

## Primary Application of Inconel, Nickel Alloy Welding Wires



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# What is Inconel, Nickel Alloy Welding Wires?

➤ In the world, there are many grade of welding wires according to their chemical compositions. But, basically, they can be separated as 2 groups as **1. Stainless Steel based** and **2. Nickel Alloy based**.

## 1. Stainless Steel based Welding Wires

Stainless Steel				
AWS Classification	UNS Number	KOWEL Brand Name		
		MIG	TIG	SUB-ARC
ER 307Si		KWM-307Si	KWT-307Si	KWS-307Si
ER 308	S30880	KWM-308	KWT-308	KWS-308
ER 308L	S30883	KWM-308L	KWT-308L	KWS-308L
ER 308H	S30880	KWM-308H	KWT-308H	KWS-308H
ER 308LSi	S30888	KWM-308LSi	KWT-308LSi	KWS-308LSi
ER 309	S30980	KWM-309	KWT-309	KWS-309
ER 309L	S30983	KWM-309L	KWT-309L	KWS-309L
ER 309LSi	S30988	KWM-309LSi	KWT-309LSi	KWS-309LSi
ER 309LMo	S30986	KWM-309LMo	KWT-309LMo	KWS-309LMo
ER 310	S31080	KWM-310	KWT-310	KWS-310
ER 312	S31380	KWM-312	KWT-312	KWS-312
ER 316	S31680	KWM-316	KWT-316	KWS-316
ER 316L	S31683	KWM-316L	KWT-316L	KWS-316L
ER 316LSi	S31688	KWM-316LSi	KWT-316LSi	KWS-316LSi
ER 320	N08021	KWM-320	KWT-320	KWS-320
ER 317	S31780	KWM-317	KWT-317	KWS-317
ER317L	S31783	KWM-ER317L	KWT-ER317L	KWS-ER317L
ER 320LR	N08022	KWM-320LR	KWT-320LR	KWS-320LR
ER 321	S32180	KWM-321	KWT-321	KWS-321
ER 347	S34780	KWM-347	KWT-347	KWS-347
ER 347Si	S34788	KWM-347Si	KWT-347Si	KWS-347Si
ER 409	S40900	KWM-409	KWT-409	KWS-409
ER 410	S41080	KWM-410	KWT-410	KWS-410
ER 420J2		KWM-420J2	KWT-420J2	KWS-420J2
ER 409Ti		KWM-409Ti	KWT-409Ti	KWS-409Ti
ER 409LTi		KWM-409LTi	KWT-409LTi	KWS-409LTi
ER 430	S43080	KWM-430	KWT-430	KWS-430
430LNb		KWM-430LNb	KWT-430LNb	KWS-430LNb
ER 439	S43035	KWM-439	KWT-439	KWS-439

Stainless Steel based welding wire is used in universal industries such as Automotive, Construction, Vessel, Ocean plant, Nuclear power, Oil, and Gas, etc.

They are generally lower prices than Nickel Alloy based welding wires.



# What is Inconel, Nickel Alloy Welding Wires?

## 2. Nickel Alloy based Welding Wires

Nickel Alloys				
AWS Classification	UNS Number	KOWEL Brand Name		
		MIG	TIG	SUB-ARC
ERNi-1	N02061	KWM-Ni-1	KWT-Ni-1	KWS-Ni-1
ERNiCu-7	N04060	KWM-NiCu-7	KWT-NiCu-7	KWS-NiCu-7
ERNiCr-3	N06082	KWM-NiCr-3	KWT-NiCr-3	KWS-NiCr-3
ERNiCrFe-7	N06052	KWM-NiCrFe-7	KWT-NiCrFe-7	KWS-NiCrFe-7
ERNiCrFe-11	N06601	KWM-NiCrFe-11	KWT-NiCrFe-11	KWS-NiCrFe-11
ERNiFeCr-2	N07718	KWM-NiFeCr-2	KWT-NiFeCr-2	KWS-NiFeCr-2
ERNiCrMo-3	N06625	KWM-NiCrMo-3	KWT-NiCrMo-3	KWS-NiCrMo-3
ERNiCrMo-4	N10276	KWM-NiCrMo-4	KWT-NiCrMo-4	KWS-NiCrMo-4
53MD		KWM-53MD	KWT-53MD	KWS-53MD
WASPALLOY		KWM-WASPALLOY	KWT-WASPALLOY	KWS-WASPALLOY

