



**REFRAHOLD**  
INDUSTRIES PVT LTD



WHERE PASSION & COMMITMENT  
**FOR QUALITY MEETS**

**REFRAHOLD INDUSTRIES PVT. LTD.** is one of the leading manufacturer and supplier of REFRACTORY ANCHORS in the world, situated in an Industrial Hub of Gandhinagar with more than 1 acre area and constructed area of more than 15,000 Sqft with well-equipped machineries and trained staffs.



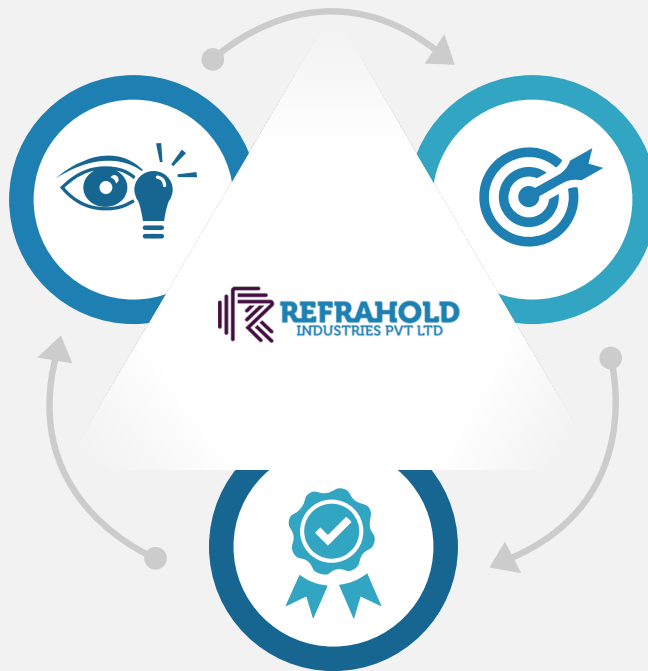
**REFRAHOLD INDUSTRIES PVT. LTD.** has taken a new shape with upgrading its skills and capabilities for the industry needs, to cater REFRACTORY ANCHORS, HEXMESH & ACCESSORIES, TURNED AND PRESSED COMPONENTS, LASER CUTTING ON SHEETS & PLATES, ALONG WITH PIPE AND TUBE MANUFACTURING.

While manufacturing and supply of Refractory anchors are a major part of our business activity, we continue to grow into new and exciting areas. Our comprehensive product range and infrastructure combined with our technical competencies, machineries, and continuous improvement initiatives, enhances our status as the pre-eminent manufacturer and preferred supplier of our products to all industrial sectors like Petrochemical, Oil & Gas, Fertilizers, Steel, Cement, Sponge Iron etc...

**REFRAHOLD INDUSTRIES PVT. LTD.** always holds a passion and commitment for quality products. Our core competence is professional service, superior and consistent quality, competitive price, and on-time delivery

## VISION

Providing customers with quality products to meet their standards through innovative designs and with total commitment



## MISSION

To always be the best in the eyes of our customers & vendors and to become a leading service provider for Refractory Anchoring solution.

## QUALITY ASSURANCE

We shall endeavour to consistently deliver quality products and services as per industry norms by constant up gradation of manpower resources through proper training, effective material management and safe & best manufacturing practices.

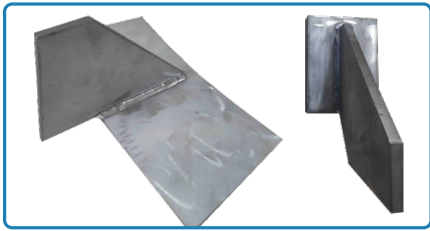
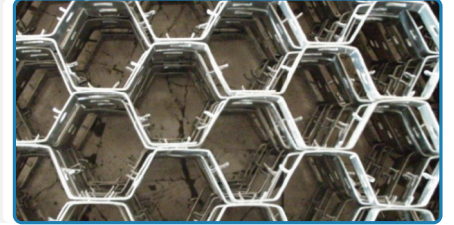


### REFRACTORY ANCHORS

The refractory anchors specialize in manufacture of alloys that can resist high temperatures and stainless fasteners that are used for anchorage of the refractories in process equipment and furnaces

### HESHMESH

Hexmetal (Hexmesh) is a unique honeycombed steel designed to provide excellent retention and reinforcement of thin wall refractories.



