

STABILIZER HARDFACING PRODUCTS

OIL & GAS DOWN HOLE DRILLING APPLICATION



**HF 3000 PROCESS
PRODUCTS/SOLUTIONS
FOR HARDFACING ON
STABILIZERS**



Welder brazing **TUNGSTEN CARBIDE INSERTS TCI 70** to **STABILIZER** using
ARCWEL 2015 SF spray powder

Stabilizers are an important Part in Down-Hole Applications and are typically made from 4145 or 4145 H Alloy steel .

The blades are subject to severe abrasion, pressure and impact causing heavy wear.

Depending on the application and equipment available we offer a variety of products **to rebuild and protect stabilizers.**

We can assist you with our long technical experience (over 50 years) to find the **best solution and product** for your application

This process is widely used and is **ideal for very hard and very abrasive formations**. It is also the recommended process for

hardfacing non magnetic stabilizers

Process description:

Tungsten carbide inserts (TCI) are set in an nickel based powder spray deposit

The stabilizer is preheated.

A thin layer of Powder is applied to the stabilizer using a spray torch

This is then followed by spraying a thin layer to the side of the TCI

POWDER RECOMMENDED FOR FIRST LAYER:

ARCWEL 2015 SF

The inserts (TCI) are then bonded to the surface of the stabilizer

TUNGSTEN INSERTS RECOMMENDED :

ARCWEL TCI 70

Most popular sizes are 25X5X4 mm and 13X 5X4 mm

POWDER recommended for bonding TCI to Stabilizer : ARCWEL 2015SF/ 2018SF

A brick pattern is commonly used with a spacing of approx. 3 mm .

To optimize wear resistance a final coat +/- 1.5 mm of Nickel Tungsten Powder **ARCWEL 2070 SF** may be applied

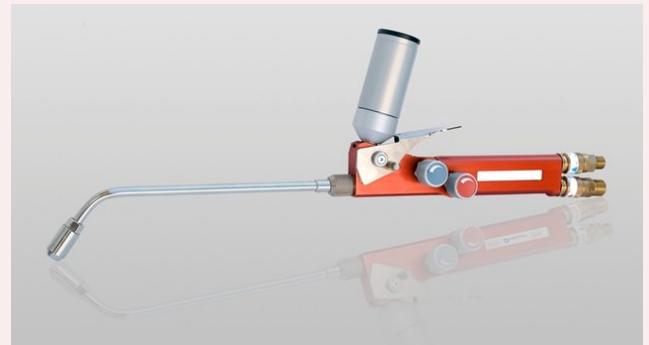
Due to the high hardness of powder 2070 SF surface cracks can appear in the final deposit.

Depending on application, the Hardness of **ARCWEL 2070 SF** may be reduced by mixing it with **ARCWEL 2015 SF** therefore minimizing surface cracks.

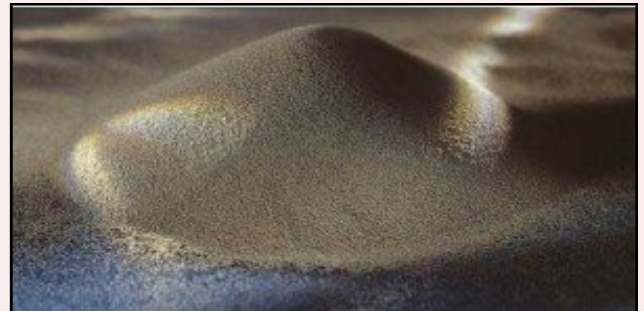
(Mixing ratio rec. 1 part 2070 SF to 2 part 2015 SF)



Fig.2.1 typical HF 3000 brick pattern



ARCWEL 2010 SPRAY & FUSE TORCH



ARCWEL 2015 SF SPRAY POWDER sSF



ARCWEL WC INSERT TCI

HF 1000 STABILIZER HARDFACING with COMPOSITE RODS

ARCWEL 790 G COMPOSITE RODS

Made from Crushed tungsten carbide held in a nickel bronze matrix

Ideal for soft to medium hard formation drilling.

Process description:

The composite rods (**790 G**) are applied to the stabilizer by using a large oxy acetylene torch

Preheating is required

A tinning (bonding layer) using **865 FB Nickel** bronze brazing rod is generally applied first.

