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THE PRODUCT

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*"When it comes to welding difficult alloys, there is only one word of it
....Techno-Weld."*



What is Techno-Weld?

"Techno-Weld is a genuine revolution in fusion welding of Aluminium"

Because:

1. It allows a genuine fusion weld to take place at 380°C some 200°C below the melting point of Aluminium.
2. It de-skills what has until now been a highly specialised welding process.
3. There is no need for an inert atmosphere or special equipment.
4. There is no need for expensive and corrosive fluxes, and no toxic vapours.
5. It enables you to weld materials that have until now been impossible to weld.
6. It makes light work of complex welds like thick to very thin.
7. It produces a clean 'pretty' weld everytime.
8. It reduces the energy requirements for a manufacturing process.
8. It has a large working temperature window of 380 - 430°C. (BP 495°C)
9. It is relatively insensitive to grease and oil contamination so special cleaning of items to be welded is not required.
10. It costs less than conventional welding or brazing / soldering processes.

No other product works in the same manner as Techno-Weld and despite the efforts by major competitors to replicate it, Techno-Weld remains the only product to form a genuine welded joint at low temperature.

How does it work ?

Techno-Weld is a unique welding rod formed from a complex mixture of metals in a highly controlled process to produce a material with totally unique metallurgical properties. When applied to an Aluminium containing alloy under the right temperature conditions, a grain boundary reaction takes place that causes Aluminium ions from the bodies being welded and Zinc, Copper and Manganese ions from the Techno-Weld to diffuse across the weld boundary to a depth of several microns producing a genuine weld.

"It is easy to use because it is a soldering technique that produces a genuine fusion weld and so anyone who can solder can use Techno-Weld".

Professional Approval & Recognition

Techno-Weld has been thoroughly evaluated by the Technical Welding Institute (TWI) and been recognised as *"Opening the door to a revolution in the process of Aluminium joining technology"*, and now forms a major part of their new National Exhibition entitled 'Joining Forces' which will be on permanent display at their headquarters in Abington Hall near Cambridge, UK.

It has also been given full approval and support from the British Aluminium Plate Research Centre at Birmingham, and has been endorsed by BOC Ltd and Reynolds Metal Corporation in the USA for use in welding Aluminium as a valuable alternative to conventional welding.

Techno-Weld Ltd is an Industrial Member of The Welding Institute



Properties of Techno-Weld

It melts at 380°C rather than the 430-700+°C of Aluminium and its alloys or the 596°C of 88/12 welding rods.

It is harder and so more wear resistant than most grades of Aluminium.

It is entirely resistant to salt water corrosion.

It won't stick to steel allowing stud manufacture.

It can be re-melted at any time with no further addition of material or flux.

It can be melted with perfectly standard Butane, Propane or town gas torches.

It is much more viscous and controllable due to its large operating window allowing a whole range of new repair techniques.

It can be nickel and chrome plated.

Performance and Technical Benefits of Techno-Weld

1. Less stress is caused in the joint area due to the lower temperature of joining causing less thermal expansion and contraction.
2. Higher tensile and compressive strength of weld due to lower temperature and slower cooling.
3. Can weld thin alloy to thick alloy - easily.
4. Can fabricate items from very thin aluminium easily, including welding Al foil to itself.
5. Can produce genuine Lap-Jointing and Butt joints without expensive multi-pass techniques.
6. Can be used as coating on softer alloys.
7. Can join Aluminium to Copper. (This is a braze joint)
8. Can fill holes and splits in thin Aluminium sheet easily.
9. Can pre-coat complex or bulky structures and join using a simple blow torch.
10. Can re-work a joint at any time.
11. Can work in any position, even overhead.
12. Can repair Aluminium castings including Mazak easily.
13. No problem with Porous joints / welds.
13. Cheaper & quicker - less energy, no flux, no special equipment, and less training needed.
14. Most repair work can be done in-situ.
15. Safe to use provided basic safety procedures are followed.
16. Can be machined, drilled and tapped.
17. Unlimited shelf life.

"Until now, repairing or working Aluminium permanently has not been an option to the unskilled. - Now it is!" Results are Guaranteed if the instructions are followed and the advice of the Techno-Weld technical staff is sought in the event of any problems.



What will it Weld ?