### SUPPORT PLATES

Shapes & components drawn from flat metallic sheets/ plates with varies thickness. These constitute huge range of assembly products used in the refractory linings & furnace shell structures

### TURNED & PRESSED COMPONENTS

Manufacture of components created from metal rods (round or Hex). Common products are Studs, Bolts & Nuts



### PIPES & TUBES

A PIPE is a round tubular to distribute fluids and gases, that represents the pipe conveyance capacity; a TUBE is a round, rectangular, squared or oval hollow section measured by outside diameter (OD) and wall thickness (WT)

### CNC LASER

Technology that uses a laser to slice materials. Laser cutting works by directing the output of a high-power laser most commonly through optics. The laser beam focused on the material melts, burns, vaporizes away, or is blown away by a jet of gas, leaving an edge with a high-quality surface finish.



### FABRICATIONS

Process of turning raw metals to pre-made shapes for assembly use. The process includes cutting, burning, welding, machining, forming, and assembly to create the final product. Metal fabrication projects include everything from hand railings to heavy equipment and machinery.

### ANCHOR ACCESSORIES FERRULES & CAPS

Plastic caps & Ferrules are used over the tips of the anchors. Plastic melt at elevated temperatures allowing the anchor to grow slightly without inducing a stress on the refractory for thermal expansion of anchors.

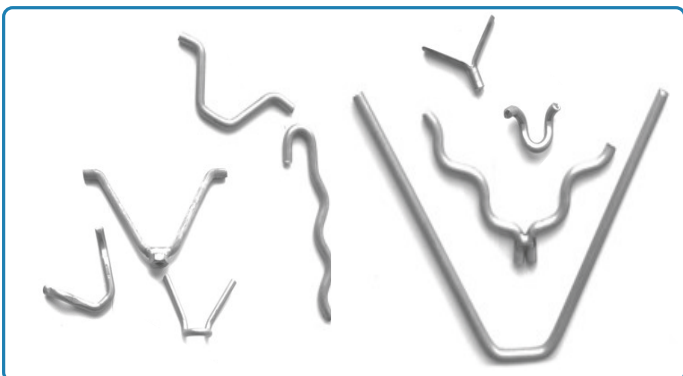
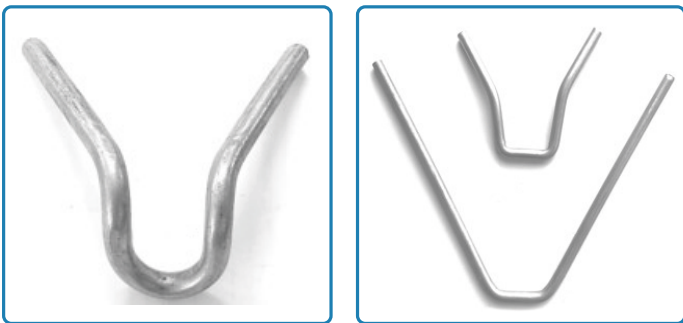
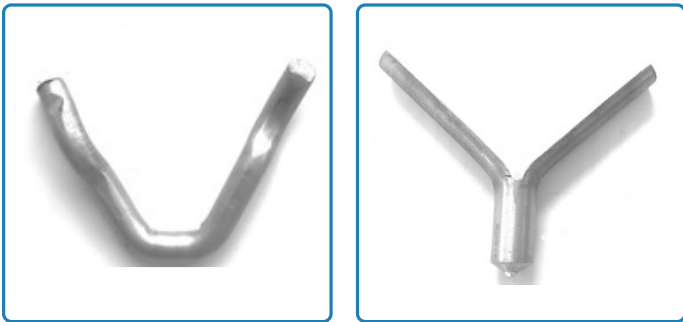
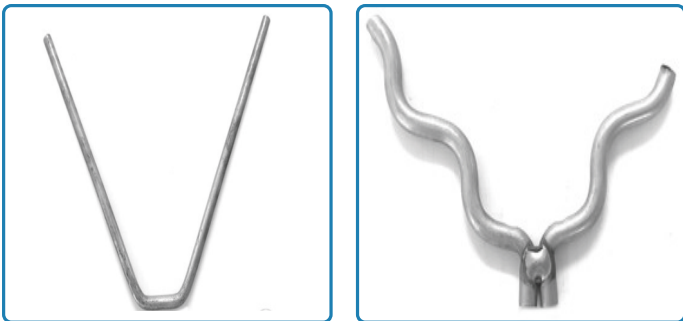


