

## **AM deposited metallic materials mechanical properties assessment with the use miniaturized samples**

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Additive manufacturing (AM) has seen a dramatic surge in interest, necessitating precise characterization of mechanical properties for its successful integration into engineering structures. It is well-established that the mechanical behavior of AM-produced components is highly sensitive to deposition parameters such as location, orientation, and wall thickness, resulting in substantial property variations. Moreover, the size dependency and surface quality of AM parts significantly impact their mechanical performance, rendering standard test samples often unsuitable. While miniaturized samples are undergoing standardization for tensile testing, there remains a critical gap in methodologies for fatigue, fracture toughness, and creep evaluations. This paper provides a comprehensive overview of mini-sample utilization for these tests and outlines ongoing standardization efforts in this field.

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