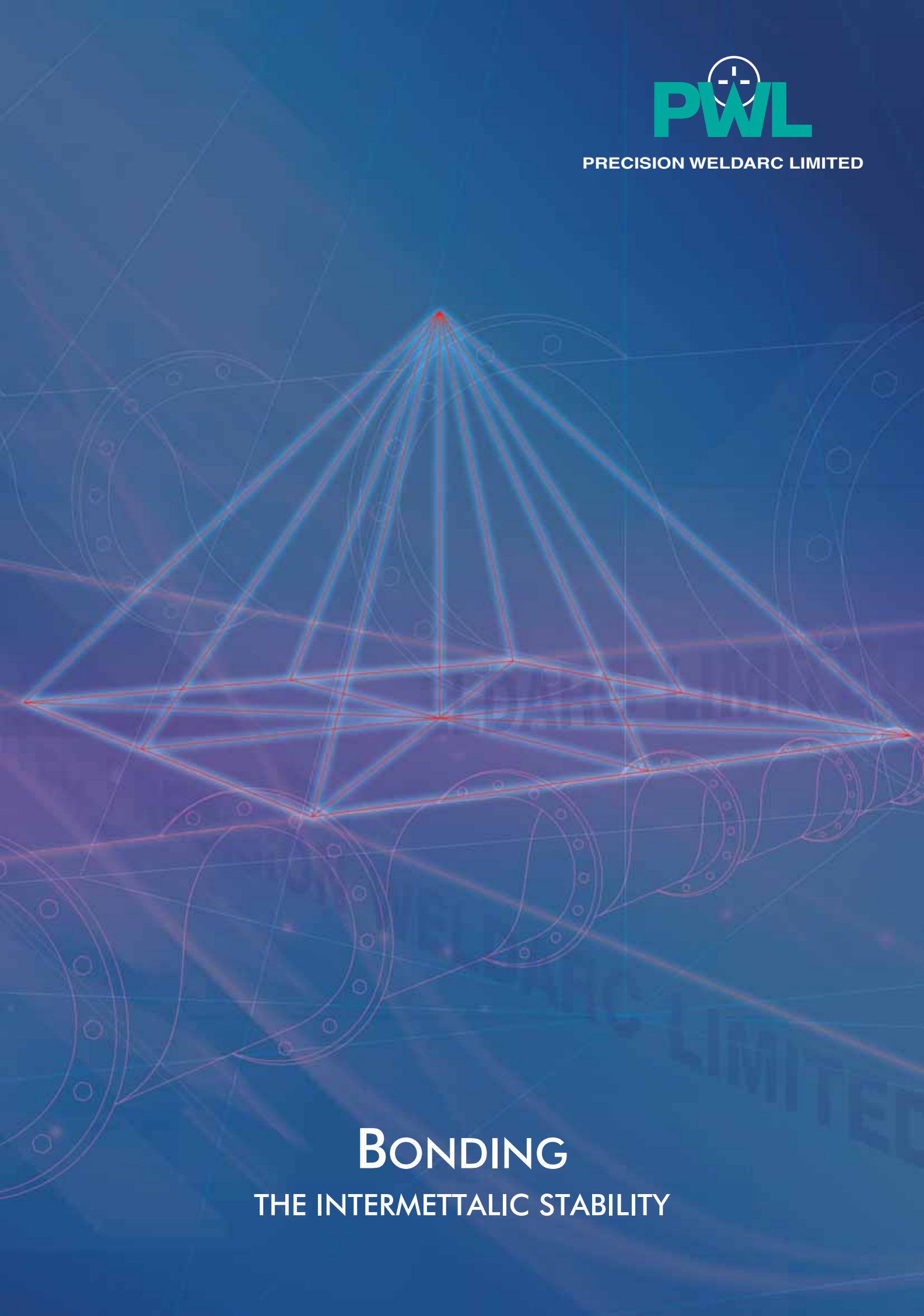




PRECISION WELDARC LIMITED

The background of the entire page is a deep blue gradient. Overlaid on this are several faint, light blue geometric patterns. A prominent feature is a large, complex network of thin lines that form a series of interconnected triangles and polygons, resembling a technical drawing or a structural analysis. In the center of this network is a small, bright red point. Additionally, there are faint, semi-transparent circular patterns with small dots around their perimeters, which look like technical drawings of flanges or circular components. The overall aesthetic is technical and precise.

BONDING

THE INTERMETTALIC STABILITY

Precision Weldarc Ltd a well known manufacturer of Submerged Arc welding wire, Mig welding wire and SAW Flux in the weld arc industry is fully equipped with all essential machines and equipments to meet production, inspection, testing and storage needs. Apart from the dynamic management, the company has a dedicated workforce of around 100 skilled technicians and semi skilled workers. It has a fully computerized administrative office, centralized purchase as well as production and marketing division, which are well monitored by the Directors.

Today, Precision Weldarc Ltd is a formidable team with unsurpassed professional excellence ready to take on new opportunities and challenges.





PWL works with a vision to take the technology to the common man, founded in 1997 the company is a major manufacturer and exporter of copper coated welding wire. The success story of Precision Weldarc, started when Mr. Tanay Moosaddee & Mr. Umesh Goenka joined hands and with their dynamic leadership and marketing abilities made the company a well-known name in the industry.



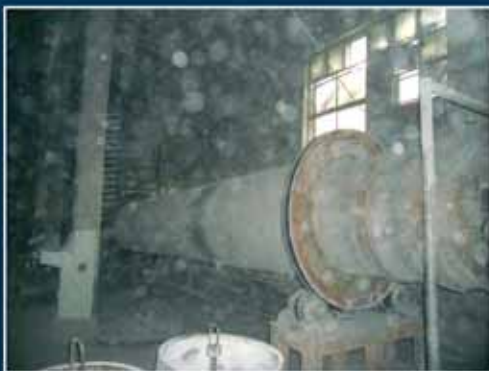
Since its establishment in 1997 PWL has grown to new heights. PWL now produces an annual quantity of approx 15000 MT per annum copper coated wires and 5000 MT of welding flux for weld arc industry. In view of the continuous expansion and demands from our clients, PWL has increased its human resources with qualified and skilled people at all levels.

