

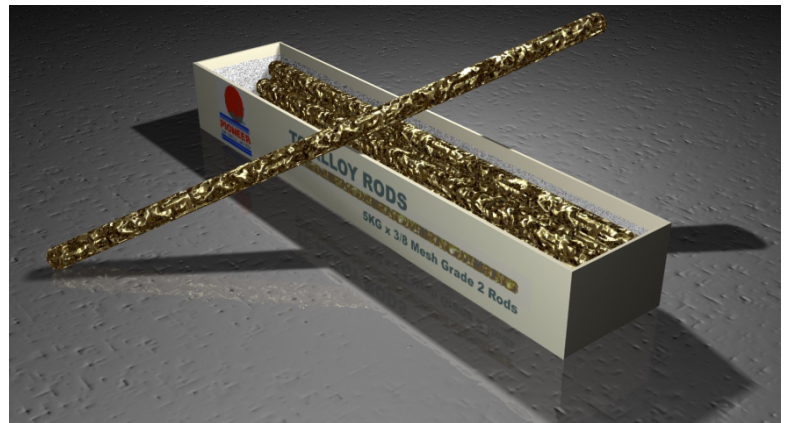
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PIONEER TC ALLOY

GENERAL DESCRIPTION

Pioneer TC Alloy is a composition of sharp graded particles of tungsten carbide bonded with a high duty nickel bronze brazing alloy matrix. Specially developed for the oil industry, TC Alloy is particularly suitable for the hard facing of down hole milling tools. The use of tungsten carbide combines maximum cutting efficiency with high-speed cutting/high wear resistance and there is little effect from the heat generated by cutting action.



AVAILABILITY

Pioneer TC Alloy is supplied in rod form making it convenient to use in any environment where oxy-acetylene equipment is available. To achieve the necessary bond to the tool being dressed it is necessary to use tinning matrix and flux. The methods to be used are detailed in later paragraphs. The materials are available as follows :-

ROD DESIGNATION	ROD SECTION	ROD LENGTH	MESH SIZE				
			1/8" (3mm)	3/16" (4.5mm)	1/4" (6mm)	5/16" (8mm)	3/8" (10mm)
Grade 1	1/2" Round	18"	*	*	*	*	N/A
Grade 2	3/4" Wide	18"	N/A	N/A	N/A	*	*
Tinning Rod	1/8", 3/16", 1/4" Diameter	18" & 36"	Not Applicable				

TYPICAL USES FOR PIONEER TC ALLOY

Pioneer TC Alloy may be used to dress all types of tools for the successful milling of junk which cannot be removed by conventional means. Examples of these tools are milling shoes, junk mills and taper mills.

Pioneer has extensive experience in the use and application of TC Alloy and would be pleased to quote for the manufacture or refurbishment of tools requiring hard facing. Simply contact our sales office for further information.

“When time is of the essence, Pioneer delivers”

APPLICATION PROCEDURES

Pioneer TC Alloy is an easy material for any qualified welder familiar with brazing techniques to use and a successful bond will be achieved by adopting the following procedures.

Applied to New Tools

- 1. Ensure that surfaces to be hard faced are thoroughly cleaned.**
- 2. Place the tool in a suitable position – a small tool may be secured in a fixture, which will allow it to be turned.**
- 3. Pre-heat the area to be hard faced, including adjacent areas, to avoid the heat being drawn from the working surface. Preheat temperature will vary depending on the section of the tool but a useful guide is that the metal be a cherry red colour.**
- 4. Apply brazing flux to the area to be hard faced and continue heating until the flux is clear and completely covering the area.**
- 5. Apply the tinning rod to the area. Providing the heating is uniform across the area, as the rod melts the alloy will flow smoothly to give a uniform thickness, which should be approx. $\frac{1}{16}$ ".**
- 6. Having previously selected the correct grade of TC Alloy rod to allow the necessary build-up to be achieved in one pass, apply the matrix to the tinned surface and at the same time continue to maintain an even temperature across the area. Avoid overheating the tungsten carbide particles, which may cause the particles to become brittle resulting in premature breakdown of the cutting edges. If it is felt that the particles are not evenly spaced, they can be repositioned using the end of a tinning rod.**
- 7. Having completed the hardfacing, leave the tool to cool slowly.**
- 8. It may be necessary to grind the tool to the required shape and dimensions. Remove any brazing slag/spatter from the tool.**

To Rebuild Existing Tools.

Tools can be rebuilt to their original dimensions using Pioneer TC Alloy as follows :-

- 1. Ensure that the complete tool has been thoroughly cleaned. Any mud left will harden during the heating and become difficult to remove. Dress off any irregularities caused by previous use.**
- 2. If the original hard facing has been completely worn away in any parts exposing the base metal of the tool to wear, it may be necessary to build up the base metal to its original profile prior to commencing the hard facing procedure. For this operation, use an AWS-ASTM-E-6010 electrode or equivalent.**
- 3. Follow the same procedure as laid down for new tools to apply the Pioneer TC Alloy hardfacing.**

As the policy of Pioneer Oil Tools is one of continual products improvement we reserve the right to change designs or specifications without notice.