When it comes to metallic Refractory Anchors, **REFRAHOLD INDUSTRIES PVT. LTD.** is a ONE STOP SOLUTION for all your needs. We strive to give best quality at optimal price.

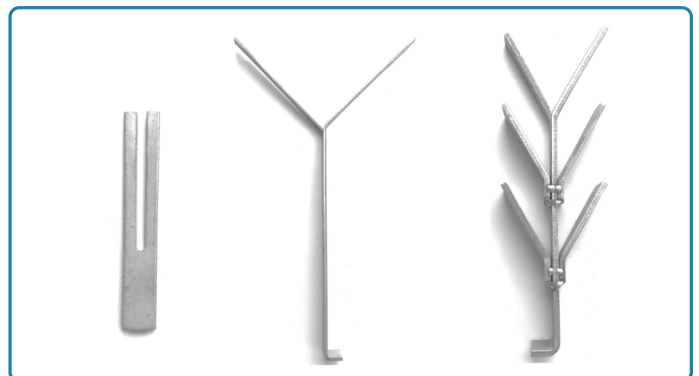
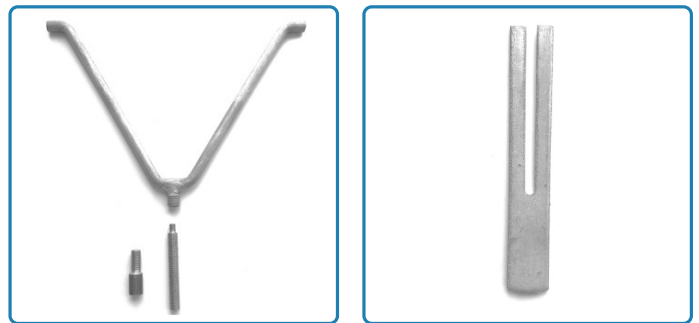
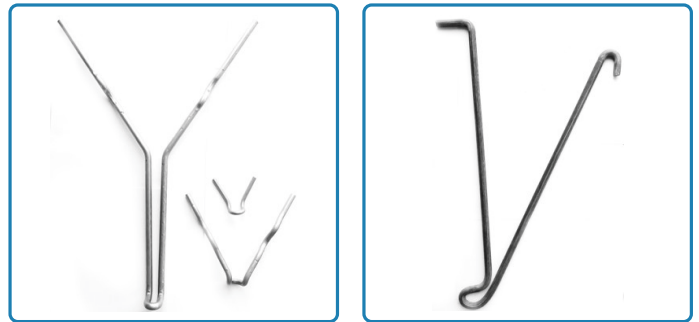
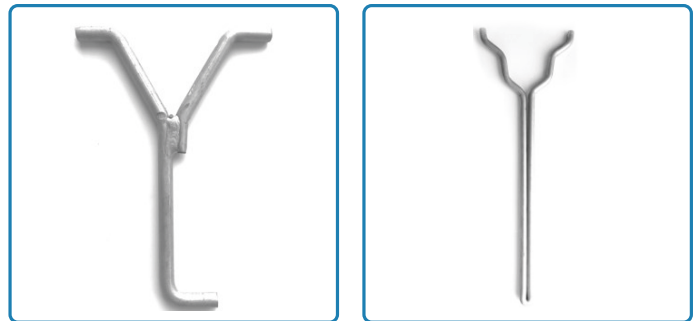
Our continuous service in the market for over 3 decades, is a standing proof to our capability & efficiency Anchor sizing for a refractory lining depends on the refractory thickness and number of components. Some designers use the practice of sizing the anchor height to be 75-85% through the main dense castable or gunned lining. Other rules of thumb used in the industry dictate that the anchor tip should be no more than two inches from the hot face of the refractory for thicker lining designs greater than 6-7".

