



ABOUT US

Awring Maad Sanat is a premier technical-engineering company with over 15 years of experience in the oil, gas, petrochemical, refinery, power plant, steel & mining industries.

industries. We specialize in the innovative design and manufacturing of equipment, as well as the procurement of high-quality materials tailored to meet the unique needs of our clients.

Throughout our history, we have had the privilege of collaborating with prominent clients across Iran, participating in major projects that showcase our commitment to excellence and reliability. Our extensive experience in various sectors has equipped us with a deep understanding of industry demands and challenges, allowing us to deliver effective and

efficient solutions.

Our team of skilled engineers and designers works closely with clients to provide customized solutions that enhance operational efficiency and drive innovation. We pride ourselves on our ability to adapt to evolving industry standards and technological advancements, ensuring that our clients receive the best products and services available.

At Awring Maad Sanat, we are committed to building strong relationships with our partners and maintaining a reputation for quality and integrity. We look forward to continuing our legacy of excellence, helping our clients achieve their goals, and contributing to the growth of the industries we serve.



AWRING FIELDS

PROCUREMENT SERVICE

INNOVATIVE PRODUCTS

MAAD-WOOD ® SOLUTION



ABOUT AWRING PROJECT LIST

Procurement Services:

- 1. Supply of IDESA Heat Exchanger Gasket (Spare Parts) | Ilam Petrochemical Company
- 2. Supply of **PIPING MATERIAL (WELDOLET & RED. TEE)** | Petro Iranian Downstream Industries Development Company (PIDIDC)
- Supply of Stud Bolts for Compressor | Petro Iranian Downstream Industries Development Company (PI-DIDC)
- 4. Supply of **SEW Geared Motor** | Tabriz Petrochemical Company
- 5. Supply of LISEGA Spring Hanger Support | Petro Iranian Downstream Industries Development Company (PIDIDC)
- 6. Supply of **RENK Coupling** (Flexible Connection Parts) | Petro Iranian Downstream Industries Development Company (PIDIDC)
- 7. Supply & Manufacturing of **Tube Oil Skimmer** (Spare Parts) | Khorasan Steel Complex
- 8. Supply & Manufacturing of **Tube Oil Skimmer** (Spare Parts) | Vian Steel Complex

- Supply & Manufacturing of Belt Oil Skimmer (Spare Parts) | Jahan Ara Steel Company
- Supply & Manufacturing of Belt Oil Skimmer
 (Spare Parts) | Azerbaijan Steel Company
- Overhaul & Refurbishment of Compressor Valve
 Seat | Arghvan Gostar Ilam Petrochemical Company
- 12. Overhaul & Refurbishment of Compressor Valve Seat | Arghvan Gostar Ilam Petrochemical Company
- 13. Overhaul & Refurbishment of Extruder Housing

 Bearing (Universal Bearing) | Arghvan Gostar Ilam

 Petrochemical Company
- 14. Supply of Compressor Over Head Crane (Main Rail) | Arghvan Gostar Ilam Petrochemical Company 15. Supply & Manufacturing of Trolly Wheels and Rails | Arghvan Gostar Ilam Petrochemical Company
- 16. Supply & Manufacturing of **SPAANS BOBCOCK Blending Mixer** (Spare Parts) | Arghvan Gostar Ilam

 Petrochemical Company
- 17. Supply of **Main Condenser Tubes** (Spare Parts) | llam Petrochemical Company

CUSTOMERS & PARTNERS



























ABOUT AWRING PROJECT LIST

Innovative Products:

- Design & Manufacturing of Mechanical Interlocking
 System | Jam Petrochemical Company
- Design & Manufacturing of API Separator Package
 Ilam Petrochemical Company
- Design & Manufacturing of Belt Oil Skimmer | Abadan Oil Refinery Company
- 4. Design & Manufacturing of Flame Arrester | Ilam Petrochemical Company (PIDEMCO)
- 5. Design & Manufacturing of Gauge Hatch | Ilam Petrochemical Company (PIDEMCO)
- 6. Design & Manufacturing of **Spray Nozzles** | Ilam Petrochemical Company
- 7. Design & Manufacturing of Fusible Plugs | Ilam Petrochemical Company
- 8. Design & Manufacturing of **Tube Oil Skimmer** | Gol-Gohar Iron & Steel Development Company (MSVCO)
- 9. Design & Manufacturing of **Mechanical Interlocking System** | Ilam Petrochemical Company (GSS Co.)
- 10. Design & Fabrication of Sampling System | Ilam Petrochemical Company (NORAHAN SANAYEH Co.)
- 11. Design & Manufacturing of Floating Oil Skimmer

