

# **HART “HOT” Black Oxide Coating Aerospace Material Specification AMS 2485K ASTM A105 Carbon Steel Unions**

Hart Industrial Unions, LLC uses a black oxide is the conversion coating formed by a chemical reaction with the iron in metal to form an integral protective surface.

A black oxide conversion coating is applied to ferrous alloys when a blend of caustic, oxidizers and additives react with the iron to form magnetite ( $\text{Fe}_3\text{O}_4$ ), the black oxide of iron. Black oxide does not affect the union dimension, hardness, temper or surface properties.

Black oxide coating will not chip, peel, flake or rub off. We use a hot black oxide is a conventional hot (285 F°) process which produces a true black oxide iron magnetite. All the benefits of black oxide are available from the “hot” oxidizing process.

## **What are the advantages and benefits of black oxide coating?**

### **Dimensional Stability**

Black oxide adds no more than 5 to 10 millionths of an inch to the dimension of a part (it also penetrates to an approximate depth of 5 to 10 millionths). For all intents and purposes, the as-formed dimensions do not change (as they do when plated or painted).

### **Improved Lubricity**

Our Black Oxide post-treatment protects against corrosion and also adds lubricity in mating union components.

## **Corrosion Protection**

Black oxide coating can give corrosion resistance equivalent to 400 humidity hours exposure. Other applications are designed to provide extended shelf life for stored parts prior to their use or to prepare them for further surface treatment (painting).

## **Where is black oxide regularly used?**

Black oxide conversion coatings are widely used in the machine tool, automotive, appliance and general forming industries. Screw machine parts, forgings and stampings are commonly black oxide coated.

## **Applicable “Hot” Black Oxide Specifications**

- SAE Aerospace AMS 2485K
- Mil C-13924D-Class 1\*
- Ford Motor ESF-M6P3-A
- General Motors GM-4347-M
- Toyota TSH7603G
- Steelcase ES 1-02-02