high performance in severe environments, is corrosion resistant and weighs less than aluminium.

The challenge for Souriau was to find a REACH-compatible chemical solution for hexavalent chromium-free treatment of the connectors. Thomas Pichot, R&D manager at Souriau explains:

"We no longer use hexavalent chromium, which was previously needed to improve the adhesion of coatings on the composite substrate of our housings. We have developed and from now on are using a new preparation treatment, which allows us to ensure the adhesion of successive metal layers equally well without needing this substance. This builds on the approach we used for aluminium connectors, where we have also qualified hexavalent chromium-free passivation in our zinc-nickel treatment process. All substitute products developed and deployed are now certified non-hazardous and fully compliant with all the various environmental regulations, including REACH. While the challenges are obviously of a technological nature, the benefits are largely ecological, since this changeover has already enabled us to halve the volume of hexavalent chromium used in our production site.

A PEEK plating solution unique in the world

Souriau's particular achievement has been to develop a chemistry that works with PEEK material. Plating on to composite material is nothing new, but not on this type of plastic which is especially used in the aeronautics industry. This solution, unique in the world, is qualified QPL, according to the American standard MIL- DTL-38999 and the European standard EN3645. In addition to its qualification by accredited bodies, the process change has been validated by major aeronautics customers.

As soon as the European REACH regulation was published, SOURIAU's management and all the various teams realised there was a need for a vast program of innovation in surface treatment techniques in order to preserve connector manufacturing in France. The determination shown in the push to innovate and find alternatives to hexavalent chromium has added to Souriau's achievements and demonstrated its know-how. As Nicolas Paumier, Product Manager D38999 composite explains: "Souriau's proactivity in response to the REACH regulation shows its commitment to its customers, who also face the same issues, whether in terms of innovation, the environment or people's health and safety. This new REACH range will have an impact on our orders for all these reasons, but also because it responds to the global demand from both customers and Europe".

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