- | Shahid Hashemi Nezhad Gas Refinery Company
- 12. Design & Manufacturing of Sampling Cylinder | SABA Power Plant
- 13. Design & Manufacturing of Sampling Cylinder | Kermanshah Gas Company
- 14. Design & Manufacturing of **Spray Nozzles** | Petro Pars Ghodrat Company

MAAD-WOOD® Solution

- Design & Fabrication of Wooden Blocks (Hard Woods) | PIDEMCO
- Design & Fabrication of Wooden Blocks (Hard Woods) | Kangan Petrochemical Company (TASHA SANAT Co)
- 3. Design & Fabrication of Insulation Blocks | TASHA SANAT Co.
- 4. Design & Fabrication of **Wooden Saddle** (Hard Woods) | Kangan Petrochemical Company (TASHA SANAT Co)
- 5. Fabrication of Coring **Wooden Boxes** | National Iran Drilling Company
- Design & Fabrication of Wooden Blocks (Hard Woods) | National Iran Drilling Company

CUSTOMERS & PARTNERS



























ABOUT AWRING **CERTIFICATES**



6

PROCUREMENT

- Sourcing Specialized Equipment & Materials
- Vendor Selection & Management
- Quality Control & Inspection
- Logistics & Delivery Coordination
- Cost- Effective Eolutions



PROCUREMENT SUPPLY SERVICES

At Awring Maad Sanat, we pride ourselves on delivering exceptional procurement services tailored to meet the unique requirements of industries such as Oil, Gas, Petrochemical, Refinery, Power Plant, Steel, and Mining. With years of experience, our team is well-versed in sourcing high-quality materials, state-of-the-art equipment, and critical components from a vast network of globally trusted suppliers.

We understand that reliable procurement is vital to the success of any project. Whether it's small-scale operations or large-scale industrial ventures, our goal is to ensure that your project receives the best products in a timely manner, without compromising on quality or exceeding budget constraints.

Our Industry-Specific Expertise

We offer specialized procurement services across a wide range of categories, ensuring every aspect of your project's supply chain is meticulously managed. Our expertise spans the following sectors:

■ Piping:

From pipes, valves, and fittings to gaskets and flanges, we provide all the materials needed for your fluid handling and transfer systems.

Mechanical:

We source pumps, compressors, heat exchangers, turbines, and other mechanical components critical to

operational efficiency.

Electrical:

Power cables, transformers, switchgear, and electrical components are supplied to meet your project's energy distribution and control needs.

Instrumentation:

Control systems, sensors, analyzers, and other instrumentation devices are sourced to ensure precision in monitoring and control.

Packages:

We provide turnkey equipment packages that integrate multiple systems, tailored to meet the specific technical requirements of your operations.

Drilling:

For the Oil and Gas sector, we offer a range of drilling equipment, from rigs and drill bits to mud pumps and blowout preventers.

Safety:

Safety is our top priority. We supply personal protective equipment (PPE), fire and gas detection systems, and other safety-critical materials to ensure compliance with stringent industry standards.

Our commitment is to deliver reliable and efficient procurement services tailored to your specific project needs.



8



SUPPLY SERVICES PROCUREMENT

Our Core Services

At Awring Maad Sanat, we go beyond simple sourcing to offer a full range of procurement services. We meticulously manage every stage of the supply chain, ensuring you receive the right products at the right time. Our procurement services include:

Sourcing Specialized Equipment and Materials

We specialize in sourcing hard-to-find, custom-engineered, or industry-specific equipment and materials, ensuring your project has everything it needs to run smoothly.