Through years of manufacturing experience and well-organized management, PWL has become one of the most preferred copper coated wire suppliers in the industry and provides the finest products as per industry norms and specifications.



At PWL we will be differentiated from our competitors by technology, quality, applications engineering, sales and marketing expertise.

OUR WORKSHOP



TESTING FACILITIES



VISION

PWL will be the undisputed leader supplying the finest quality welding products. In order to accomplish this, we will continue our emphasis on being the industry's lowest cost producer, on providing applications expertise and solutions for our customers, and on developing new and innovative technology that responds to customer needs with value-added products and services.

MISSION

Total Solutions

PWL will be driven by customer satisfaction and become known as the supplier of choice in our industries. We will strive to exceed customer expectations. We will be a solutions company, not simply a supplier of consumables.

Expertise

PWL will be differentiated from our competitors by technology, quality applications engineering, sales and marketing expertise.

Responsibility

PWL will continually strive to be environmentally responsible and to support the health and safety of our employees, customers, and neighbors. We support the communities where we operate and the industries in which we participate.

At PWL we will expand our operations and be global, we will have cost competitive manufacturing facilities to cater our overseas clients to best serve our customers' needs.

PWL WELDING CONSUMABLES



GAS METAL ARC WELDING (GMAW)

Gas metal arc welding (GMAW), sometimes referred to by its subtypes metal insert gas (MIG) welding or metal active gas (MAG) welding, is a semiautomatic or automatic arc welding process in which a continuous and consumable wire electrode and a shielding gas fed through a welding gun. A constant voltage, direct current power source is most commonly used with GMAW, but constant current systems, as well as alternating current, can be used. There are four primary methods of metal transfer in GMAW, called globular, short-circuiting, spray, and pulsed spray, each of which has distinct properties and corresponding advantages and limitations.

Originally developed for welding aluminum and other non-ferrous materials in the 1940s, GMAW was soon applied to steels because it allowed for lower welding time compared to other welding processes. The cost of inert gas limited its use in steels until several years later, when the use of semi-inert gases such as carbon dioxide became common. Further developments during the 1950s and 1960s gave the process more versatility and as a result, it became a highly used industrial process. Today, GMAW is the most common industrial welding process, preferred for its versatility, speed and the relative ease of adapting the process to robotic automation. The automobile industry in particular uses GMAW welding almost exclusively. Unlike welding processes that do not employ a shielding gas, such as shielded metal arc welding, it is rarely used outdoors or in other areas of air volatility.

At PWL we will be driven by customer satisfaction and become known as the supplier of choice in our industries. We will strive to exceed customer expectations



MIG WIRES

PWL	MIG 1	Classification : AWS 5.18, ER70S6 DIN 8559-SG1			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.06-0.12	1.00-1.30	0.50-0.70	0.02 max.	0.02 max.	0.30 max.
Typical Mechanical Analysis of weld deposit					
Tensile strength (N/mm ²) 530					
Yield strength (N/mm ²) 430					
Elongation % A5d 26(>22%)					
Impact properties (CVN) at -20 C 80 J (>47J)					

PWL	MIG 2	Classification : AWS 5.18, ER70S6 DIN 8559-SG2			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.06-0.15	1.40-1.85	0.80-1.15	0.02 max.	0.02 max.	0.30 max.
Typical Mechanical Analysis of weld deposit					
Tensile strength (N/mm ²) 570 min					
Yield strength (N/mm ²) 470 min					
Elongation % A5d 26(>22%)					
Impact properties CVN at -40 C 55 J (>47J)					

PWL	MIG 3	Classification : AWS 5.18, ER70S6 DIN 8559-SG3			
Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.06-0.15	1.60-1.90	0.90-1.20	0.01 max.	0.01 max.	0.30 max.
Typical Mechanical Analysis of weld deposit					
Tensile strength (N/mm ²) 600 min					
Yield strength (N/mm ²) 500 min					
Elongation % A5d 26(>22%)					
Impact properties CVN at -40 C 60 J (>47J)					

PWL	MIG 4	Classification : AWS A5.28, ER90S-G DIN 8575 SGMo				
Chemical Analysis of Wire (%) :						
C	Mn	Si	S	P	Mo	Cu
0.08-0.12	1.90-1.30	0.30-0.70	0.02 max.	0.02 max.	0.40-0.60	0.30 max.
Typical Mechanical Analysis of weld deposit						
Tensile strength (N/mm ²) 600 min						
Yield strength (N/mm ²) 500 min						
Elongation % A5d 26(>22%)						
Impact properties CVN at -40 C 80 J (>47J)						

Welding electrode wire, cu coated with the addition of deoxidizing agents Mn and Si, designed for semi automatic welding under the protective atmosphere of CO₂ (MAGC) or mixtures M21-80% Ar + 20% CO₂ (MAGM). It is used for general fabrication for welding of auto frames, railcar bodies, metal furniture and storage bins. Welding electrode wire in the range of 1.20 to 1.60mm. Large diameters are produced upon a beforehand made agreements.

Welding electrode wire, cu coated with the addition of deoxidizing agents Mn and Si, designed for semi automatic welding under the protective atmosphere of CO₂ (MAGC) or mixtures M21-80% Ar + 20% CO₂ (MAGM). It is used for welding of unalloyed construction steels, boiler steels, shipbuilding steels, and low alloyed, general purpose, C-Mn steels of increased strength. Welding electrode wire in the range of 1.20 to 1.60mm for fabrication and 2.50 & 3.15mm for the Pipe manufacturers.

