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M1Or2C-06: Mechanical tensile testing of Hiperco 50A at cryogenic temperature

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Abstract

Hiperco 50A is a highly desired material for use in cryogenic applications, specifically for adiabatic demagnetization refrigerators (ADRs) due to its magnetic field shielding capabilities. Although the alloy has good strength, there is a concern with the material's brittle behavior which is believed to worsen at low temperature based on previous tests. The testing described here investigates the mechanical properties of Hiperco 50A at cryogenic temperature through mechanical tensile testing to failure and evaluation of the failed coupons. The methods and techniques used to determine the elongation, yield strength, ultimate tensile strength, and break strength of the material as well as the results will be presented here.

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