

# **Contact Roughness Characterization Parameters for Abrasion-Resistant Epoxy-Coated Surfaces Enhanced with Micro and Nanoparticles**

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## **Abstract-**

**In recent years, numerous studies have been conducted to characterize the physical parameters that define the behavior of surfaces coated with epoxy resins, particularly in terms of hardness and resistance. Many of these surfaces have been doped with micro- and nanoparticles. In this work, we present the internationally defined roughness parameters that are typically of interest for the use of these materials in industrial parts. We analyze the information these parameters provide about the coatings when measured by contact methods, not just optically before and after physical abrasion. The contact profile roughness parameters (R) are highlighted, as they can offer more reliable information regarding the physical wear of these surfaces due to abrasion (typically Ra, Rq, Rz, Rsk, Rku and Rmr). The main advantage is that this approach allows for discerning parameters that, when linked with other functionalities of the parts, provide more comprehensive information without being limited to purely optical or non-contact SEM analysis. The characterization of nanometric particle-doped surfaces with Ra, Rq, and Rz, and of micrometric particle-doped surfaces with Rmr (10&ndash;20%) is proposed, in order to clearly characterize the final behavior of the surface before and after wear.**

**Index Terms-** contact 2D R roughness parameters; nanoparticles; microparticles; surface performance change; Parámetros de rugosidad 2D R por contacto; nanopartículas; micropartículas; cambio en el rendimiento de la superficie.

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