Welding electrode wire, cu coated with the addition of deoxidizing agents Mn and Si, designed for semi automatic welding under the protective atmosphere of CO₂ (MAGC) or mixtures M21-80% Ar + 20% CO₂ (MAGM). The increased contents of Mn gives higher weld strength, higher resistance of the weld to surface contamination and better impact strength when compared to G6. It is used for welding of unalloyed construction steels, boiler steels, shipbuilding steels, and low alloyed, general purpose, C-Mn steels of increased strength. This wire is highly recommended for the Pipe Industry with high silicon (1%) for good fluidity and very less spatter. Welding electrode wire in the range of 1.20 to 1.60mm for fabrication and 2.50 & 3.15mm for the Pipe manufacturers.

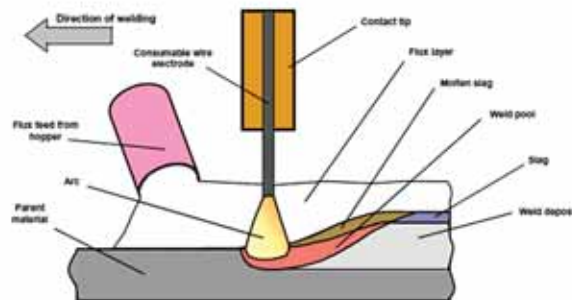
Welding electrode wire, cu coated, No alloyed solid wire electrode for welding of HSLA steels and creep resisting steels. Typical applications are higher strength welds and construction equipments. Welding electrode wire in the range of 1.20 to 1.60mm. Large diameters are produced upon a beforehand made agreements.

SUBMERGED ARC WELDING [SAW]

Technical information about the process, filler metals and the application.

When SA-welding an electric arc between a bare metal electrode and a workpiece is initiated. This arc and the molten metal are “submerged” in a blanket of granular fusible flux. The heat evolved by the plasma of the arc together with the thermal reactions in the welding zone continuously melts the end of the electrode (solid wire, metal powder cored wire [MPCW], strip electrode), parts of the flux and the edges/surface of the base metal. The arc and the molten weld pool are protected against atmospheric contamination by the cover of the liquid flux-slag and the mound of unfused flux. Gases and vapours created during the melting of the metals and the flux form an arc-cavity. Here intensive chemical reactions with a rapid and high exchange of elements between the liquified droplets of the electrode, the molten base metal and the flux-slag happen, continuing in the melted bath near the arc. The strong stirring motion in the weld pool increases the rate of reaction and distributes these reaction products (gases and slag-particles) throughout the liquid metal as inclusions. The gases diffuse progressively effecting a desoxidation of the weld metal; the inclusion/particles partly nucleate and are trapped between the solidifying grains. The weld pool and, the liquid flux-slag cool and solidify, forming the weld and a protective slag cover over it.

SCHEMA OF SA-WELDING SYSTEM



The SA - process can be successfully applied for joining/surfacing of most mild steel base metals and many types of high alloyed stainless metals using single wire process (with AC or DC power sources) or multiwire processes such as TWIN-AC, TANDEM with two and more independent arcs. Wire electrodes or strip electrodes are combined with neutral or low active fluxes to meet the requirements of the base metal or the material specifications.

Good welding results will be easily obtained when the main factors of influence are considered :

- base metal, especially the characteristics about the welding technology and the heat treatment.
- weld preparation and weld construction.
- fusion and dilution of the base metal due to the heat - input of the process and, as a consequence, the recooling rate (*) of the fusion zone.
- the welding parameters and the welding performance.
- the SAW-flux, its characteristics mainly with respect of its alloying behaviour in combination with a standard wire/strip electrode.
- Specification and requirements of the authorities and health regulations.

At PWL we will base our human resources systems on our proven principles reflective of our core values and our commitment to attract, reward, develop and motivate high quality people. They will reflect the global scope of our business while demonstrating responsibility and flexibility with respect to cultural diversity, and statutory and regional business realities.

SAW WIRES

PWL	SAW 1	Classification : AWS A5.17, EL-8/EL 12 DIN 8557-S1			
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Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.04-0.10	0.35-0.60	0.03 max.	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit					
Mechanical Properties + Typical values					
Tensile Strength (Mpa) 480					
Yield Strength (Mpa) 400					
Elongation % 27					

PWL	SAW 2	Classification : AWS A5.17, EM12K DIN 8557-S2			
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Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.04-0.12	0.90-1.20	0.15 max.	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit					
Mechanical Properties + Typical values					
Tensile Strength (Mpa) 500					
Yield Strength (Mpa) 425					
Elongation % 27					
Impact at -20 C 47J					

PWL	SAW 3	Classification : AWS A5.17, EM12K DIN 8557-S2Si			
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Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.07-0.12	0.80-1.20	0.15-0.35	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit					
Mechanical Properties + Typical values					
Tensile Strength (Mpa) 520					
Yield Strength (Mpa) 420					
Elongation % 27					
Impact at -20 C 47J					

PWL	SAW 4	Classification : AWS A5.17, EM12K DIN 8557-S3Si			
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Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.09-0.13	1.50-1.80	0.20-0.30	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit					
Mechanical Properties + Typical values					
Tensile Strength (Mpa) 550					
Yield Strength (Mpa) 440					
Elongation % 27					
Impact at -20 C 47J					

Welding wire electrode, Cu coated in combination with flux is suitable for welding of construction steels, boiler steels and shipbuilding steels. It is used for making butt welds and fillet welds in general purpose steel constructions, pressure vessels. It is also used for pad welding on railways. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

Welding wire electrode, Cu coated in combination with flux is suitable for welding low carbon steels, low alloyed steels and for medium and increased strength steels (construction, boiler and shipbuilding steels). It is used for making butt welds and fillet welds in general purpose steel constructions, pressure vessels. It is also used for pad welding on railways. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

