

# Obtaining multilayer copper strips by ARB (accumulative roll bonding) rolling process

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## Abstract

In this paper, the production of multilayer samples, by joining copper strips, by the rolling process at temperatures below the recrystallization temperature is presented. The newly obtained multilayer samples were then subjected to tensile testing and hardness measurement in order to determine their properties. The obtained results show that with increasing degree of reduction, the tensile strength and hardness of the samples increase. Up to the degree of reduction of 66.5%, the tensile strength and hardness of the samples increase slightly, while at a higher degree of reduction of 66.5%, the growth is much more pronounced.

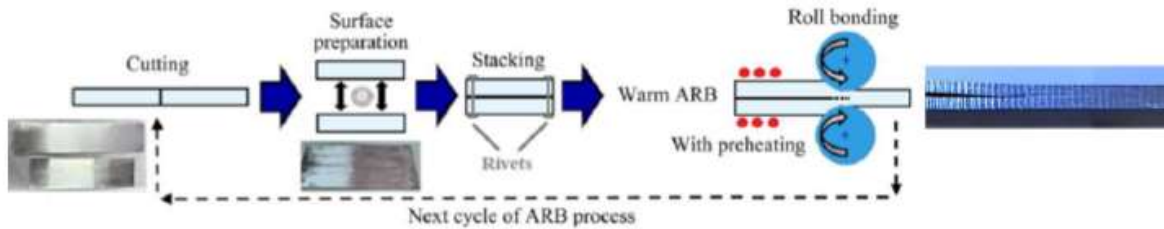


Figure 1. Schematic view of ARB (Accumulative Roll Bonding) rolling process

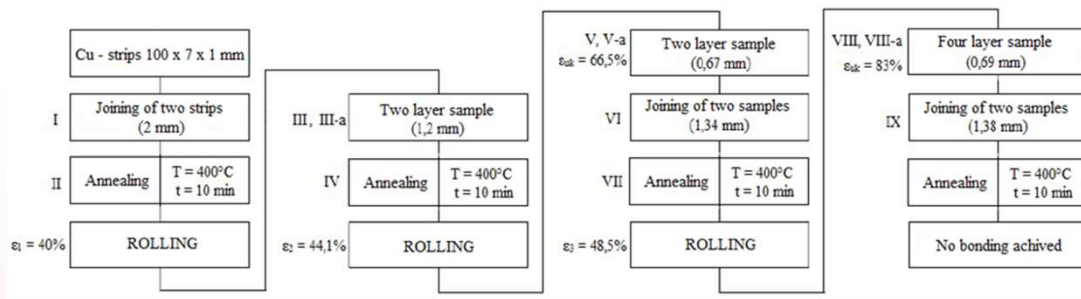


Figure 2. Schematic view of the experiment flow

| Sample   | Degree of reduction $\epsilon$ (%) | Medium hardness value (HV) | Tensile strength $R_m$ (N/mm <sup>2</sup> ) |
|----------|------------------------------------|----------------------------|---|
| III      | 40                                 | 103                        | 46,221                                      |
| III - a  | 40                                 | 102                        | 44,345                                      |
| V        | 66,5                               | 109                        | 55,336                                      |
| V - a    | 66,5                               | 108                        | 47,826                                      |
| VIII     | 83                                 | 116                        | 116,422                                     |
| VIII - a | 83                                 | 110                        | 84,559                                      |

Table 1. Hardness and tensile strength values depending on the degree of reduction

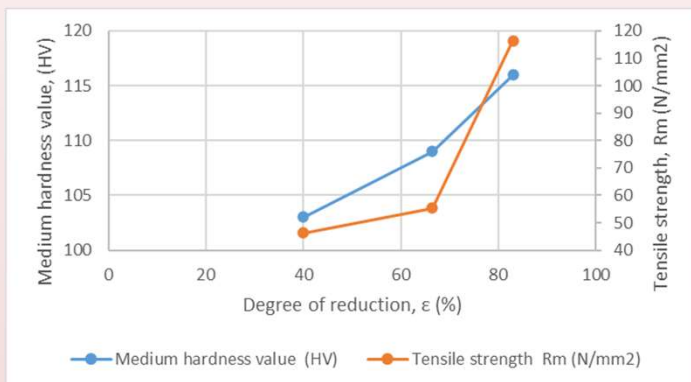


Figure 3. Dependence of hardness and tensile strength of samples on the degree of reduction for the I series of samples

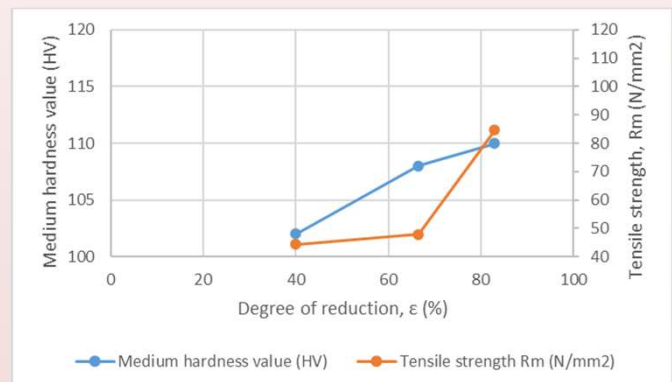


Figure 4. Dependence of hardness and tensile strength of samples on the degree of reduction for the II series of samples