Techno-Weld fusion welds virtually all known Aluminium alloys including:-

- All grades of Aluminium plate, or extrusion.
- Aluminium Castings like cylinder heads.
- Zinc based die castings such as Mazak or Brock & Alpha Zammac
- Low Melting Point alloys such as high Zinc content alloys.
- MMC's - Metal Matrix Compounds like Al/Ti mixtures.

Techno-Weld comes in a kit with Techno-Weld rods, all necessary tools and comprehensive, easy to understand instructions and is both fast and easy to use.

Use & Applications of Techno-Weld

In general terms Techno-Weld can be used wherever Aluminium is used:-

- By private individuals.
- Service and repair businesses.
- Manufacturing and fabrication.

Specifically Techno-Weld can be used for:-

- Car manufacture and maintenance of all Aluminium parts including radiators, manifolds, cylinder-heads, gearbox casings etc. as well as high tech component manufacture.
- General Engineering - for repair and maintenance of machinery and equipment.
- Chemical and Pharmaceutical industry plant construction and maintenance.
- Medical equipment and artificial joint manufacture.
- Motorcycles including crankcase and gearbox casing repair.
- Boat manufacture and repair and including Masts and all Aluminium fittings.
- Outboard motors and underwater drive units, as well as Aluminium propellers.
- Aviation and Aerospace - manufacture and repair.
- Bicycle repair and manufacture.
- Caravan and Coach Building.
- Cladding of buildings and building panels.
- Telecoms and communications for Aerial repair and assembly.
- Electric motor manufacture and Electronic assemblies fabrication.
- Central heating and air conditioning manufacture and repair.
- Agricultural and Garden machinery manufacture and repair.
- Domestic equipment (washing machines/dryers)
- Model engineering.
- Injection moulds - low cost repairs and alterations.
- General Aluminium fabrication, e.g. racking, shelving, shelters, greenhouses, trailers etc.
- Advanced Ceramic joining techniques.



Techno-Weld and Safety

Techno-Weld is entirely safe to use, contains no Cadmium and can be handled without any special precautions.

During the Techno-Welding process, no noxious materials are used and virtually no toxic by-products are produced. The only slight risk is from a possible low level of zinc oxide fumes if used at temperatures higher than that recommended for the use of Techno-Weld over an extended period (some hours) in a confined space.

Like all brazing and welding processes, protective clothing and eye wear should always be used. This is clearly stated in the instructions.

Environmental Benefits

Aluminium is the most abundant metallic element in the Earth's crust and Bauxite ($\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ $\text{Al}(\text{OH})_3$) the raw material for Aluminium production is found all over the world in Lateritic deposits and represents over 7% of the Earth's crust.

Aluminium is also the "greenest" metal in terms of its extraction and refining, as no nasty by-products are produced in its manufacture or processing unlike steel where huge quantities of harmful gases and residues are produced for every ton of steel produced.

Aluminium also saves energy wherever it is used due to the lower energy required to move it.

Aluminium is 100% recyclable and doesn't rust like steel so reducing the huge cost of protective coatings needed each year.

Techno-Weld and the Future

The main constraint in the use of Aluminium up to now has been the cost/skill needed to join it, however Techno-Weld has changed that, and will continue to do so.

Already the use of Aluminium is increasing rapidly due to environmental pressures and sales have increased dramatically over the last few years, leading to ever increasing interest in Techno-Weld.

In 1994 the Banks stock-piled £4 billion worth of Aluminium in anticipation of potential demand due to changes in the law that would demand pollution levels created by industry be reduced and emission controls on both cars and industry would be tightened still further. This has encouraged the use of Aluminium which is less polluting to make or use but it needs easier and less skill intensive joining and repair methods, for which Techno-Weld is ideal.

Even now, for certain types of construction like offshore platforms, constructors are finding that for some structures Aluminium is not only lighter than steel, but it is both stronger and cheaper also, which is causing designers to radically re-think their whole material selection philosophy.

By the end of the century, most popular motor cars are likely to be entirely constructed of Aluminium and plastics only to save energy and reduce pollution, which will work in favour of Techno-Weld in manufacturing and repair.

Consequently Norwich Union are already recommending the use of Techno-Weld on cast repairs and Aluminium bodied vehicles.

"Techno-Weld simply joins Aluminium easily"



SUMMARY OF TECHNO-WELD FEATURES

Techno-Weld is a revolutionary product in the field of Aluminium Fusion Welding, and overcomes many of the major problems associated with traditional methods Aluminium Joining.