■ Vendor Selection and Management

We collaborate with a vast network of trusted and reliable global vendors. Our stringent vendor selection process ensures that we partner with suppliers who meet our high standards for quality, reliability, and competitive pricing. We continuously monitor and manage our vendor relationships to ensure optimal performance and service delivery.

Quality Control and Inspection

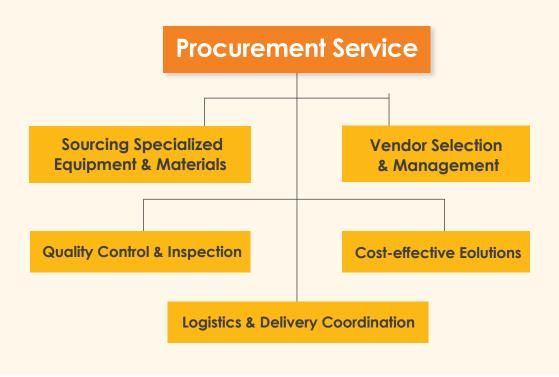
Quality is at the heart of everything we do. Our dedicated quality control team conducts rigorous inspections at every stage of procurement, ensuring all materials and equipment meet the highest international standards and your specific project requirements.

Logistics and Delivery Coordination

We understand that timely delivery is crucial for the success of your project. Our logistics team works closely with global freight forwarders to ensure seamless coordination of shipments, managing every aspect of the supply chain from point of origin to final destination. Whether by sea, air, or land, we ensure your materials arrive on time and in perfect condition.

Cost-Effective Solutions

We strive to offer cost-effective procurement solutions without sacrificing quality. Through strategic sourcing, vendor negotiations, and optimal supply chain management, we help our clients reduce costs while maintaining operational efficiency.





ENGINEERING-EXECUTIVE PROCUREMENT

Engineering Services:

At Awring Maad Sanat, we specialize in delivering advanced engineering solutions designed to meet the evolving needs of the oil and gas industry. Our experienced engineers utilize cutting-edge technology to develop innovative equipment and systems, ensuring optimal performance and efficiency in every project.

Our engineering services include:

- Technological Equipment Design: We design and develop state-of-the-art equipment tailored to your specific operational needs, utilizing the latest technologies and best practices.
- Reverse Engineering: With our expertise in reverse engineering, we can replicate and improve existing systems and components, ensuring enhanced functionality and reliability.
- Custom Engineering Solutions: We provide tailored engineering services that meet the unique challenges of your projects, ensuring precision, safety, and efficiency at every stage.
- Innovation and R&D: Our team is committed to research and development, continuously pushing the boundaries of what's possible to deliver forward-thinking solutions.

We pride ourselves on delivering reliable, cost-effective, and innovative engineering services, ensuring your projects are executed to the highest industry standards.













Iron & Steel Industry





Executive services:

(Installation, Commissioning & Maintenance)

At Awring Maad Sanat, we provide reliable installation, commissioning, and maintenance services to ensure the smooth operation of your equipment and systems. Our skilled team ensures timely and efficient setup, and we offer regular maintenance to maximize the lifespan and performance of your assets.

We are committed to providing prompt and professional support to keep your operations running smoothly.





SAFTY & PROCESSES EQUIPMENT

- API Separator
- Oil Skimmers
- Mechanical Interlock
- Flame Arrester
- Fusible Plug
- Spray Nozzle
- Sampling Connection



INNOVATIVE PRODUCTS INTRODUCTION

Awring Maad Sanat has successfully developed and customized a diverse range of products to meet the specific needs of domestic industries. By leveraging our expertise and modern technology, we ensure that our offerings effectively address the requirements of our clients and partners. Our products are actively utilized in various projects across multiple sectors.

Our localized product offerings include:

- Oil-Water Separators (Oil Skimmer): Consulting, design, engineering, and manufacturing of advanced oil-water separators for the treatment of industrial wastewater, tailored to different operational conditions.
- Water-Oil Separation Process Packages (API Separator): Comprehensive consulting, design, and

manufacturing services for effective water-oil separation solutions.