Welding wire electrode, Cu coated in combination with flux is suitable for welding of construction steels, boiler steels and shipbuilding steels. It is used for making butt welds and fillet welds in general purpose steel constructions, pressure vessels. Generally used by Pipe manufacturers for welding API grade pipes upto X52 and for water pipeline applications. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

Welding wire electrode, Cu coated in combination with flux having increased Mn alloying component, is suitable for welding low-carbon steels, low-alloyed steels, for welding medium and increased strength steels (constructions, boilers and shipbuilding steels). Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

PWL	SAW 5	Classification : AWS A5.17, EH14 DIN 8557-S4				
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Chemical Analysis of Wire (%) :					
C	Mn	Si	S	P	Cu
0.10- 0.15	1.75-2.20	0.10	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit					
Mechanical Properties + Typical values					
Tensile Strength (Mpa) 570					
Yield Strength (Mpa) 480					
Elongation % 27					
Impact at -40 C 35J					

Welding wire electrode, Cu coated in combination with flux having increased Mn alloying component, is suitable for welding low-carbon steels, low-alloyed steels, for welding medium and increased strength steels (constructions, boilers and shipbuilding steels). Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

PWL	SAW 6	Classification : AWS A5.23 EA1				
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Chemical Analysis of Wire (%) :						
C	Mn	Si	MO	S	P	Cu
0.08-0.15	0.65-1.00	0.20 max.	0.45-0.65	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit						
Mechanical Properties + Typical values						
Tensile Strength (Mpa) 600						
Yield Strength (Mpa) 520						
Elongation % 27						
Impact at -40 C 40J						

Welding wire electrode, Cu coated is used for submerged arc welding and electroslag welding of unalloyed and low alloy steels with impact requirements and low tensile than those obtainable with EA2 wires. Generally used by Pipe manufacturers for welding API grade Line pipes upto X65. We can also supply this grade with very low Sulphur and Phosphorus as per customer requirement. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

PWL	SAW 7	Classification : AWS A5.23 EA2 DIN – S2Mo				
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Chemical Analysis of Wire (%) :						
C	Mn	Si	MO	S	P	Cu
0.08-0.15	0.95-1.20	0.20max	0.45-0.65	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit						
Mechanical Properties + Typical values						
Tensile Strength (Mpa) 600						
Yield Strength (Mpa) 520						
Elongation % 27						
Impact at -40 C 40J						

Welding wire electrode, Cu coated is used for submerged arc welding and electroslag welding of unalloyed and low alloy steels with impact requirements higher than those obtainable with mild steel wires. Generally used by Pipe manufacturers for welding API grade Line pipes upto X75. We can also supply this grade with very low Sulphur and Phosphorus as per customer requirement. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

PWL	SAW 8	Classification : AWS A5.23 EA3 DIN – S4Mo				
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Chemical Analysis of Wire (%) :						
C	Mn	Si	MO	S	P	Cu
0.08-0.15	1.75-2.15	0.20 max	0.45-0.65	0.03 max.	0.03 max.	0.35 max.

Typical Mechanical Analysis of weld deposit						
Mechanical Properties + Typical values						
Tensile Strength (Mpa) 650						
Yield Strength (Mpa) 530						
Elongation % 27						
Impact at -40 C 40J						

Welding wire electrode, Cu coated is used for submerged arc welding and electroslag welding of unalloyed and low alloy steels with impact requirements higher than those obtainable with mild steel wires. Generally used by Pipe manufacturers for welding API grade Line pipes upto X75. We can also supply this grade with very low Sulphur and Phosphorus as per customer requirement. Welding wire of diameters in the range from 2.0 to 5.0mm. Large diameters are produced upon a beforehand made agreements.

SAW FLUX

SUBMERGED ARC WELDING [FLUX]

SAW Fluxes are manufactured from mineral constituents in two main form: fused and agglomerated. **Agglomerated fluxes** are a mixture of selected, finely crushed minerals from natural sources, partly heat-treated before manufacturing and metallic ingredients. All constituents are intimately dry mixed and bonded with either potassium silicate or sodium silicate to a wet mixture. This mixture is pelletized and formed to grains in special equipments such as mixer and granulation unit. After baking and screening to the proper grain-size, the flux is ready for testing and packaging.

1. Brief Introduction and points for attention

SAW agglomerated fluxes own perfect welding technological characteristics, steady arc, nice welding formation and easy slag removing. NO smoke or smell produced in course of welding, perfect in rust and blowhole resistance. Except PWL-601, all can be operated with AC or DC.

Loose packed SAW agglomerated fluxes can be recycled due to its small specific gravity, so the consumption can be much more less than fused flux (above 20%)

Since suitable amount of alloy element can be added to SAW agglomerated fluxes, with the combination of suitable welding wires, it can be widely adopted in the important welding operation of boilers, pressure vessels, chemical industry containers, nuclear power plant, bridges, ships, oil gas pipelines, steel structured houses, oil rigs, etc.

2. Guidelines of choosing SAW fluxes and Wires

Before application, only a certain understanding of the material of welding pieces, specifications of welding equipments and welding consumables, as well a suitable combination method can guarantee the quality of finished welds.

Normal carbon steel and low alloy shall adopt equal strength welding wires and the fluxes to be chosen accordingly in consideration of structure form of work pieces, steel plate thickness (high or low hardness), working conditions (dynamic or static load conditions), rupture resistance properties and other requirements.