865 FB rods are supplied in diam. 5 and 6 mm (length 500 mm)

865 FB rods are flux coated and ready to use.

Depending on application the composite rods are supplied in **different tungsten grit sizes**.

(Data Sheet 790 G)

To improve bonding and flow clients also use Additional **ARCWEL F 20 FLUX**



Stabilizer coated with composite rod 790 G



Applying the composite rod with oxy -acetylene torch



790 G -Composite rods



ARCWEL 865 FB Tinning & Brazing rod

HF 5000 STABILIZER HARDFACING / FLEXO-WEAR 788 GG

- ♦ **Self fluxing, flexible nickel/tungsten alloy producing an extremely wear resistant overlay.**
- ♦ Applied by oxy acetylene process or ARCWEL Spray& fuse torch
- ♦ Enriched microstructure of deposits (**borides, carbides, tungsten and silicides**) provides extremely high resistance to any combination of friction, abrasion, compressive loading, heat and corrosion,
- ♦ **Non-cracking of deposit** as opposed to other tungsten carbide products.
- ♦ Recommended Deposit thickness: 3– 8 mm
- ♦ **Ideal for GEO-THERMAL Applications over 350 °C**

Hardness of Deposit:

Matrix: 400 HB

WC Carbide : ~65 % ~ 2200 HV

WC Grain size: 0.8-1.2 mm

Other sizes are available on request

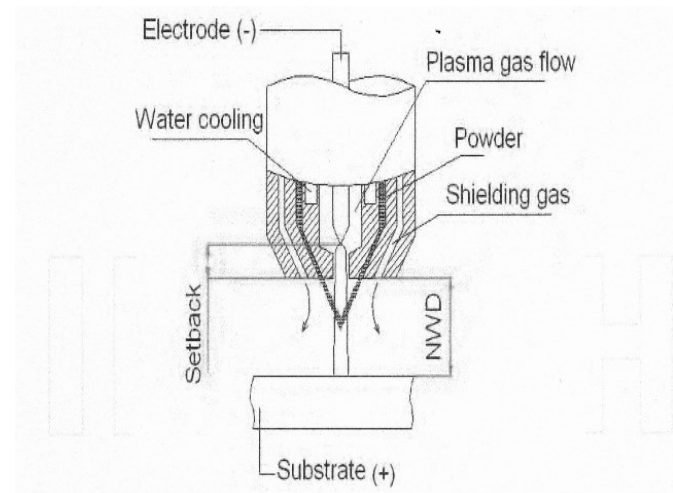
Supplied on spools : +- 10 Kg

Diameter of wire : 6 or 8 mm



PS : Flexo- wear 788 GG is also being applied in combination with Powder 2015 SF (Bonding layer) and 2070 SF WC Powder for corrections and edge build up

- ♦ The PTA Process for hard facing stabilizers, valves etc. is becoming increasingly popular as it offers the following advantages
- ♦ Precise adjustment control of penetration and build up thickness. (1– 8 mm)
- ♦ Uniform build up layers with low or no porosity
- ♦ Ideal for mass production .
- ♦ Deposition rates of up to 12 kg /hour are possible



ARCWEL PTA POWDER TYPES

Tungsten carbide grades

- ♦ **ARCWEL 2070 PTA** Nickel , Boron , Tungsten powder with excellent abrasion resistance . Recommended for hardfacing stabilizers and other mining tools

Cobalt base grades

- ♦ **ARCWEL 2001 PTA (HRC 50-55)** Stellite 1[®] type powder with excellent resistance to abrasion corrosion and heat.
- ♦ **ARCWEL 2006 PTA (HRC 37-40)** most used COBALT 6 grade powder used for diesel engine valve seats , plastic extrusion screws etc.
- ♦ **ARCWEL 2012 PTA (HRC 45-50)** Stellite 12[®] grade powder used extensively for hard facing of wearing parts in the pulp and paper industries

Note: Stellite is a registered Trademark of deloro stellit corporation



Nickel-base grade PTA Powders

- ♦ **ARCWEL 2745 MO –PTA (HRC 40-45)** Nickel , Chrome , molybdenum alloy for surfacing of valves ,valve seats ,collets etc. **high resistance to corrosion** ,stress cracking and heat.

Packaging : 5 kg Plastic bottles

Disclaimer:

The information and data presented herein are given in good faith. Application suggested are made solely for the purpose of illustration to enable the reader to make his own valuation and are not intended as warranties www.arcwel.at