- Mechanical Interlocking Systems: Engineering and manufacturing of mechanical interlocking systems for industrial valves, enhancing safety at industrial sites and protecting personnel and processes.
- Flame Arresters: Design and manufacturing of flame arresters for tanks and pipelines, ensuring safety and compliance in hazardous environments.
- Fire Alarm and Extinguishing Systems: Supply and installation of fire alarm and extinguishing system equipment, including thermal fuses and various spray nozzles, to enhance fire safety measures.
- Sampling Systems: Design and engineering of efficient sampling systems for various industrial applications.





INNOVATIVE PRODUCTS API SEPARATOR



API oil-water separator is a device designed to separate gross amounts of oil and suspended solids from industrial wastewater produced at oil refineries, petrochemical plants, chemical plants, natural gas processing plants and other industrial oily water sources.

The API separator is normally the first, and arguably, most important wastewater treatment step in petroleum refineries.

The primary function of a properly designed API separator is to remove the majority of oil and suspended solids from refinery wastewater before it enters downstream wastewater treatment processes.

Key factors influencing API separator performance in-

clude water temperature, horizontal velocity, the density and size of the oil droplets, and the quantity and characteristics of the suspended solids.

API Separator Main Parts

Separator Parts	Description	Material	Remark
Drive Unit	Electromotor-Gear	Acc. To Spec.	In hazardous area explosion
Flight	Flights work as surface scrappers and sweep the settled-down sludge from the bottom of the sump	Polymeric / S.S.	Size and length depend on sump dimensions
Chain & Sprockets	The transmitter of drive unit force to flights	Polymeric / S.S.	Size and length de- pend on total forces

The experts engineers of AWRING MAAD SANAT Company have the necessary capability and experience in the field of designing and manufacturing API package.



INNOVATIVE PRODUCTS OIL SKIMMER

Oil skimmers are simple, dependable, and effective machines used for removing oil, grease, and other hydrocarbons that float on the surface of water. They are commonly employed in situations where oil spills pose a threat to the environment, but they can also be utilized in various industrial operations.

Choosing the Right Type of Oil Skimmer

Different types of Oil skimmers are available for different applications. Which one you choose depends on the recovery rate required, the thickness of the oil on the surface and the context of still or flowing water.

There are several types of industrial oil skimmers. Choosing one best suited for your application will maximize oil removal while minimizing capital outlay and skimmer operating costs.

Types of Oil Skimmers

Belt Skimmers

Belts skimmers have a revolving strip, or belt, that rotates in a fixed path around a submerged pully, continually picking up the floating surface oil as it makes contact.

BELT OIL SKIMMER

Model	Capacity	Belt (mm)	Dimension (mm)	Power (w)	Weight (Kg)	Material
AMS-OS/BLT-75	35-110	100	300 x 480 x 268	400	30	SS304
AMS-OS/BLT-125	70-220	150	377 x 608 x 380	400	45	SS304
AMS-OS/BLT-225	90-270	200	450 x 608 x 380	600	55	SS304
AMS-OS/BLT-275	140-340	300	800 x 775 x 524	900	90	SS304
AMS-OS/BLT-375	180-500	400	800 x 785 x 524	900	110	SS304

AWRING MAAD SANAT

Disc Skimmers

Disc skimmers are fixed devices that work by submerging the lower edge of a revolving disc to collect the oil on the surface of the water.

DISC OIL SKIMMER

Model	Capacity	Disc (mm)	Dimension (mm)	Power (w)	Weight (Kg)	Material
AMS-OS/DSC-10	5-20	200-500	500 x 500 x 380	100	35	SS304
AMS-OS/DSC-40	20-50	400-600	600 x 600 x 500	250	60	SS304
AMS-OS/DSC-100	70-150	500-800	800 x 800 x 670	500	95	SS304
AMS-OS/DSC-350	200-500	600-900	900 x 900 x 720	1000	140	SS304





INNOVATIVE PRODUCTS OIL SKIMMER



Tube Skimmers

Tube skimmers operate with a Free-Floating Collector Tube that continuously moves across the surface of water.

