

Study on of Ti-Steel Clad Plate by Explosive Pressure Welding-Rolling

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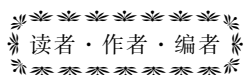
Abstract: To reduce the charge amount of welding explosive, TA2 titanium and Q345 steel plates were used as flyer and base plates of dovetail groove, respectively. The upper side length, the lower side length and the height of dovetail grooves were 2 mm, 3 mm and 1mm, respectively. All the intervals between dovetail grooves were 3 mm. The Ti-steel clad plate with dimension of 7.0 mm×300 mm×750 mm was obtained via Q345 steel and TA2 titanium plates with dovetail groove were loosely fitted and bonded by explosive pressure welding and hot rolling technology. Bonding quality at the interfaces of Ti-steel clad plate was analyzed by mechanical property test and microscopic morphology observation. Results show that the metallurgical bonding at the interfaces of TA2 titanium and Q345 steel plates is achieved by explosive pressure welding and hot rolling. Bonding quality at the interfaces of the clad plate is good, and the interfaces exhibit a linear shape, and intermetallic compounds do not occur. The clad plate has excellent bending performance. Compared with explosive welding, the charge amount of Ti-steel clad plate produced by explosive pressure welding and hot rolling may save by 62.7%.

Key words: explosive pressure welding; hot rolling; loose fit; dovetail grooves; metallurgical bonding

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为了丰富学术交流形式,及时传递含能材料领域同行们的学术观点和思想,《含能材料》开设了“观点”栏目。“观点”栏目的来稿应观点鲜明、内容新颖、形式上短小精悍。欢迎含能材料各领域的专家积极来稿。来稿时请附个人简历及主要研究工作介绍。

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含能材料的损伤特征与点火过程有密切的联系,炸药、推进剂的内部损伤及其对力学特性、安全特性和点火行为的影响规律受到了含能材料学界的高度重视,为推动这一重要研究方向的学术交流,本刊特设立“损伤与点火”专栏。专栏主要征集炸药、推进剂等含能材料的损伤观测与多尺度表征技术、含损伤的本构方程、准静态与动态损伤演化规律、损伤与破坏的宏(细)观模式、损伤对起爆、爆炸、爆轰成长以及非冲击起爆行为的影响等方向的原创性研究论文。来稿请注明“损伤与点火”专栏。

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