

Back to the Basics

In these difficult economic times – let's remember the basic goals of hardbanding and hardfacing. When times get tough, typically the best business plan is to get back to the basics. In football, the basics will always come down to blocking and tackling. In hardbanding and drill pipe maintenance, the same applies. In this bulletin we wanted to remind all of our customers and friends about the hardbanding basics. At the end of the day, the goal is to hardband/hardface drill pipe and other downhole components as efficiently as possible with the least amount of downtime and cost.

The Basics:

A stable hardbanding alloy is the best choice...

In hardbanding and hardfacing, a hard and wear resistant material is welded to relatively softer steel in most downhole components. When joining any dissimilar materials, consideration must be given to their compatibility. The chemistry of Duraband®NC was formulated to ensure that it can form a stable, 100% crack-free bond with the base material. In Duraband, Niobium is added to form carbides which provide excellent wear resistance.

Each Hardbanding product has its own unique chemical composition and no two materials are exactly the same. Some elements utilized in formulating hardbanding products are very hard but can be volatile and unpredictable in a weld matrix. More thoughts about hardness will be shared in a bit. Sometimes the benefit of hardness is completely outweighed by a tendency to cause cracks. Cracking hardbands have a major negative impact on casing and drill pipe maintenance. Cracks in hardbands will require removal and can cause catastrophic failure of the drill pipe or downhole component that they are applied to. Duraband utilizes Niobium as the backbone for our wear resistant alloy which is very stable and doesn't crack, even after repeated applications. In the end, this is the most economical method for hardbanding drill pipe and tubing along with other downhole components.

Harder is not always better...

It is a common misconception that if one material is harder than another, then it naturally wears more slowly when abrasive conditions take place. In reality, abrasive wear mechanisms are much more complicated. There are many factors which affect the speed at which a material will wear, and hardness is only one of them. For example, we can produce two products with the same base matrix, and then

add Niobium carbide to one. They are both around 60 Rockwell C hardness, but the material with the Niobium will wear around 3 times longer.

Drill pipe specifications, at times, state the hardbanding material must be above a certain hardness. This is not the best way to specify a preferred hardbanding alloy. Instead, pipe owners should look at Wear Resistance, Casing Wear Coefficients, Reliability of Application, and of course technical support from the manufacturer.

Chemical composition is perhaps the most important and complicated aspect of hardbanding technology. In summary, the best choice in hardbanding products is clearly founded in the basics. The choice that provides; the most reliable application, the most experienced technical support, the ability to be reapplied indefinitely without removal, and the most economical to apply is clearly the best choice.



WELDING TIP

Hardbander Maintenance Steps

1. Check all electrical connections. Periodically clean and tighten cable and ground clamp connections.
2. Check spool tension, drive roll tension and wire condition.
3. Check condition of drive rolls and that they are properly sized, cleaned and aligned.
4. Blow out torch liners in accordance to usage and environment.
5. Check that wire guides tubes, liners and contact tips are properly sized and not worn.
6. Keep spare parts on hand to prevent loss of production time.
7. Set up a regular inspection and maintenance schedule based on usage and work environment.