TUBE OIL SKIMMER

Model	Capacity (L/h)	Tube Length (M)	Tube Diameter (mm)	Power (w)	Weight (Kg)	Material
AMS-OS/TUB-200	10-200	Up to 20	16-22	120	25	SS304
AMS-OS/TUB-500	100-500	Up to 50	16-22	370	80	SS304
AMS-OS/TUB-800	300-800	Up to 100	16-22	500	125	SS304

Floating Skimmers

Floating Skimmers is a device used to remove debris and contaminants from surface of a body of water. It is designed to float on waters surface and collect leaves, bugs, and other floating debris.

FLOATING SUCTION SKIMMER

LOATING GOOTION SKIMMER										
Model	Capacity	Suction Head	Absorption Device(mm)	Power (w)	Weight (Kg)	Material				
AMS-OS/FLT-50	50	1	370 x 70 x 225	15	10	SS304				
AMS-OS/FLT-80	80	1	370 x 70 x 225	15	15	SS304				
AMS-OS/FLT-300	300	4	550 x 110 x 225	550	55	SS304				



AWRING MAAD SANAT has extensive experience in Oil Skimmers. Our trained technical experts can assist you in customizing, supplying, and training your team.



INNOVATIVE PRODUCTS

MECHANICAL INTERLOCK



A Mechanical Interlock is an interlock that is physically connected to another device to prevent unintended actions. Most accidents in the process, oil, and gas industries are related to procedures that do not occur frequently but can have catastrophic effects when executed incorrectly. Start-ups, shutdowns, and handovers are all good examples of processes where a slight mistake or lack of concentration can lead to disastrous consequences. Mechanical Interlock systems ensure that valves are opened and closed in the correct order.

By using Mechanical Interlocks, you force operators to follow the correct valve opening and closing procedure and so create safer working environments. It also reduce costs by preventing product spills or losses due to incorrect changeovers.

When you choose AWRING MAAD SANAT
Mechanical Interlock, you eliminate human error.



Features

Permanently Mounted on Valve

Suitable for All Hand Wheel Operated Applications.

No Grease or Other Lubrication Required

Entrance Protection of Key Slots by Self-Sealing Weather Strips

Single or Double Key Versions are Available

Mounting

No Alterations to Host Valve Required

Custom Made Bracket and Adaptor for Mounting to the Valve

Original Nut is used if Possible

Can be Mounted in a Live Plant

Can be Mounted on Each Size of Valve, however to a Maximum Valve Spindle Size of 68 mm. Above That Size, a Customized Interlock is Provided.

Keys

Linear Keys

Uniquely Coded

Key Codes are Registered, for Easy Replacement and to Avoid use of Duplicate Keys

Spare Keys Available

Master Keys Available

Colored Tag Marks

Master Key & Master Key Cabinet

Keys are Inserted Linearly and the Internal Locking Mechanism Consists only of Linear Moving Components.



INNOVATIVE PRODUCTS FLAME ARRESTER





A flame Arrester, as the name suggests, is a device used to stop a flame from entering into an atmosphere where combustible gases may be present and prevent explosions. A standard flame arrester has many small tubes that help produce the required venting capacity while preventing the passage of flame. It works on the principle that the speed of the flame decreases with the reduction in the diameter of the pipe.

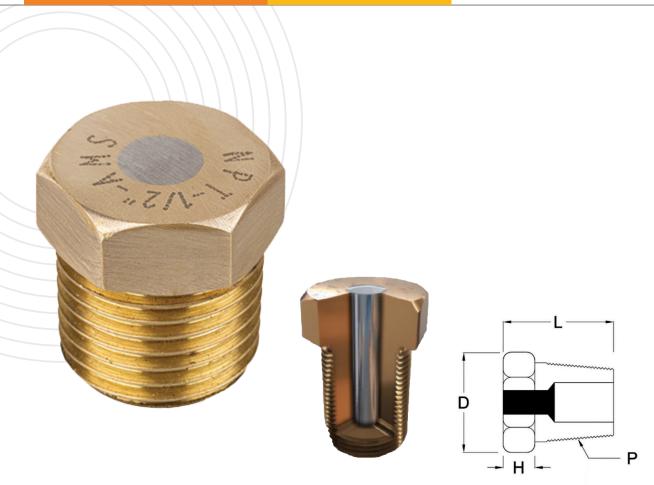
Design Codes	EN 16852 / ASTM F1273
Design Temperature	-10/+250°C for C.S., -120/+250°C for S.S.
MESG	IIA / IIB / IIC
Factory Tested	Dimensional, Hydrotest
Sizes	From 2" to 12"
Connections	Flanged ANSI / DIN / ASME B16.5