## ANCHORS FOR CASTABLES

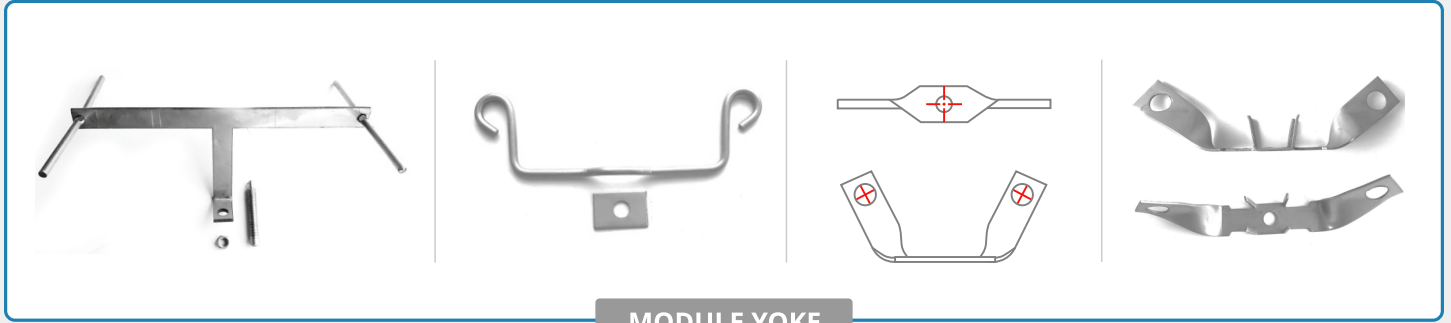
### V ANCHORS (SIMPLE & CORROGATED)



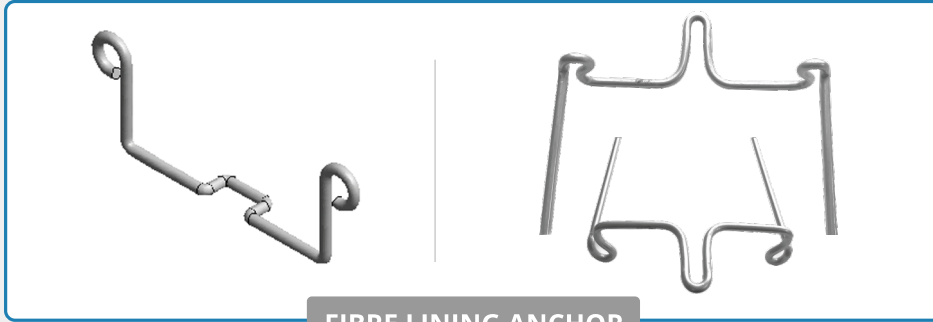
### Y ANCHORS (SIMPLE & CORROGATED)