1. SIMPLE TO USE - Welding with Techno-Weld is similar in process to gas soldering/silver soldering, therefore traditional Aluminium welding skills or equipment are not necessary.

The work-piece or area to be welded, requires only sufficient heat to raise the temperature to 380°C by using any general heat source appropriate to the size of job, such as Blow-torch, Oven or Oxyacetylene etc.

No need to raise the temperature dangerously near to the melting point of the Aluminium/Alloy itself, avoiding the possibility of sudden collapse of the job.

2. NO FUMES / VIRTUALLY INDEFINITE SHELF LIFE - The process requires no flux at all, and is therefore free from toxic fumes. Techno-Weld rods have an almost indefinite shelf-life, provided they are stored in a relatively dry area.

3. A STRONG FUSION WELD - Techno-Weld forms a true fusion weld. Even though the Welder is not heating the workpiece up to its melting point, the area of workpiece when correctly heated will melt the Techno-Weld and form an alloy with the Techno-Weld material without high temperatures. The resultant weld material is very hard, has good tensile and compressive strength, which serves to reinforce the join or filled area.

4. VERSATILE - Techno-Weld is effective on virtually all grades of Aluminium, Aluminium alloy (including high silicon content casting) and special Aluminium derivatives such as Duralium, Dural, Birmabrite (Land Rover body panels), and zinc based alloys.

Since the nature of the Techno-Weld process is somewhat different to traditional methods of welding Aluminium, it opens up the possibility of developing new and exciting methods and uses in all areas of Industry that use Aluminium material.

Techno-Weld : Easy, Safe , Strong and Economical



MATERIAL SAFETY SHEET

TECHNO-WELD LOW TEMPERATURE ALUMINIUM FUSION WELDING RODS AND MATERIAL

VENDEE AND THIRD PERSONS ASSUME THE RISK OF INJURY DIRECTLY OR INDIRECTLY CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT FOLLOWED AS PROVIDED FOR IN THE DATA SHEET, AND VENDOR SHALL NOT BE LIABLE FOR SUCH INJURY. FURTHERMORE, VENDOR SHALL NOT BE LIABLE FOR INJURY TO VENDEE OR THIRD PERSONS, DIRECTLY OR INDIRECTLY CAUSED BY ABNORMAL USE OF THE MATERIAL, EVEN IF REASONABLE SAFETY PRECAUTIONS ARE FOLLOWED.

ALL PERSONS USING THIS PRODUCT, ALL PERSONS WORKING IN AN AREA WHERE THIS PRODUCT IS USED, AND ALL PERSONS HANDLING THIS PRODUCT SHOULD BE FAMILIAR WITH THE CONTENT OF THIS DATA SHEET. POSTING THIS DOCUMENT FOR EMPLOYEE NOTIFICATION IS RECOMMENDED BY THE VENDOR AND MAY BE REQUIRED BY LAW.

Revision Date: 23/02/94

PRODUCT IDENTIFICATION DATA

Supplied by: TECHNO-WELD LTD.
Address: ASTON WORKS, BACK LANE, ASTON, OXON, OX18 2BX, ENGLAND.
Trade Name: TECHNO-WELD
Synonyms: LOW TEMPERATURE ALUMINIUM FUSION WELDING MATERIAL.
Intended Use: FOR D.I.Y., COMMERCIAL AND INDUSTRIAL USE. CADMIUM-FREE FLUXLESS FUSION WELDING FILLER MATERIAL.

HAZARDOUS INGREDIENTS DATA

MATERIAL OR COMPONENT	(CAS #)	WEIGHT %	HAZZARD DATA	
			OSHA PEL	ACGIH TLV
ZINC	(CAS # 7440-66-6)	90 - 98	2 mg/m ³	2 mg/m ³
ALUMINIUM	(CAS # 7429-90-5)	1.0 - 9.0	6.5 mg/m ³	0.5 mg/m ³
COPPER	(CAS # 7440-50-8)	0.1 - 5.0	30 mg/m ³	
DUST	action level		1.0 mg/m ³ (m&D)	1.0 mg/m ³ (m&D)
FUME	action level		0.1 mg/m ³	0.2 mg/m ³

