Interaction of steel surface treatment by means of abrasive cloth and adhesive bond strength

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This paper deals with the surface texture influence of by hand grinded steel specimens using abrasive cloth of different grit on the resultant bonded joints strength. This method is often used in repairing and on places where the application of mechanical grinding is not possible. Determination of the optimal surface finish is the necessary step at the bonded joint realization. The evaluation of the roughness influence on the strength characterizations was carried out according to the standard CSN EN 1465 by the use of two two-component epoxy adhesives, namely Bison epoxy metal and Lepox 1200. Bonded specimens were made from the constructional plain-carbon steel S235J0. From carried out tests it followed not only the necessity to perform the specimen surface mechanical finish before bonding, but the optimal grit of the abrasive cloth for the concrete tested material was determined, too. The use of the unfit selected abrasive cloth, or its use with the unfit selected adhesive layer thickness, can cause the expressive loss in tensile strength of the bonded joint.

Keywords: Adhesive bond, adhesive layer thickness, hand grinding, optimal surface finish

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