

Effect of Silicon Carbide Conductive Adhesive on the Performance of Electric-explosive Device

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Abstract: To study the effect of ratio of silicon carbide to epoxy resin in SiC conductive adhesive on the performances of electrostatic protection, insulation resistance and ignition sensitivity for electric-explosive device, the ratio of silicon carbide to epoxy resin was adjusted, ten kinds of silicon carbide conductive adhesive materials with different proportions were prepared. According to an electrostatic discharge test and a method for measuring insulation resistance prescribed in GJB5309.6-2004 "Test methods for initiating explosive devices", the highest electrostatic protection voltage, the insulation resistance of the foot and shell and the ignition performance parameters for a standard initiating explosive device under the condition that the SiC conductive adhesive is not coated and the SiC conductive adhesive is coated with different proportions were measured. The influence law of SiC conductive adhesive on the performance of electric was obtained. Results shows that when the ratio of silicon carbide to epoxy resin is 1.25 : 1, the highest electrostatic voltage protection capability of the initiating explosive device reaches 30 kV, and when the test voltage is less than 100 V, it can meet the requirement of insulation resistance value $>20\text{ M}\Omega$, at the same time it does not affect the ignition performance of the product.

Key words: electric-explosive device; human body static electricity; SiC conductive adhesive; ignition sensitivity; insulation resistance

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