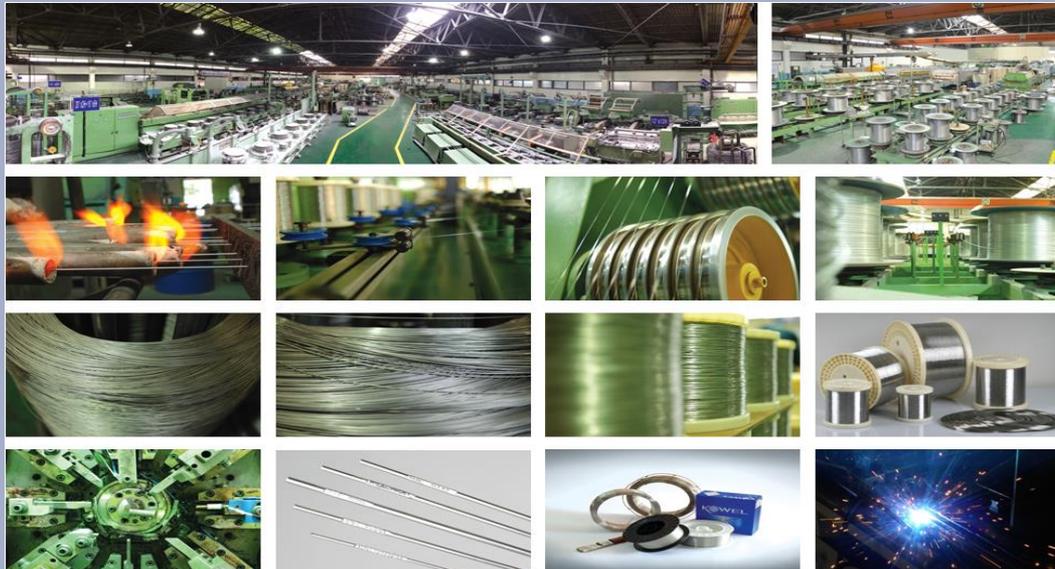


Nickel Alloy based welding wire is composed of Ni (Nickel) over than 50 % and other chemicals. They are generally higher prices than Stainless Steel based welding wires.

Usually, they are used in industries where very high temperature and pressure resistance property is needed.

Generally, Nickel Alloy Welding Wire is called as Inconel Welding Wire.

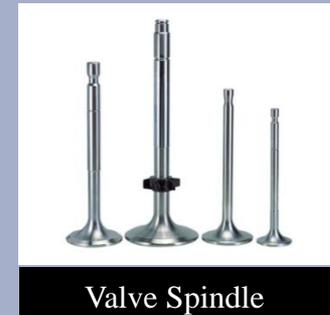
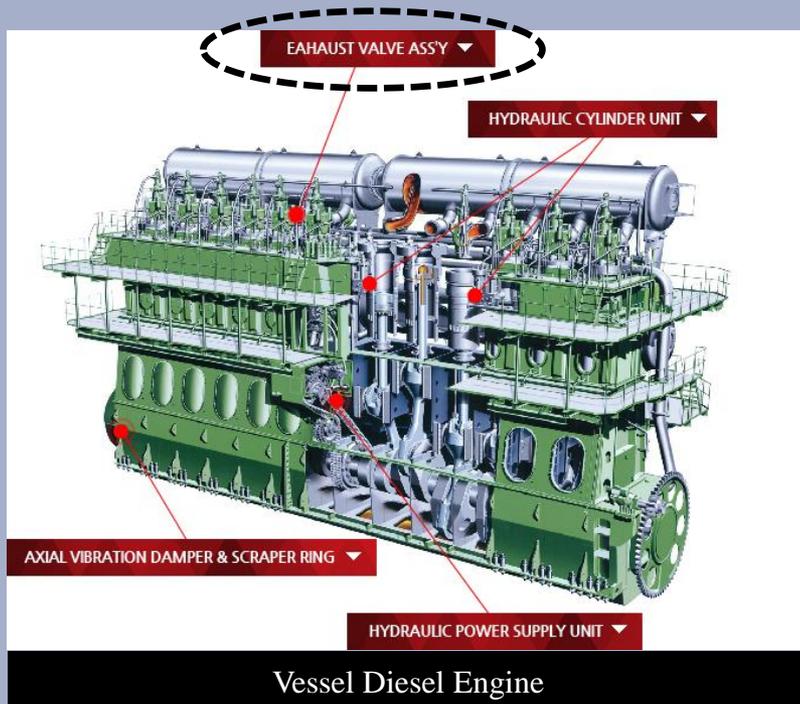
As you may know, Inconel is the brand name of the company “Special Metals (USA)” who is a steel mill company. But now, their brand name “Inconel” is globally generalized for Nickel Alloy Steel.