Model	DN (inch)	DN (mm)	A (mm)	B (mm)	C (mm)	D (mm)
AMS-FA-E020	2"	50	334	140	272	165
AMS-FA-E025	2 ½"	65	334	140	302	185
AMS-FA-E030	3"	80	354	150	333	200
AMS-FA-E040	4"	100	376	160	363	220
AMS-FA-E060	6"	150	478	210	475	285
AMS-FA-E080	8"	200	518	230	560	340
AMS-FA-E100	10"	250	550	250	646	405
AMS-FA-E120	12"	300	611	280	765	460

AWRING MAAD SANAT design and manufacture flame Arrester according to your requirements.



INNOVATIVE PRODUCTS FUSIBLE PLUG



Fusible Plug is a threaded cylinder of metal, usually bronze, brass or gunmetal, with a tapered hole drilled completely through its length.

Fusible plugs serve as warning devices used in compressed air systems, wellheads, and steam systems. They are considered the last line of defense and are often employed to prevent catastrophic failures. It operates as a safety valve when dangerous temperatures, rather than dangerous pressures, are reached in a closed vessel.

The initial use of the fusible plug was as a safety precaution against low water levels in steam engine boilers, but later applications extended its use to other closed vessels, such as air conditioning systems and tanks for transporting corrosive or liquefied petroleum gases.

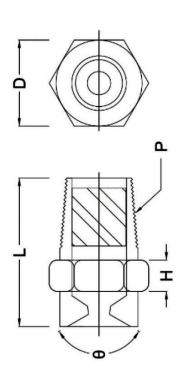
		Threaded	Dimensions (mm)			
Model	Material	Size (P)	L	Н	D (Hex.)	
AMS-FUP-S2	_ ,	1/4" NPT	21	6	16	
AMS-FUP-S3	Brass / Stainless	%" NPT	23	8	18	
AMS-FUP-S4	Stainless -	½" NPT	25	8	22	
AMS-FUP-S6		3/4" NPT	30	10	27	

Cat Daint Ctamp	Melting	Point	Color Code
Set Point Stamp	°C	°F	Color Code
71	71	160	Black
100	100	212	Orange
124	124	255	Green
138	138	281	Red

AWRING MAAD SANAT Company has experience in the field of designing, manufacturing, and producing fusible plug. If you prioritize quality, standards, and safety, feel free to contact us.



INNOVATIVE PRODUCTS SPRAY NOZZLE





A Spray Nozzle is a simple device used to break apart a fluid flow into a spray pattern. It is designed to control the direction or characteristics of a fluid flow, especially to increase velocity as it exits or enters an enclosed chamber or pipe.

It is often a pipe or tube with varying cross-sectional areas, and it can be used to direct or modify the flow of a fluid, whether liquid or gas. The nasal spray nozzle has the ability to spray at angles of 30 degrees, 60 degrees, 90 degrees, and 120 degrees, creating various patterns

such as a circle, ellipse, and square.

The hydraulic nozzle is a single-fluid type of spray nozzle that commonly sprays water or other liquids, such as chemicals or oil, depending on the application.

AWRING MAAD SANAT design and manufacture Spray Nozzle system according to your requirements.

