

# TENSILEWELD

by **WASHINGTON ALLOY CO.**

The "**SUPER BLUE**" alloy is a problem solver!

When you're in a jam and need a quick reliable answer, reach for Tensileweld.

Tensileweld's tough matrix and unique formula give it a wide variety of applications, from pulling a broken bolt stud to welding high strength and high stress steels.

Washington Alloy products are manufactured, packaged and processed in strict conformance to an

**ISO 9001**

**Registered Quality Management System**

**Pack Sizes**  
60 lb carton  
10 lb packs  
5 lb packs  
1 lb tubes

**Diameters**  
3/32, 1/8, 5/32,  
and 3/16"

MIG, TIG  
and flux-cored wires  
are also available

**Features:**

High strength weld deposits.  
Excellent crack resistance.  
Easily machinable.  
Smooth, finely rippled bead.  
Crisp, easy slag removal.  
Welds in all positions.

***TENSILEWELD is great for dissimilar metals!  
Also, many unknown metals, worn and fatigued metals,  
cast steels, tool & die steels, etc. can be easily welded  
and repaired with smooth running Tensileweld!***



California:  
8535 Utica Ave  
Rancho Cucamonga, CA 91730  
(800) 830-9033 T  
(909) 291-4586 F

Texas:  
4755 Alpine Drive #100A  
Stafford, TX 77477  
(877) 711-9274 T  
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7010-G Reames Rd  
Charlotte, NC 28216  
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(704) 598-6673 F



# WASHINGTON ALLOY TENSILEWELD



## SUPER STRENGTH WELDING ELECTRODE For Fabricating, Maintenance and Repair AC/DC+



**USA TENSILEWELD** is a high strength, versatile welding electrode designed for applications on a variety of ferrous alloys, especially crack sensitive steels. TENSILEWELD is also typically used on T-1 Steel, Hy80 and Hy 100 steels, all grades of stainless steels, carbon, spring and case-hardened steels. TENSILEWELD can also be used to join any dissimilar combination of ferrous alloys as well as unknown or unidentified steels. TENSILEWELD can even be used to remove broken off bolt studs (procedure shown below), as well as broken off easy-outs and drill bits.

*Note: TENSILEWELD is not designed to be used on aluminum, magnesium, titanium or other non-ferrous metals. Any attempt at welding such metals is at the sole responsibility of the user.*

**TYPICAL APPLICATIONS** include pressure vessels, aircraft parts\*, pits and cracks in tool steels, buttering work-stressed steels prior to joining or hardfacing, underlayment for hardfacing, cast steel repair, gears, shaft rebuilding, **UNKNOWN STEELS**, some cast iron repair\*\*, etc.

\* Any application in the aircraft industry will require special spec. certification. \*\* When welding cast irons to other steels, "peening" is recommended to relieve surface stress.

### USA TENSILEWELD does NOT respond to heat treating

Tensile Strength up to 120,000 psi  
Yield Strength up to 90,000 psi  
Elongation up to 30%  
Hardness 200 Brinell, Rc up to 20

USA TENSILEWELD usually does not require pre-heating the base metal, however, on heavy sections a pre-heat of up to 400°F is recommended

### RECOMMENDED AMPERAGE SETTINGS

Size:	3/32	1/8	5/32	3/16
Amps:	40-90	75-125	100-150	140-240

## PROCEDURES FOR REMOVING A BROKEN STUD OR BOLT

**USA TENSILEWELD** has a special flux coating that will, when used according to the procedure below, flow around the column of weld metal and act as a barrier between the threads and the weld metal, preventing the two from joining. Do not attempt this procedure with any other type of welding electrode or bare MIG or TIG wires.

**BE SURE TO WEAR PROPER EYE AND BODY PROTECTION**

**Step 1.** Before beginning your weld, use a test plate to set your amperage by making a small test weld that will burn smoothly with a buried arc. Carefully insert USA TENSILEWELD into the bolt hole paying special attention not to touch the sides of the hole with the electrode. Strike your arc dead center on the stud, keeping a tight arc, holding the electrode as steady as possible.

**Step 2.** Do not break the arc. Keep holding USA TENSILEWELD dead center in the hole, allowing the weld puddle to build up on top of itself, forming a column of weld metal on top of the broken stud. **DO NOT OSCILLATE or WEAVE the ROD!** As the column builds, the flux slag does its job by keeping the weld metal from flowing into the threads. When the column reaches the top of the cavity, allow it to crown slightly before breaking the arc. Do not drag the arc to one side as this may weld the column to the block.

**Step 3.** A broken off stud in an engine block or other solid housing, can frequently be removed in a fraction of the time it would take with a stud remover. USA TENSILEWELD can get you back in business in just minutes with no drilling, tapping or the need of specialized tools. Just follow these simple steps:

Select a nut that has a hole in it slightly larger than the column of weld metal, but preferably not as large as the bolt hole. Carefully center the nut over the column crown and lay it flat on the surface of the block.

**Step 4.** Repeat steps 1 and 2, striking your arc on the crown of the column and allowing the column to build up level to the top of the nut.

**Step 5.** Once the column is level with the top of the nut, begin oscillating the TENSILEWELD electrode until you weld the nut to the column of weld metal.

**Step 6.** Now that you are done, allow the weld to cool and use a wrench to remove the stud with a rapid back and forth motion to break up the slag and loosen the stud

### IMPORTANT TIP

**Note:** If you are in a situation where two pieces of metal were held together by the broken bolt, such as an exhaust manifold flange to an engine block, and both sections are still in place, you **MUST** use a section of copper tubing slightly smaller than the hole, inserted all the way into the hole, then follow the above procedures. Gaps between the two metals will allow the slag to leak out from the bolt cavity, causing the weld column to lose its flux barrier and weld itself to the threads.

**WARNING: PROTECT** yourself and others. **READ AND UNDERSTAND** this information. **FUMES AND GASES** can be hazardous to your health. **ARC RAYS** can injure eyes and burn skin. **ELECTRIC SHOCK** can KILL. \* Before use, read and understand manufacturer's instructions, **Material Safety Data Sheets (MSDS)** and your employer's safety practices \* Keep your head out of fumes \* Use enough ventilation and/or exhaust at the arc to keep fumes and gases from your breathing zone and the general area. \* Wear correct eye, ear and body protection. \* Do not touch live electrical parts. \* Keep out of reach of those unable or unwilling to use safe handling practices \* See American National Standard ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes" published by the American Welding Society, 550 NW LeJeune Rd, Miami, FL 33126; OSHA "Safety and Health Standards", available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. **CALIFORNIA PROP. 65 WARNING:** This product may contain chemicals known to the state of California to cause cancer, birth defects and reproductive harm.