

## Spark Testing ARC Products

In immersion applications, particularly in corrosive or chemically aggressive applications, it is vital that the applied film be of a continuous nature without breaks or voids (holidays). Two methods are commonly employed to test this characteristic of a film, provided the material is non-conductive and it is applied to a conductive substrate. The principal of operation for both methods is described in detail in the National Association of Corrosion Engineers (NACE) Recommended Practice SP 0188.

### 1. Low Voltage Wet Sponge Testing

This method of testing is effective on non-conductive films with dry film thicknesses less than 0,5 mm (0.020"). Its principal of operation is based on passing a sponge, dampened in a conductive solution which is connected by cables to a voltage source, (typically capable of 90 volts) over the coated surface. The voltage source is connected to an exposed section of the substrate by a ground cable. Whenever the dampened sponge passes over a flaw in the film the conducting solution makes contact with the substrate and the circuit is completed between the ground cable and the voltage source causing an audible tone to be emitted from the test unit. This method can only be employed as a final film quality test due the risk of intercoat contamination by the conducting solution. **This method is not suitable for use with most ARC® Composites due to a typical final film thickness specification of greater than 0,5 mm (0.020").**

### 2. High Voltage Spark Testing

This method of testing is effective on non-conductive films with dry film thickness over 20 mils (0.20"). Its principal of operation is based on passing an electrode (either rubber or wire brush), which is connected by cables to a voltage source (typically capable of up to 14,000 volts), over the coated surface. The voltage source is connected to an exposed section of the substrate by a ground cable. Whenever the electrode passes over a flaw in the film (holiday, thin film thickness or air bubble) the circuit is completed between the ground cable and the voltage source causing a spark and audible tone to be emitted from the test unit. This method can be employed between intermediate coats however since it is classified as a destructive test ARC Technical Service recommends its use only as a final film quality control check. **This method is suitable for use only with the following ARC products: (S1PW, S1HB, S2, S4+, S5 S7, S7 AR, HTS, HTT). NACE recommends voltage settings of 100 v/mil of the applied composites dry film thickness.**

Testing should not be carried out until the film has reached the stage of cure classified as Full Load on the corresponding Product Data Sheet.

All other ARC Composites contain sufficiently high concentrations of electrically conductive reinforcements to render them unable to be high voltage spark tested at voltages recommended and recognized by NACE.