Madel	Metavial	TVDE	Thursd Cine (D)	K Fac-	Approx. Orifice	Spray	D	imensions	s (mm)
Model	Material	TYPE	Thread Size (P)	tor	Dia. (mm)	Angel (Θ)	L	Н	D (Hex.)
AMS-SNZ-B4-K12				12	5.2	30°			22
AMS-SNZ-B4-K14	Brass/ Stain- less Steel	Full Cone	1/2 NPT	14	5.6	60° 90° 120°	38	8	
AMS-SNZ-B4-K16	1000 01001			16	5.8				
AMS-SNZ-B6-K18				18	6	30° 60° 90°			
AMS-SNZ-B6-K24	Brass/ Stain- less Steel	I Full Cone	ne 3/4 NPT	24	7.2		44 1	10	27
AMS-SNZ-B6-K28	1033 01001			28	8	120°			



INNOVATIVE PRODUCTS **SAMPLING CONNECTION**





A Sampling Connection is a type of connection in piping that allows for the extraction of a representative sample of a fluid or gas from within a pipeline for the purpose of analysis or testing. It can be found in a variety of industries, including oil and gas, chemical processing, pharmaceuticals, and food and beverage production.

Overall, sampling connection systems play a critical role in ensuring the safety, quality, and efficiency of processes in a wide range of industries, including the oil and gas industry.

Sampling Cylinder Technical Data

Model	Volume (Cm³)	Туре	Material	Pressure Rating PSI (Bar)	Thread Size	Thread Type
AMS-SM-S-150	150	Single				
AMS-SM-S-300	300	Ended / Double	S.S 304L / S.S 316L	1,800 (124)	1/4"	NPT
AMS-SM-S-500	500	Ended		()		

AWRING MAAD SANAT design and manufacture sample connection system according to your requirements.

MAAD-WOOD® SOLUTION WRING HARD WOOD ■ Wooden Block ■ Wooden Pillow Insulation Block ■ Wooden Box



MAAD-WOOD ® SOLUTION

Introduced to the market in 2016, Maad Wood is a premium product of Awring Maad Sanat, developed through a collaboration between our engineers and wood specialists from the University of Tehran.

All Maad Wood products are manufactured in compliance with international standards, and we ensure their quality by obtaining quality assurance certifications for each item. Leveraging our specialized knowledge and practical experience in processed woods, Maad Wood is committed to delivering the highest level of technical and engineering quality through our consulting services.

Our processed wood, meeting rigorous industrial standards, serves as an excellent alternative to conventional wood, providing superior efficiency and durability.

Maad Wood Solutions Include:

- Consultation and Raw Material Selection
- Design and Engineering Document Preparation
- Processing and Production
- Precision Manufacturing (including measuring, precise cutting, and drilling)
- Testing and Standard Certification Services





22



MAAD-WOOD ® SOLUTION









Common Name	(WENGE)	(TEAK)	(IROKO)	(BEECH)
Average Dried Weight	870 (KG/M3)	655 (KG/M3)	660 (KG/M3)	710 (KG/M3)
Shrinkage	12.9 (%)	7.2 (%)	8.8 (%)	17.3 (%)
Elastic Modulus	17.59 (GPA)	12.28 (GPA)	9.38 (GPA)	14.31 (GPA)
Modulus of Rupture	151.7 (MPA)	97.1 (MPA)	87.6 (MPA)	110.1 (MPA)
Crushing Strength	80.7 (MPA)	54.8 (MPA)	54 (MPA)	57 (MPA)
Janka Hardness	8600 (N)	4740 (N)	5610 (N)	6460 (N)









Common Name	(PINE)	(OAK)	(SPRUCE)	(ASH)
Average Dried Weight	475 (KG/M3)	775 (KG/M3)	435 (KG/M3)	675 (KG/M3)
Shrinkage	11.8 (%)	16.3 (%)	11.8 (%)	13.3 (%)
Elastic Modulus	10.81 (GPA)	12.15 (GPA)	10.76 (GPA)	12 (GPA)
Modulus of Rupture	64.4 (MPA)	102.3 (MPA)	66 (MPA)	103.5 (MPA)
Crushing Strength	38.4 (MPA)	50.8 (MPA)	33.6 (MPA)	51.1 (MPA)
Janka Hardness	2920 (N)	5990 (N)	2180 (N)	5870 (N)

