# Bi-Metallic Transitions Prevent Galvanic Corrosion Between Dissimilar Metals

## Applications

Design engineers often face the dilemma of material selection. Frequently, the material that would work the best for one specific element of a design lacks properties required by other elements of the design. For example, a material may exhibit good corrosion resistance, electrical conductivity, or thermal conductivity, yet lack the strength, hardness, weldability, or wear resistance required in the final design. Utilizing explosion welded materials can be a powerful solution to this dilemma.

Explosively welded materials allow design engineers to specifically place a certain material exactly where the design requires it, without compromising other critical elements. The correct application of explosion welded materials can yield significant gains in strength, reliability, and cost-effectiveness throughout the product's lifetime.

Bi-metallic transitions can prevent galvanic corrosion.

## Marine Shipbuilding Components

High-strength bi-metallic transitions join dissimilar metals together, reducing the need for mechanical joints and preventing **galvanic corrosion**. High-strength, critical parts can be manufactured incorporating stainless steel/aluminum bi-metallic transitions and welded directly to an aluminum structure without generating galvanic corrosion.

Because of these galvanic corrosion prevention characteristics, explosion welded transition materials have become prevalent throughout the shipbuilding industry. Cylindrically bonded aluminum-to-steel transition rings enable shipbuilders to securely weld forged steel cup-and-cross tie-down elements into the aluminum deck of aircraft carriers.

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