Fabrication of Silver Stabilizer Layer Using Nano Silver Paste for Coated Conductor

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Ag stabilizer layer of coated-conductor has been fabricated using nano silver paste by dip coating. Nano silver paste was coated on YBCO film by dip coating process with a speed of 20 mm/min. The film dip coated with silver paste was dried in air and heat treated at 400~700 ^{o}C in oxygen atmosphere. The effect of heat treatment temperature on adhesion strength of silver layer was tested by 3M taping test(KS D 6711). The sample heat treated at 500 ^{o}C showed poor adhesiveness of 65/100 but it is clearly enhanced to 100/100 when firing temperature was raised over 600 ^{o}C. The hardness and electrical conductivity of the sample were measured by pencil hardness test (KS D 6711: 9.8 N) and volume resistance test by LORESTA-GP (MITSHUBISHI), respectively. The results for the sample heat treated at 700 ^{o}C showed high hardness value of more than 9 H and volume resistivity of 1.417×10^{-6} Ω·㎝ at room temperature. SEM observations showed that a dense silver layer was formed with a thickness of about 2 ㎛. Silver layer prepared by using nano silver paste showed superior electrical and mechanical characteristics which is comparable to that of sputter deposited Ag layer.

Keywords : stabilizer layer, coated conductor, nano silver paste