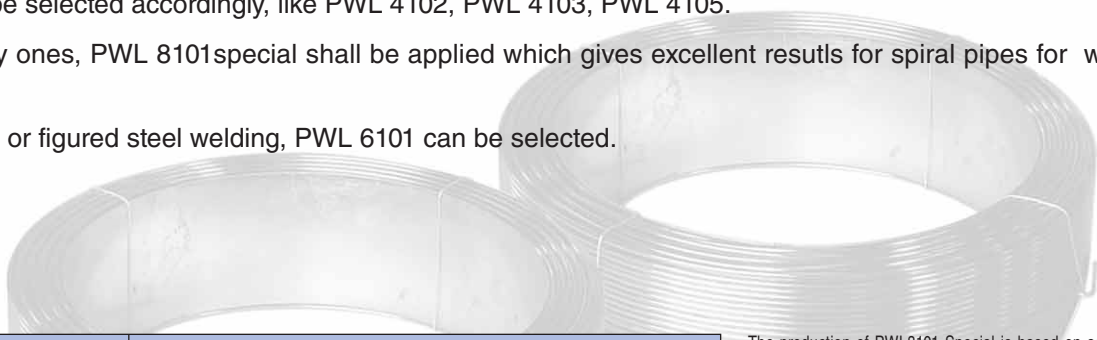
If good plasticity, high impact toughness, satisfied low temperature properties, and strong rupture resistance are required, the high alkalinity fluxes shall be applied, like: PWL 7101, PWL 7101q, PWL 7102, PWL 7105q, etc.

If good welding technological characteristic, easy in slag removing, nice welding formation, suitable plasticity and impact toughness are required, acidic agglomerated fluxes shall be adopted, like: PWL 5101, PWL 5101m, PWL 5103 (KF385), etc.

If special requirements are necessary for working pieces, like mining equipments, wearing resistance items, etc., the fluxes shall be selected accordingly, like PWL 4102, PWL 4103, PWL 4105.

For neutrality ones, PWL 8101 special shall be applied which gives excellent results for spiral pipes for water pipe lines.

For stainless or figured steel welding, PWL 6101 can be selected.



PWL 8101 SPECIAL		Classification : AWS A5.17, F7A0-EL8, F7A2-EM12K			
Chemical Composition of Flux :					
SiO ₂ +TiO ₂	CaO+MgO	Al ₂ +MnO	CaF ₂	S	P
25-35	15-25	30-40	5-15	<0.06	<0.08
Mechanical Properties of Deposit Metal :					
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
F6A0 EL8	>400	350-450	27	0	-20
F7A2 EM12K	>400	415-550	28	>50	>27
				>70	>50

The production of PWL8101 Special is based on agglomerated flux produced by imported technical know-how and equipment of Swiss Olicon welding industry company (former product name is OP-143)

PWL8101 Special is a calcium-silicon type neutral Flux, alkalinity around 1.0. It is gray and round grain, with grain size around 2.0-0.28mm. It can be operated with AC and DC. The wire shall be connected to positive pole when applying DC. It has steady arc, nice weld formation, and easy in slag removing, as well with perfect deposit metal welding mechanical properties. It suits various welding conditions, with short slugs and no flow appearances.

Applications: Accompanying suitable wires (EL8 & EM12K) mainly used in the welding of normal low carbon steel (like X60, 235 etc.) structure and the SAW of boiler pressure vessels, ships, pipe line etc. Its deposit metal owns perfect impact toughness. It suits the SAW with multiple.

PWL 8101	Classification : AWS A5.17, F7A2-EM12K, F7A4-EH14
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Chemical Composition of Flux :					
SiO ₂ +TiO ₂	CaO+MgO	Al ₂ +MnO	CaF ₂	S	P
15-25	25-35	20-30	15-25	<0.06	<0.08

Mechanical Properties of Deposit Metal :					
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
				0	-20
F7A2 EM12K	>400	415-550	28	>70	>50
F7A4 EH14	>400	480-650	25	>90	>70

PWL 7101	Classification : AWS A5.17, F7A4-EM12K, F7A4-EH14 AWS A5.23, F8A2-EA2
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Chemical Composition of Flux :					
SiO ₂ +TiO ₂	CaO+MgO	Al ₂ +MnO	CaF ₂	S	P
14-24	25-36	20-30	16-26	<0.06	<0.08

Mechanical Properties of Deposit Metal :					
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
				-20	-40
				-50	
F7A4 EM12K	485	560	27	>70	>40
F7A4 EH14	510	600	25	>80	>60
F8A2 EA2	525	610	24	>100	>60

PWL 5101	Classification : AWS A5.17, F6AZ-EL8, F6AZ-EM12K
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Chemical Composition of Flux :					
SiO ₂ +TiO ₂	CaO+MgO	Al ₂ O ₃ +MnO	CaF ₂	S	P
25-35		50-60	3-10	<0.06	<0.08

Mechanical Properties of Deposit Metal :					
Accompanied Wire	Y.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
				-0	
F6AZ EL8	>330	415-550	27	>27	
F6AZ EM12K	>330	425-550	27	>27	

PWL 6101	Classification : F316-H0Cr19Ni12Mo2 F309-H1Cr24Ni13
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Chemical Composition of Flux :					
SiO ₂ +TiO ₂	CaO+MgO	Al ₂ O ₃ +MnO	CaF ₂	S	P
5-10	6-10	30-40	40-50	<0.06	<0.08

Mechanical Properties of Deposit Metal :					
Accompanied Wire	T.S. MPA	T.S. MPA	Elongation %	CHARPY-V Impact test (J)°C	
				0	
H0Cr21Ni10	480-650		>35		

The production of PWL8101 is based on agglomerated flux produced by imported technical know-how and equipment of Swiss Olicon welding industry company (former product name is OP-122)

PWL8101 is a soda-fluorine type agglomerated flux, with grain size around 2.0-0.28mm. It can be operated with AC and DC, the wire shall be connected to positive pole when applying DC. It has steady arc, nice weld formation, and easy in slag removing, as well with perfect deposit metal welding technological characteristics.