# Where Inconel, Nickel Alloy Welding Wires are used?

## Very specific application example of Inconel, Nickel Alloy Welding Wire

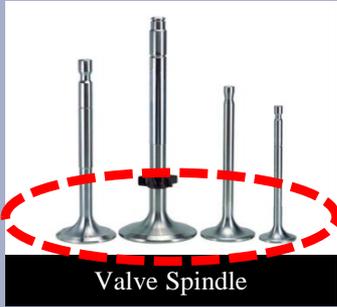
- There are lots of industries where nickel alloy welding wire can be used.  
But, at the moment, I hope to focus on the Vessel Diesel Engine Repairing/Reconditioning industry.
- In the Vessel Diesel Engine, there is Exhaust Valve Ass'y. And, inside the Exhaust Valve Ass'y, there are Valve Spindle, Piston Crown, etc.



# Where Inconel, Nickel Alloy Welding Wires are used?

## Very specific application example of Inconel, Nickel Alloy Welding Wire

### Valve Spindle Repairing / Reconditioning



### Piston Crown Repairing / Reconditioning



- Inside Exhaust Valve Ass'y, very high temperature & pressure condition is being formed during Engine gas combustion. So, its Valve Spindle disc area and Piston Crown head are worn-out easily. But, because the parts are made of very expensive material as "Nimonic", it is much costly to change the whole part to new one.

# Where Inconel, Nickel Alloy Welding Wires are used?

## Very specific application example of Inconel, Nickel Alloy Welding Wire

- So, Repairing/Reconditioning of only worn-out parts industry has been developed globally. Repairing service companies are located in almost all ocean port of the world and their main customers are such vessel diesel engine makers as MAN Diesel and WARTSILA.
- Basically, the repairing companies are using such Nickel Alloy Welding wires as Inconel 625, Inconel 718, and Inconel M-82 for their reconditioning service.
  - Inconel 625 = ERNiCrMo-3
  - Inconel 718 = ERNiFeCr-2
  - Inconel M-82 = ERNiCr-3
- We, KOWEL are manufacturing not only Stainless Welding Wires but also Inconel, Nickel Alloy Welding Wires as the biggest volume in South Korea.
- Now, we are supplying Inconel, Nickel Alloy Welding Wires to East Asia and South-East Asia countries. Indeed, our price is much competitive and it is approved through our global marketing.

