

# TUNGCHIP TUBE METAL



## CHARACTERISTICS

Tungchip Tube Metal welding rods consist of a steel tube filled with grains of crushed sintered tungsten carbide. They are available in either 350mm or 700mm lengths. After the oxyacetylene application process, these carbide grains lie uniformly distributed in a tough matrix base forming a highly wear-resistant coating. According to the specific field of application, various grain sizes can be selected.

The small grain sizes (Fig.1) are used where protection from highly abrasive surfaces are required, whereas the more durable, larger grain sizes (Fig. 2) are employed to form such abrasive surfaces e.g. as used in oilwell drilling.

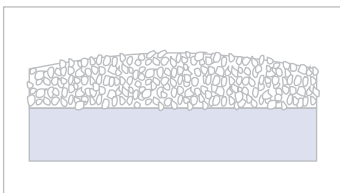


FIG.1

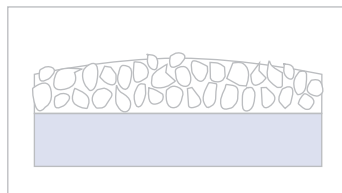


FIG. 2



## AVAILABLE SIZES

4mm x 700mm - Filled with 40 x 70# grit

5mm x 700mm – Filled with 24 x 30# grit

6mm x 700mm – Filled with 16 x 20# grit

The symmetrical distribution of tungsten carbide grains throughout the weld deposit gives the part subject to wear and tear an exceptional resistance to abrasion. The tough matrix base in which the grains are embedded prevents a premature breaking out of the carbide.

## RANGE OF APPLICATION

Tungchip Tube Metal can be used in the following fields : sand, grit, stone and cement industries, coal and stone mining, ore-mining, road building, brick fabrication, drilling, construction, lime and ceramic industry and mining machinery.

## EXAMPLES OF APPLICATION

Cutting blades, scrapers, slag breakers, all forms of screws, grinders, cutting bits, mixing shafts, cylinder parts, shock plates, grading knives, plough shares, core bits, guide rollers, fishtail parts, drills, cutting heads, elevator brakes, edge scrapers, mixing blades, mill hammers, etc.

## WELDING TIPS

### BASE METAL

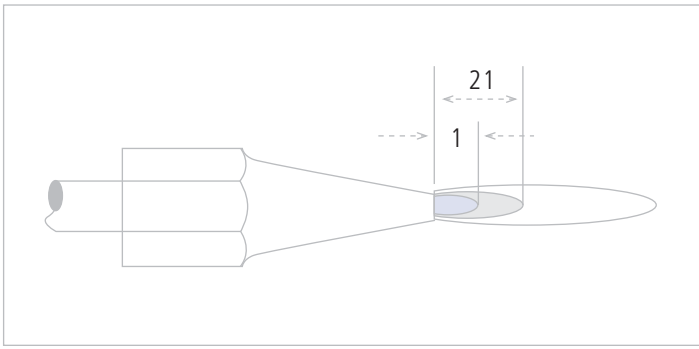
Tungchip Tube Metal is suitable for use with all non-alloyed and base alloyed steels or cast steel products with a carbon ratio of up to 0,5%. If the carbon content is above this level, bonding difficulties may occur and a reduction in impact resistance can occur.

### PREPARATION OF MATERIAL

Ensure that all surfaces are free from rust, scale, grease and other impurities. The process works best on surfaces which have been cleaned through mechanical processing or grinding, ensuring a satisfactory bonding of the alloy.

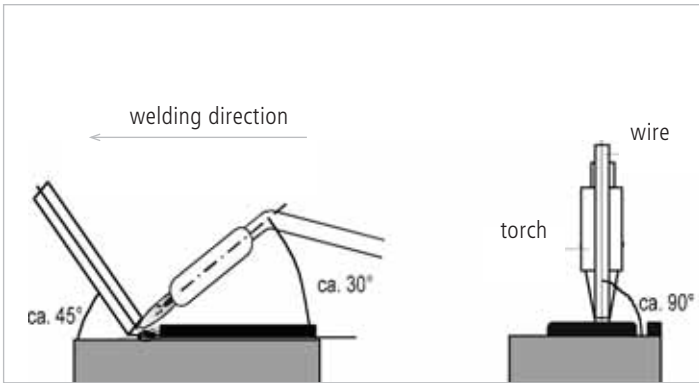
### APPLICATION

Tungchip Tube Metal is oxyacetylene welded so preliminary heating of the separate components is unnecessary. Larger components, however, for which the required binding temperature of ca. 850°C cannot be attained, should either be pre-heated in a furnace or else be brought to between 500 - 600°C (dark red) with a larger welding or pre-heating torch. Choose a welding torch a size or two smaller than is used for ordinary joint welding. The flame should be adjusted to neutral as illustrated in Figure 3. (see reverse)