Applications with applicable wires (EM12K, EH14) mainly used in the welding of low carbon steel and some low alloy steel structure and the SAW welding of boiler pressure vessels, ships, bridges, oil transportation lines, etc.

The production of PWL7101 is based on agglomerated flux produced by imported technical know-how and equipment of Swiss Olicon welding industry company (former product name is OP-122) and with refined materials, it can highly satisfy the steel welding requirements for oil gas pipelines.

PWL7101 is fluoride basic flux, basicity >1.8. It is gray and round grain, with grain size around 2.0-0.28mm. It can be operated with AC and DC. The wire shall be connected to positive pole when applying DC. It has steady arc, and the welding bead smooth and pleasing, nice weld formation, and easy in slag removing, as well with perfect deposit metal welding technological characteristics.

Applications with applicable wires (EM12K, EH14, EA2, EA3, S3MoTiB) mainly used in the welding of low carbon steel and some low alloy steel (like 16Mn, X65, X70, X75, 355) structure and the SAW welding of boiler pressure vessels, ships, bridges, oil transportation lines, etc. It works excellently for welding Oil or Gas pipe line also can be applied to offshore platform & High Tensile bridges.

The production of PWL5101 is based on agglomerated flux produced by imported technical know-how and equipment of Swiss Olicon welding industry company (former product name is OP-185).

PWL5101 is an aluminum-titanium type acidity flux (Rutile type), with alkalinity around 0.5-0.8. It is gray and round grain with grain size around 1.18-0.28mm. It can be operated with AC and DC. The wire shall be connected to positive pole when applying DC. It has steady arc, nice weld formation, and easy in slag removal specially at high speed.

Applications with applicable wires (EL8 & EM12K) mainly to weld low carbon steel and some low alloy steel like the SAW welding of boilers, pressure vessels, ships, etc. It has perfect deposit metal impact toughness. PWL 5101 is a specified flux used in the high speed welding of power plant boiler water wall, PEB structural, its welding speed can come up to 70m/h. It is usefull for welding thin plates in single pass & limited pass.

PWL 6101 is a basic agglomerated flux of stainless steels and heat resistance steels welding, with grain size around 1.18-0.28mm, basicity index 1.8. It can be operated with AC and DC, the wire shall be connected to positive pole when applying DC. It has steady and nice weld formation, welded metal shows excellent crack resistance, corrosion resistance and mechanical properties, Toughness of weld metal at -196 centigrade is satisfied.

Excellent weldability such as stable arc and easy slag removal. Good bead appearance, high welding efficiency in welding thin and ultra-thick plate.

Accompanying suitable (H0Cr21Ni10, H00Cr21Ni10, H00Cr21Ni10, H00Cr19Ni12Mo2) to weld major structures of stainless steel and high alloy heat resistance steel, etc. It has perfect deposit metal mechanical properties.

PWL follows the International Storage and Handling recommendations of SAW WIRES for SAW PROCESSES

Products

All grades of solid wires supplied by Precision are melted in an electric arc furnace/AOD converter combination and continuously cast in billet caster by the Wire Rod manufacturer. This ensures a uniform chemistry throughout the melt.

During rolling and drawing close control of diameter is observed as well as close control of the copper coating.

Commonly, for 25 kgs the wire is layer wound on a M.S. Ring packed in shrink wrapped plastic and in cardboard boxes. Large PAY – OFF Drums of 300, 500 and 750 kg and more are coiled in a M.S. Drum with a core. The wire end is usually anchored to the wire drum to the core to prevent loose wire-end short circuits.

Marking

All wire coils are provided with labels inside the package and outside. The minimum information given on each label is :

- Company
- Grade Designation
- AWS Designation (where applicable)
- Lot Number
- Diameter
- Coil Weight
- Warning (according to AWS/ANS Z49) where applicable

The label of the wire-start shall always be maintained throughout the welding manufacturing for Quality Control reasons.

Storage and Handling

The common rule : first in – first out should be observed. The wire electrodes should be kept in the original packaging, wire in damaged package must be properly repacked right away; otherwise it may have to be scrapped.

Basically sub arc solid wires can be stored for an indefinite period as the surface is coppered. However, if the surface is wet even the coppering does not guarantee a one hundred percent protection against corrosion. Therefore, the wire electrodes should be stored inside a building to protect against weather influences and precautions taken to prevent a wet wire surface during processing.

Sudden and drastic changes in temperature should be avoided to prevent the formation of condensation water. Therefore, wire electrodes transported from outside to heated production rooms should be left in the original packaging and not used before reaching ambient temperatures during cold winter months

Moisture absorption of wire electrodes in the original package can be neglected in dry condition (in house), even after long storage (> 2 years)

Redrying of wire is unusual. Wet or oily wire shall be discarded.

Unused wire shall be properly stored in the original package with the identification label at the wire-start in dry storage-rooms.

Unused wire without identification labels shall be discarded as well as wire with rusty, greasy or oily surfaces

Dependent upon the requirements wire in the welding equipments shall be protected by appropriate means against chemical attacks.

Transportation

Transportation of wire should be done in covered vehicles. Unprotected wire spools or coils must not be exposed to direct wetness like snow or water.

PWL follows the International Storage and Handling recommendations of SAW FLUXES for SAW PROCESSES

General

As a result of carefully selected raw materials and optimized manufacturing conditions the PWL fluxes have a guaranteed as-delivered low moisture content from the factory. That is valid for both agglomerated and fused fluxes. Commonly, the fluxes are delivered in paper bags outside with HDP bag inside, steel drums or specially coated big-bags, containing 25 to 1000 kg. All flux packages are normally supplied on wooden pallets with a net weight up to 1000 kg; pallets are shrink-wrapped with plastic foils before delivered from the factory. To maintain the as-delivered moisture content as long as possible the handling and the storage of the flux must be done according to the following recommendations of PWL.

