



IDENTIFYING TYPE AND EFFECTIVENESS OF ANODIZATION TREATMENT



Anodized metals have different properties than the un-oxidized base metal. These properties are important to ensure that the metal part meets its performance specification. The type of anodization as well as the time and level of current applied are major factors in achieving the desired uniformity and thickness of the metal oxide layer.

There are a number of different anodization chemistry processes that may be employed, each of which achieves a different result with respect to hardness and final coating capability. Examples include sulfuric acid, chromic acid or borate sulfuric acid anodization.

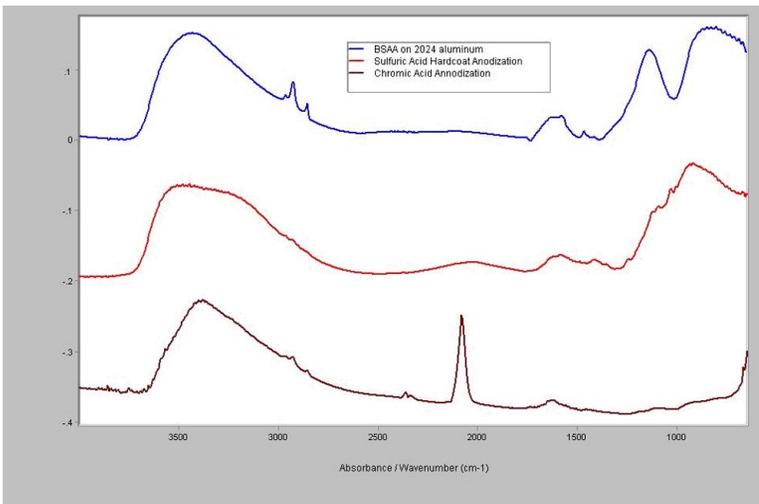


Figure 1 – Infrared spectra of BSAA anodization (blue), sulfuric acid hardcoat (red) and chromic acid anodization (brown) all collected on the Exoscan.

We have shown that FTIR spectroscopy using the Exoscan system can not only determine the type of anodization process that a metal part has been subjected to, but that the thickness of the anodized layer is of the appropriate thickness and uniformity. As is shown in Figure 1, each of the aforementioned anodization processes yields a unique infrared spectrum that is a fingerprint of the chemical process with which the part was treated. Figure 2 shows how the process used can be identified by a simple library search of anodized coatings.

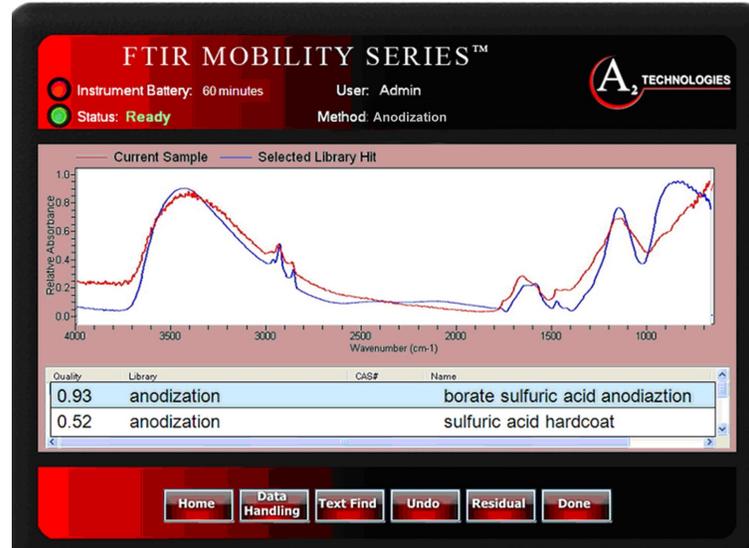


Figure 2 - Library search in the Exoscan software showing a positive match for the BSAA process.

The portability and performance of the Exoscan system means that anodization identity and thickness measurements can be made directly at the site where the anodized part is manufactured as well as where it is used. Thus, Exoscan is an effective tool for quality control and quality assurance analysis of the anodization process and of anodized parts.

For the full report on the use of Exoscan in this application, please see A2 Technologies application note 202 entitled "Metal Coating Analysis".



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