



## Cr-free conversion coatings for Aerospace - The European Perspective

Boeing Research & Technology Europe  
Dr. Nieves Lapeña-Rey & Steve Gaydos

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Chromate Alternatives for Metal Treatment and Sealing  
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### SEARCH for Commercial Products (2007)

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- Different vendors & at the European patent office

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### Conclusions from our search

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- Although the aerospace industry is still exempt, Cr has been banned in most applications by The European Reduction of Hazardous Substances (RoHS) directive (2002/95/EC).
- As consequence, no one in Europe is using chromate-based conversion coatings anymore in industrial sectors other than aerospace.
- The alternative treatments are based on phosphates, permanganates, Ti/Zr treatments, cerium-based treatments, molybdates, sol-gel and Cr III processes.
- The automotive industry is mainly relying on the use of Zn and Fe phosphates but the amount of Al in cars constantly decreases with the use of composites and the corrosion requirements are considerably less stringent than for the aerospace industry.
- In Europe industry is not open about what they specifically use.
- The Aerospace industry in Europe (and US) is still using Cr (VI) conversion coatings because they are not forced by regulation and they still do not have the answer to the corrosion challenge that a full Cr-free treatments pose.




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### Conclusions from our search

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- The aerospace industry in Europe (and US) is relying on few Cr-free paint coatings (primers) to do most of the corrosion control and at the moment they might be using Cr-based conversion coatings/anodizing + Cr-free primers as intermediate step for a total Cr-free solution.
- Examples include numerous chromate free polyurethane primers and chromate free epoxy primers from ANAC (Azko Nobel Aerospace Coatings, DEFT and PPG being used by Air France, AEA, Aeronautica Militare, Airbus UK, Alenia, BAE systems, Belgian Defence, etc..
- Whatever solution they are using is not just a European solution since they are all global companies using the best solutions available world-wide.
- The European aerospace industry is still working with vendors and researching novel Cr-free conversion coatings/anodizing solutions that can comply with their stringent corrosion requirements because there are not aware of anything commercially available that is attractive enough for aerospace either here or in the US.



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