Transport

Transportation of the flux must be done in covered vehicles. Packages must be shrink-wrapped in plastic or kept in dry cardboard or wooden boxes on undamaged pallets.

Unprotected containers and flux packages must not be exposed to direct wetness, like snow and rain. Damaged containers must be repacked within one hour, otherwise they should be scrapped. A maximum of 2 pallets may be stapled onto each other without additional supporters.

Storage

Common rule for stock is: first-in, first-out / separating flux types and flux lot-No., including recycled fluxes. Unopened flux bags, drums or big-bags must be kept under properly maintained and controlled storage conditions as follows:

- Temperature $25 \pm 10^{\circ}\text{C}$
- Relative Humidity as low as possible, not exceeding 70%

Agglomerated fluxes stored according to these conditions have a lifetime of max. 3 years and fused fluxes of max. 5 years after date of delivery ex factory.

The content of unprotected flux hoppers must be placed in a drying cabinet or should be kept in heated flux hoppers at $150 \pm 25^{\circ}\text{C}$.

Remaining flux from opened bags or drums must also be kept at $150 \pm 25^{\circ}\text{C}$ before actual use.

Recycling

Moisture and oil must be removed in a suitable way from the compressed air used in the flux-recovery system. Addition of new flux to the recovered flux quantity must be done according to the actual flux consumption to maintain almost the original grain size. Commonly the ration is at least 1 part of new flux to 3 parts of recovered ones. Foreign material such as millscale, dross or other impurities from plate surfaces or preparation etc and uncrushed flux-slag from the welding process should be removed by adequate recovery devices such as e.g. sieves or dust-separators.

Rebaking

When handled and stored as mentioned above the PWL-fluxes can normally be used as they are. If, however, a severe application (as given by the material specification) is considered, rebaking of the flux is recommended. Rebaking shall be performed as follows:

- $250 \pm 50^{\circ}\text{C}$ effective temperature of the flux.

rebaking may be done on shallow plates with a flux height not exceeding 50mm or appropriate flux-rebaking furnace or drying system.

Flux-rebaking furnace should be constructed to allow steam, condensation moisture and vapour to effuse. If a PWL-flux has picked up moisture (due to any unfavourable handling or storing) proper flux-rebaking as mentioned above can return the flux to its original state.

Rebaked flux, not immediately used, should be kept at $150 \pm 25^{\circ}\text{C}$ before actual use.

For cleaning or collecting non-fused flux only proper wire-brushes should be used to avoid flux contamination.

QUALITY CONSCIOUSNESS

The quality of the Precision Welding Wires is characterized by the use of steels with low content of impurities deriving from integrated cycle. This allows to obtain products granting high mechanical characteristic (tensile and impact values) even at low temperatures as well as a very good stability of arc and no spatters. During the production process, the wire rod is mechanically scaled and electrolytically pickled on a plant on line. After the drawing process the wire undergoes a powerful cleaning operation in order to guarantee a total absence of residual particles on the surface and therefore a perfect copper adherence. Systematic controls effected on the finished product before the packaging operation (verification of the physical, chemical and geometric properties) guarantee its perfect suitability.

Agglomerated flux made by PWL is a heterogeneous product where the individual powdered particles of the raw-material are bonded and baked together in their original and natural quality. That means: each grain of and agglomerated flux is heterogeneous but all these heterogeneous grains are identical among each other. Thus constant metallurgical reaction during welding and uniform welding characteristics with reproducible results can be obtained. It is worth making the point that PWL fluxes are baked at a higher manufacturing temperature (around 800°C). Together with the prebaked and selected raw-materials a low hydrogen potential is achieved with the PWL agglomerated fluxes.

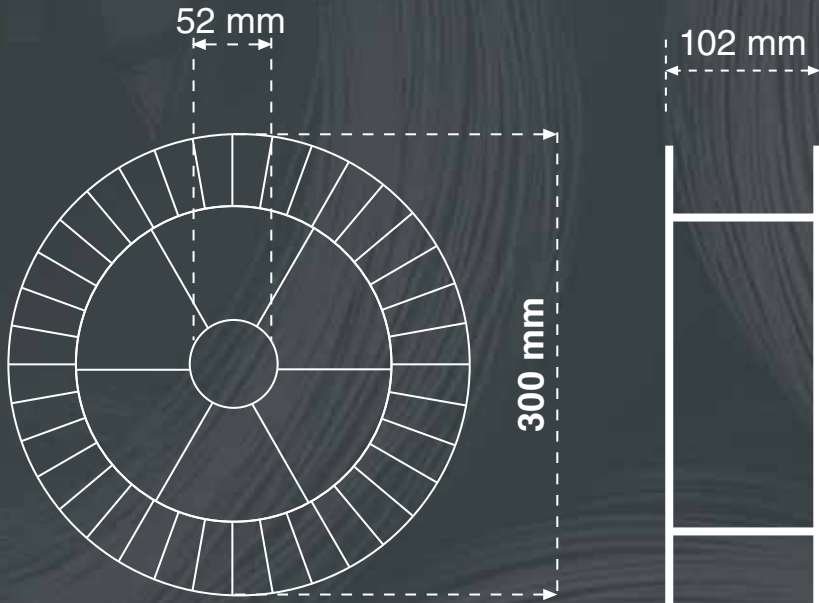
Being an ISO 9001 certified company, we strongly believe that quality control and assurance department is the backbone of every growing company. Our state-of-the-art laboratory houses chemical, mechanical and welding labs equipped with Universal testing machine, impact testers, hardness tester etc. Company specific and standard procedures are followed to check and test each and every step of production from procurement of the raw materials to finished products. Special quality control stations are installed to test the quality of manufactured items, and each lot goes through these stringent tests.