PHYSICAL DATA

BOILING POINT	Zinc = 907°C	Aluminium = 2467°C	Copper = 2595°C
SPECIFIC GRAVITY (Density @25°C)	Zinc = 7.133 g/cm ³	Aluminium = 2.699 g/cm ³	Copper = 8.94 g/cm ³
VAPOUR PRESSURE	Not Applicable	Not Applicable	Not Applicable
VAPOUR DENSITY	Not Applicable	Not Applicable	Not Applicable
SOLUBILITY IN H ₂ O	Not Applicable	Not Applicable	Not Applicable
% VOLATILES BY VOL	Not Applicable	Not Applicable	Not Applicable
EVAPORATION RATE	Not Applicable	Not Applicable	Not Applicable
APPEARANCE AND ODOUR	Silver Coloured Metal with no Odour		

REACTIVE DATA

Incompatibility:
Pure zinc: Incompatible with strong acids, sodium's or halogens.
Pure Aluminium: N/A
Pure copper: Incompatible with 1-bromo-2-propyne, fume is incompatible with acetylene gas, dust and mist are incompatible with acetylene gas and magnesium metal.

Hazardous Decomposition: Not Applicable

Hazardous Polymerisation:

Does not occur

FIRE AND EXPLOSION DATA

Flash Point: Not Applicable

Auto Ignition Temperature: Not Applicable

Flammable Limits in Air (% by Vol): Not Applicable

Extinguishing Media: Special mixtures of dry chemicals suitable for metal fume. Do not use water or moist sand. Fire fighters should wear self-contained breathing apparatus and protective clothing.

Special Fire: Metal products are not a fire hazard. However, dust generated from grinding especially if mixed with flammable coatings may present a fire or explosion hazard under certain conditions. At a temperature above 375°C this alloy may melt and continuous heating could produce metal vapour.



HEALTH HAZARD SAFETY SHEET - (US Specification)

PRIMARY ROUTES OF EXPOSURE: Ingestion of Dust, Inhalation of Dust or Fume.

- Zinc :** Chronic inhalation of Zinc Oxide dust or fume. See attached MSDS on pure Zinc. Note: Zinc is a high percentage of the Techno-Weld formula.
- Aluminium :** Inhalation of fumes from melting, casting, welding or burning and dust from grinding or cutting. Note: Aluminium is a low percentage of the Techno-Weld formula.
- Copper :** Industrial exposure to copper fumes, dusts or mists result in metal fume fever with atrophic changes in nasal mucous membranes. Chronic poisoning results in Wilson's disease, characterised by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea. Note: Copper is a low percentage of the Techno-Weld formula.

EFFECTS OF OVER EXPOSURE:

Acute Over exposure: Excessive inhalation of fumes from many metals can produce an acute reaction known as "metal fever". Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms) which comes on a few hours after such an exposure. Long-term effects have not been noted.

Chronic Over exposure: Fumes may cause irritation of the respiratory tract, skin and eyes.

EMERGENCY AND FIRST AID TREATMENT:

Eyes - Flush eyes with water at least for 15 minutes, and seek medical assistance if necessary.

Burns - Treat burns from molten materials as you would any other serious burns.

Inhalation - Remove from over-exposure to fresh air. Consult Physician. Keep the Subject warm and resting. Perform artificial respiration if breathing has stopped.

Ingestion: If large quantities are ingested, give 1-2 glasses of water or milk. Induce vomiting only if Subject is fully conscious and has not convulsed. (Ingestion of significant amounts is likely.) All severe ingestion cases should have immediate medical aid.

Dust on Skin - Remove excess dust from skin and wash affected area with soap and water. Seek medical assistance if necessary.

SPILLS, LEAKS & DISPOSAL PROCEDURES

Steps to be taken: No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming with approved HEPA type filtration or wet sweeping to prevent heavy concentrations of airborne dust. Clean-up Personnel should wear respirators and protective clothing.

Waste disposal: Scrap metal can be reclaimed for reuse. Follow Government and Local regulations regarding disposal.

SPECIAL PROTECTION INFORMATION

Ventilation Requirements: Use mechanical local exhaust ventilation adequate to maintain airborne concentration of all components and reaction produced to within their respective OSHA PELs'.

Specific Personal Protection:

Eyes: Goggles, face shield.

Hands: Use chemical resistant gloves to avoid repeated skin contact.

Other Clothing: Wear non-flammable protective clothing suitable for the process of melting, casting and torch welding.

Work Hygiene: Avoid ingestion of material. Wash hands and face before eating, drinking or consumption of tobacco.