# Quality Comparison between KOWEL and Others

## Quality Benefit of KOWEL's Inconel, Nickel Alloy Welding Wire



**Welding Bead is consistent,  
Overlaid surface is smooth and flat.**



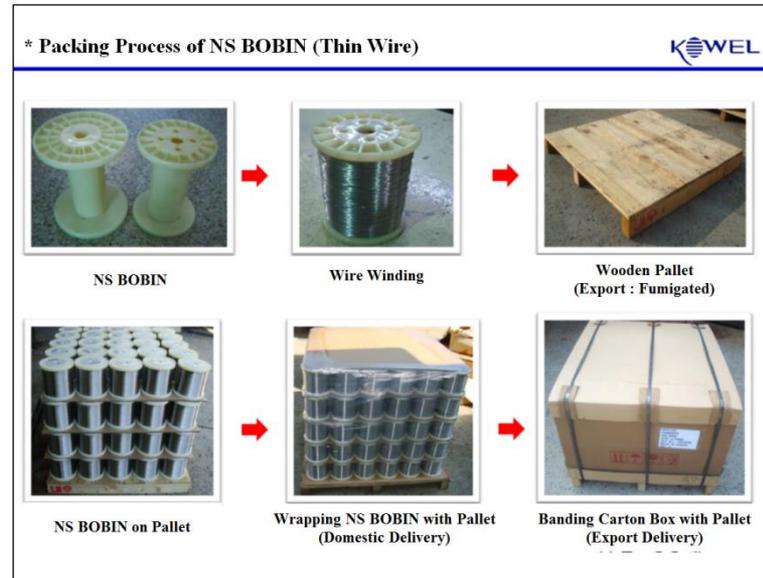
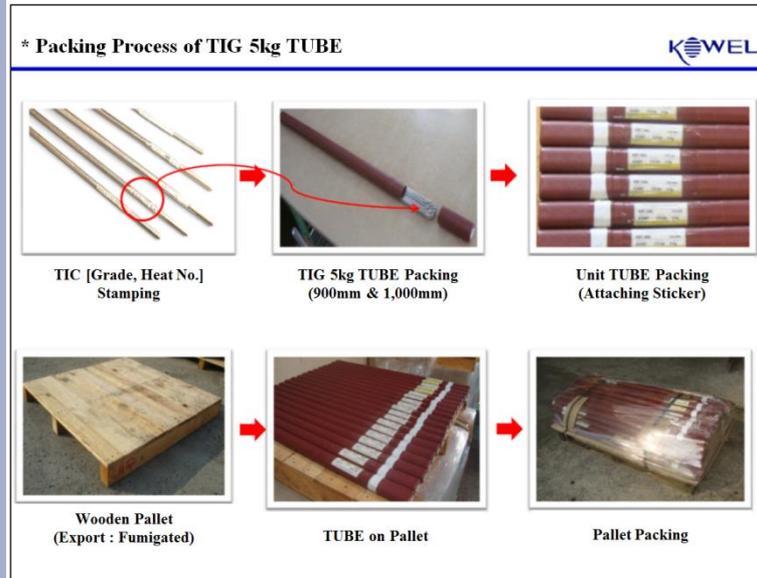
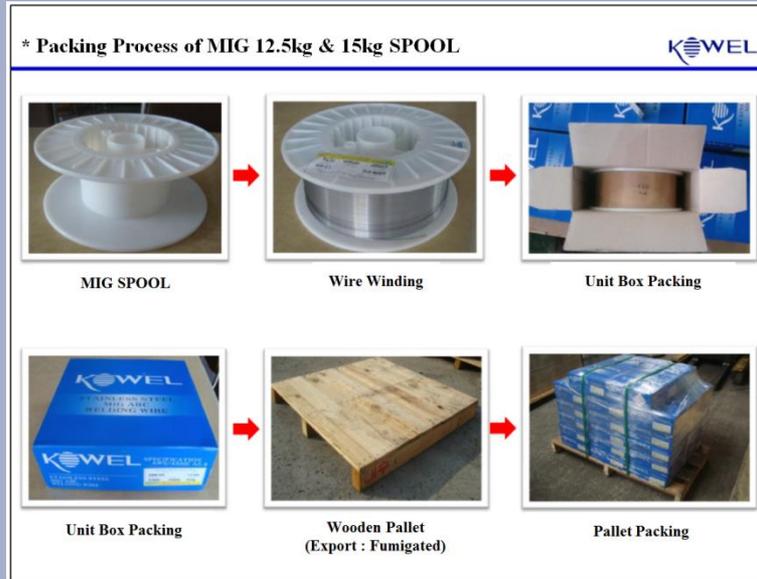
**Welding Bead is not consistent,  
Overlaid surface is not flat and has many curves**



Supplier "B"

# Standard Packing Condition for Export

Other packing condition is upon customer's request



**Thank You**