OUR PACKAGING SPECIFICATIONS

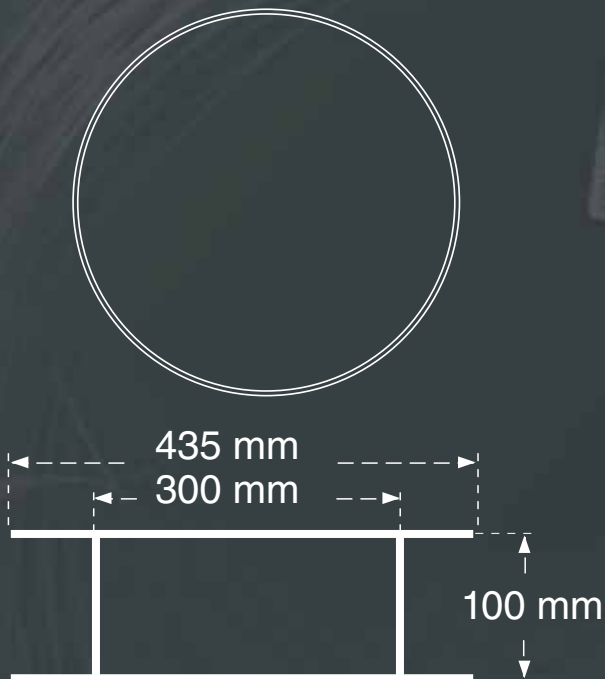


MIG WIRE SPOOL Plastic 15 Kgs



Spool

SAW WIRE SPOOL Spool Weight : 20 - 30 kg (depending on wire ϕ)



Ring

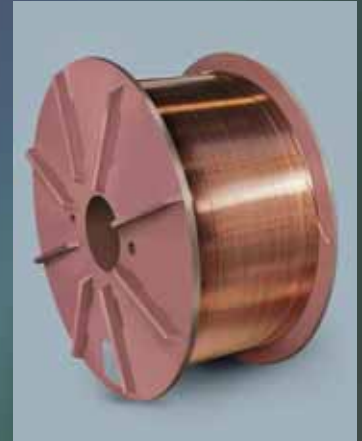
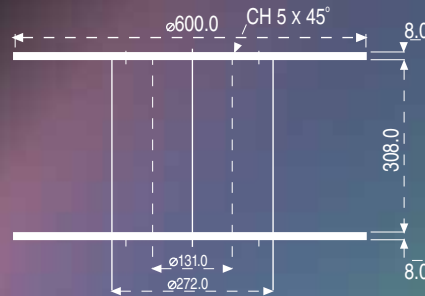
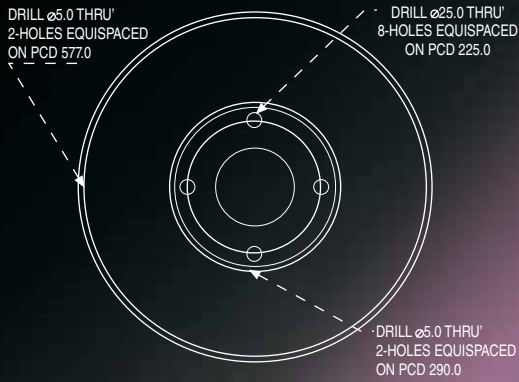
Coil / Spool Dimensions of K 435

Type	Outer ϕ [mm]	Inner ϕ [mm]	Width [mm]
K435	450 max	300 +5	100 +3

OUR PACKAGING SPECIFICATIONS

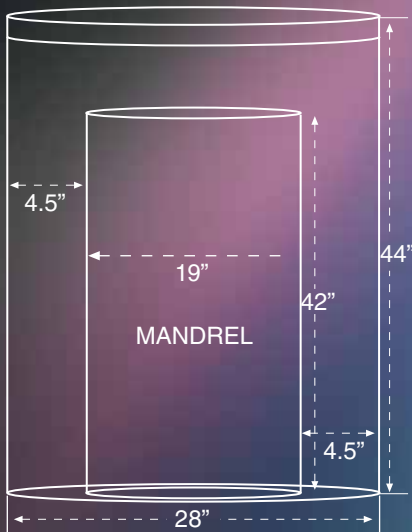


Bobbin Packing 250 kgs



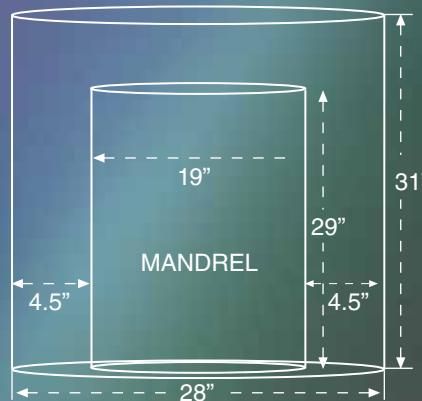
Bobbin

750 Kgs Wire



Drum Packing

500 Kgs Wire



Drum

Coiling in Pay-off-Pack and Steel-drums is available clockwise or anti clockwise :



Please mark when ordering :

clockwise

anti clockwise

PWL uses Dehumidifier for moisture free packaging

Before the final packaging of the product the product is kept in a dehumidifier room equipped with latest dehumidifying machines to prevent moisture.



**Dispatch
&
Loading
of
Wire & Flux**



PWL Clients

**Welspun Group
MAN Industries
Ratnamani Pipes
JCO Gas Pipe
Pratibha Industries
Samshi Pipes
Bokaro Steel Plant
Megha Engineering
Cubuilt Engineers
Bhilai Engineering
Jindal Steel & Power
PSL Ltd**

**Jindal Saw
BHEL
Suzlon
Indian Railways
Essar Steel (Pipe Mill)
Surya Global Pipes
Rourkela Steel Plant
Topworth Pipes
Regen Powertech
Vishal Nimriti Pvt. Ltd.
Metalfab Hightech
Utkarsh Pipes**



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