

# Influence of anvil size on delamination strength of REBCO CC tapes by anvil test method under transverse loading

**Hyung-Seop Shin**<sup>a\*</sup>, Alking Gorospe<sup>a</sup>, and Marlon James Dedicatoria<sup>a</sup>

<sup>a</sup> Andong National University, Andong, Korea

Delamination in 2G coated conductor wires which were used in applications such as in wet wound coils are still one of the major concerns in the field of applied superconductivity. Delamination of these multi-layer structured coated conductor (CC) tapes occurs due to several factors that may induce excessive transverse tensile stresses during fabrication and operation. These factors include the difference of the coefficient of thermal expansion (CTE) values among each constitutive layers, thermal cycling etc. Investigation of the delamination properties in the CC tapes is very important in the design of its applications such as in coils. Nowadays, several methods in evaluating the delamination strength of these CC tapes were already used including the pin-pull and the anvil tests. However, standardization of these methods is not considered in spite of the variety of produced data by anvil test. For anvil testing, size of anvils was a very important factor to be considered especially in determination of delamination strength. In this study, the common anvil test method was used. The delamination strength of wide CC tape fabricated by reactive co-evaporation by deposition and reaction (RCE-DR) was investigated by using different anvil sizes. The influence of anvil sizes on the delamination mechanism was discussed. In addition, schematics of possible delamination mechanisms of CC tapes for each anvil size condition were presented. Finally, using the scanning electron microscope (SEM), origin of delamination was investigated and delamination sites were uncovered through element mapping.

Keywords: coated conductor, standardization, mechanical delamination strength, anvil size,

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