Other Handling and Storage Requirements:

Use good housekeeping practices to prevent accumulations of dust and to keep airborne dust concentrations at a minimum. Avoid breathing dust or fumes. Store material away from incompatible materials, and keep dust away from sources of ignition.

DISCLAIMER OF EXPRESSED OR IMPLIED WARRANTIES

ALTHOUGH REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF THIS DATA SHEET, AND ALL INFORMATION CONTAINED THEREIN HAS BEEN REVIEWED AND REVISED TO THE BEST OF OUR ABILITY, WE EXTEND NO WARRANTIES AND MAKE NO REPRESENTATIONS AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION FOUND IN THESE DATA SHEETS. WE THEREFORE ASSUME NO RESPONSIBILITY REGARDING THE SUITABILITY OF THIS INFORMATION FOR THE USERS INTENDED PURPOSES OR FOR THE CONSEQUENCES OF THIS PRODUCTS USE. EACH INDIVIDUAL MUST MAKE HIS OR HER OWN DETERMINATION AS TO THE SUITABILITY OF THE INFORMATION FOR SUCH PURPOSES OR USE.



COMPREHENSIVE MATERIAL DATA SHEET FOR TECHNO-WELD

TECHNO-WELD is a proprietary alloy based on mainly zinc, with additions of Aluminium, copper, manganese, magnesium, and other metals. Lead, Cadmium, Tin and Iron are kept below the threshold values as outlined in the assay specifications. Joints may show a weak bond if excessive silicone is present in the base metal.

No flux is recommended for the joint, since fluxing will remove the trace elements that align the dendrite structure before the bond is complete. Do not use a deoxidiser on this product. Pulsation resistance welding will allow a controlled heating of the joint.

Join testing was undertaken by Reynolds Aluminium, and was tested on both 3003-H14 and 1100-H14 Aluminium. T joints were made by using 2 sheets of 0.01" x 2 x 3" and were subjected to a continuous 5% salt spray test. No failure was observed after 500 hrs.

Corrosion resistance is dependent upon the surrounding environment. When tested on the Eastern Seaboard, Long Island, NY, the penetration rate reached 0.000762 mm per year. Near very heavy Industrial operations, the penetration was magnified to 0.00173mm per year. This material is expected to perform safely wherever zinc or zinc coated steel has been used in the past with success.

Several socket joints were made to simulate return bends used in practice for 3/8" diam., .89mm wall Aluminium tubing. They had a nominal 1/4" joint length. They were subjected to 720 hrs. in a controlled humidity cabinet (100% relative humidity) at 65.5°C with no visible signs of corrosion.

Endurance limit on a 1/4" section showed a limit of 8500 psi at 100million cycles.

Lap joints were made from 2 sheets of 1/8" thickness Aluminium, 5" long and 2" wide. Using a Tinius Olsen Tensile Strength Machine, the following results were obtained:

28kg sheer strength for 1.27mm x 50.8mm lap (28kg for .05" lap)
 After 48 hrs in flowing synthetic tap water: 24.6 K.s.i
 After 720 hrs in 100% relative humidity at 150°F: 15.5 K.s.i. sheer strength for .05" lap

Standard finishes: Mechanical, electrodeposited, chemical, organic, and plastic.

Temperature Transition points	379 Solidus - 390 Liquidus (°C)
Liquid Working Temperature	392 - 495 °C
Tensile Strength *	Exceeds 50 K.s.i. (345 N/mm ²) Die cast 1/4" section = 52,000 psi Ultimate tensile strength 40,000 psi
Shear Strength *	Exceeds 45 Ksi (310 N/mm ²) Die cast 1/4" section = 46000 psi Actual joint strength exceeds 25 ksi
Solidification shrinkage	1.2% (die design, use .3% to .6%)
Thermal Expansion	25°C - 105°C = .000762mm per °C (.00003" per °C)
Thermal Conductivity	75°C - 145°C 0.245 cal/cu.cm./°C/second
Electrical Conductivity	24.9% of Copper
Electrical Resistivity	@ 20°C = 6.8 micro-ohm - cm
Impact Value	Charpy 35 ft-lb
Brinell Hardness	97
Compressive Strength *	Exceeds 90,000 psi
Density	@ 21°C = 6.7g/cu.cm
Elongation	7.5% in 1/4", 3% in 2" (thickness of bar)
Solidification shrinkage	0.14"/ft

* Values are the minimum of a series of tests and may well be substantially exceeded in particular applications.