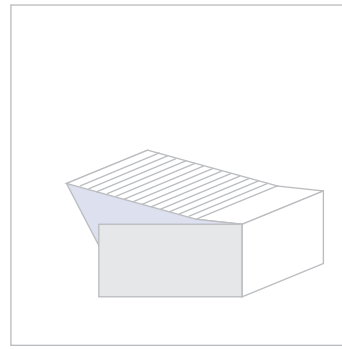


**FIG. 3**  
To prevent the component from slipping during welding, it should lie as level as possible with the plated surface. The thickness of the deposit can be altered by slightly inclining the surface plane.

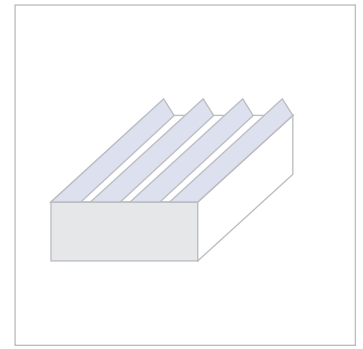
The forehand welding technique is used for application (Fig. 4). This method not only prevents the welding material from overheating, but also simultaneously preheats the base metal. The torch should be guided as horizontally as possible to the component being welded – thus ensuring that overheating does not occur. Ideally, the “nucleus” of the flame should not come into contact with the welding material.



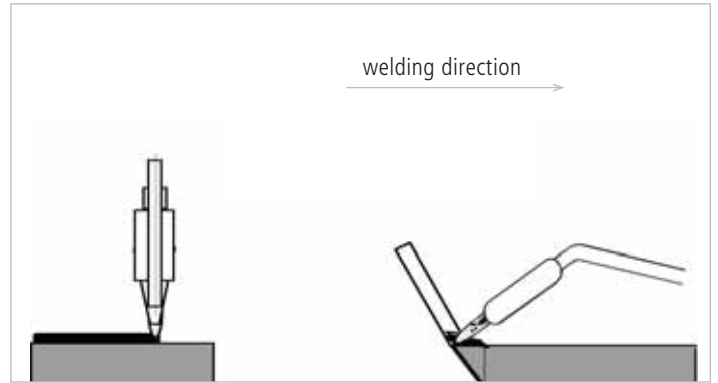
**FIG. 4**  
For the facing and mounting of edging work and line-beading (Fig. 5 and 6) should a Welding alignment as shown in Fig. 7. In this way, the welding itself guides both the torch and the rod through the application.



**FIG. 5** - Edge faced with Tungchip Tube Metal



**FIG. 6** - Line - beading Tungchip Tube Metal



**FIG. 7** - Position of torch and welding direction when facing edging with Tungchip Tube Metal

Particular care must be taken during facing to not let the rod touch the welding puddle, otherwise the carbide grains will float upwards and be blown away by the welding flame. The welding material should be held as close as possible whilst still allowing tear-shaped droplets to form.

Additionally, the rod should be held at an angle not exceeding 30° to the horizontal to ensure that the carbides do not drop off the rod and over concentrate the initial part of the weld. Careful attention to this procedure will ensure the correct mixing of carbides and matrix throughout the welded length of the rod.

Our products & any recommended practices should be tested by the user under actual service conditions to determine their suitability for any particular purpose. The results obtained using this product / information are affected by variable such as welding procedure, base material composition, operating temperature, weldmet design, method of fabrication and service requirements which are beyond our control. It is the sole responsibility of the user to determine the serviceability of a structure using this product and the information contained in this data sheet. Please observe all appropriate safety regulations in force. The technical information's given in this data sheet reflects the present state of knowledge. They do not form part of any sales contract as guaranteed properties of the delivered materials. Our delivery and sales conditions apply to all contracts included.



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