TROUBLE - SHOOTING

The major problem is that people don't read the instructions ! which leads to one of two problems :-

1. The Techno-Weld doesn't take or adhere to the Aluminium.

Explanation

This is caused by heating the welding rod in the flame rather than heating the workpiece. It is essential that it is the heat from the workpiece that melts the Techno-Weld rod NOT the flame. This is the only way you can ensure that the TECHNO-WELD and the Aluminium are at 380°C at the same time. Molecules of Aluminium start to leave the surface at 380°C and TECHNO-WELD "grabs" these molecules to start the process. If TECHNO-WELD is at 380°C before the Aluminium, it has nothing to "grab".

2. The joint cracks or TECHNO-WELD lifts from the edge of a repair

This results in a weak joint that will fail under stress or a repair that will probably "pit" on dressing back.

Explanation

This is caused by the Aluminium cooling too fast. The Aluminium must be heated in a general area around where the repair is to take place. There should be sufficient heat in the Aluminium to keep the TECHNO-WELD molten on the surface for at least 6 seconds. On large section aluminium castings (cylinder heads, crankcases etc.) 15-20 seconds. This slow cooling allows TECHNO-WELD to form a large, strong crystalline structure. Fast cooling results in small "granular" structure which is inherently weak.

If the problem occurs - reheat the job, (not directing the flame onto the Techno-Weld) until the TECHNO-WELD remelts and let the job recool on the time indications given above.

Large Aluminium workpieces should always be preheated with a big "fluffy" flame or in an oven up to 200-250°C (Gas Mark 9!)

TECHNICAL SUPPORT FOR CUSTOMERS AND END USERS

Techno-Weld Industrial provides free Technical Advice and help for all customers, whether distributors or end users, on the suitability of the material for particular applications, and the best heating and engineering approach to meet a customers particular need.

Whilst most Aluminiums do not present any problem when using Techno-Weld, we always invite any end user to contact us for help should they feel unsure about any aspect of the alloy they are dealing with.

Techno-Weld Limited are Industrial Members of The Welding Institute and can therefore often provide specialist knowledge generally unavailable.

GUARANTEE

Techno-Weld should always fuse Aluminium and alloys provided the instructions are followed correctly and the material is used on suitable metal.

In the event of any end user claiming that the product does not function as claimed by Techno-Weld Limited, please advise them to contact Techno-Weld Industrial directly for advice, as most problems are caused by contravention of advised application procedure, mostly related to insufficient volume of heat or over fast cooling.

In the event of any defect in the component content of the packaged product, such defective product will be replaced Free of Charge.

"Techno-Weld makes a Weld of difference to your business"



Customer List

Benetton F1 Team
BOC
British Airways
Denby Pottery
Ducatti Racing
Ford Motor Company
GEC Marconi
H M Prison Service
JET Joint Undertaking
Lucas
Metropolitan Police
Ministry of Defence
Rover
Snap-On
Scottish Fisheries Protection Agency
T&N Technology
TVR
TWR
Universities & Engineering Colleges
Verity Perkins (Rolls Royce Engine Maintenance)



TECHNO
WELD

....a revolution

in

Aluminium Welding

SUMMARY OF FEATURES

Techno-Weld is a revolutionary product in the field of Aluminium Fusion Welding, and overcomes many of the major problems associated with traditional methods of Aluminium Joining.

1. **SIMPLE TO USE** - Welding with Techno-Weld is similar in process to gas soldering/silver soldering, therefore traditional Aluminium welding skills or equipment are not necessary.

The work-piece or area to be welded, requires only sufficient heat to raise the temperature to 380°C by using any general heat source appropriate to the size of job, such as Blow-torch, Oven or Oxyacetylene etc.

No need to raise the temperature dangerously near to the melting point of the Aluminium/Alloy itself, avoiding the possibility of sudden collapse of the job.

2. **NO FUMES / VIRTUALLY INDEFINITE SHELF LIFE** - The process requires no flux at all, and is therefore free from toxic fumes. Techno-Weld rods have an almost indefinite shelf-life, provided they are stored in a relatively dry area.

3. **A STRONG FUSION WELD** - Techno-Weld forms a true fusion weld. Even though the Welder is not heating the workpiece up to its melting point, the area of workpiece when correctly heated will melt the Techno-Weld and form an alloy with the Techno-Weld material without high temperatures. The resultant weld material is very hard, has good tensile and compressive strength, which serves to reinforce the join or filled area.

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