## ANCHORS FOR CERAMIC FIBERS



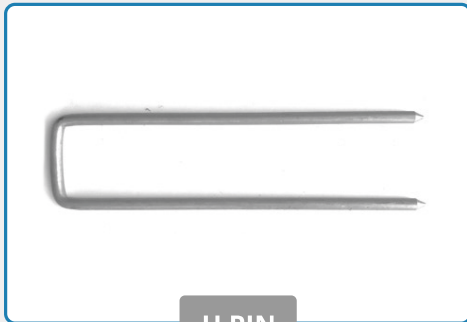
MODULE YOKE



FIBRE LINING ANCHOR



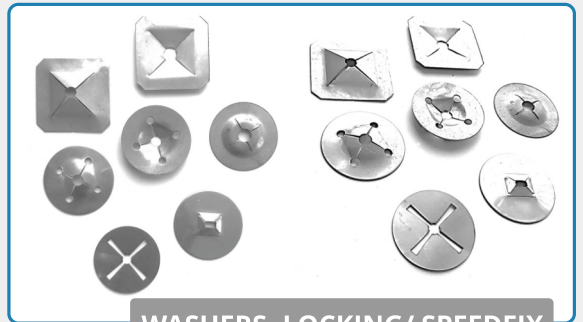
CERAMIC CUPLOCK



U PIN

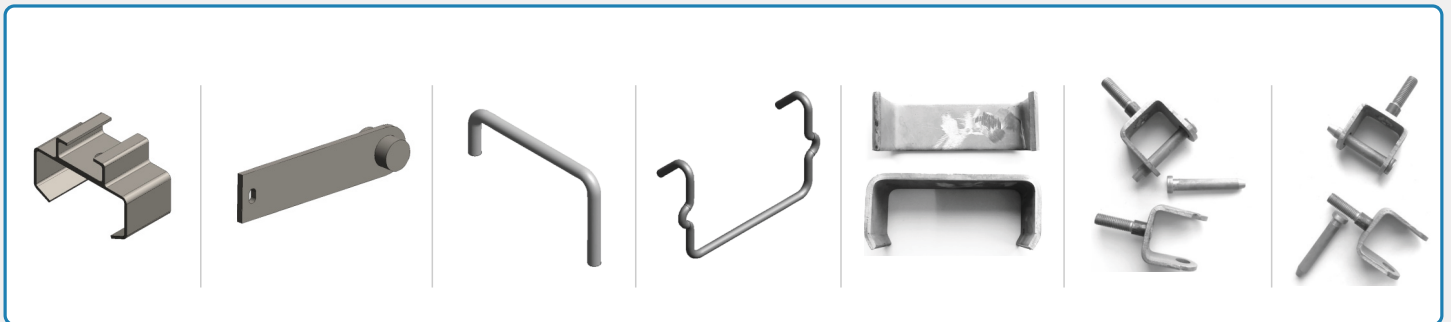


INSULTWIST STUD



WASHERS- LOCKING/ SPEEDFIX

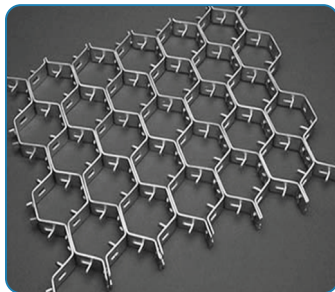
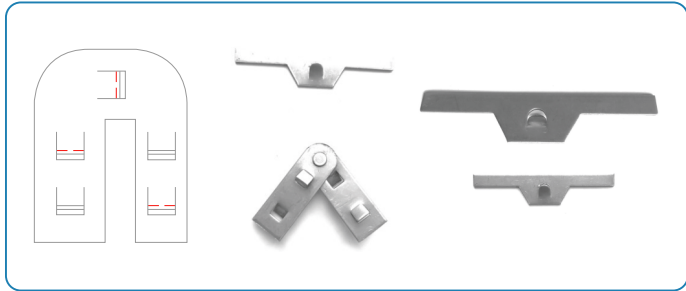
## ANCHORS FOR REFRACTORY BRICKS



## SUPPORT PLATES



Hex Meshing is mainly based on various forms of well-structured Concept design, having a particular shape. Hex mesh offers a calculated design, which are relevant to the each of the node of the mesh. It fully complements dense hydraulic and chemically bonded refractories in resisting erosion.



## TYPES OF HEXMESH

- L-Type mesh – this style has lance tabs protruding from the walls of the hexagonal cell to act as anchorage for the refractory.
- H-Type mesh – instead of lance tabs, holes are punched through the walls of the hexmetal cell. Achieve a bond from one cell to another.
- Accessories- Punch tabs/ Hex, C & S-Bars

Range of stainless steel and carbon steel includ alloy 304, 310,410S and 253MA. Other materials can be supplied on request.

Gauge	14Ga (2.0mm)	
<b>Standard Size:</b>	1000mm Wide & 1000mm Long	Customizable based on request
<b>Standard Thickness:</b>	19mm (3/4")25mm (1")	
<b>Standard Alloys:</b>	SS304H, SS304, SS310 and SS 410S	Other alloys done upon request
<b>Rolling &amp; Forming</b>	Customized as per drawing	

## TURNED & PRESSED COMPONENTS

We manufacture a wide range of Turned, threaded & pressed components that includes

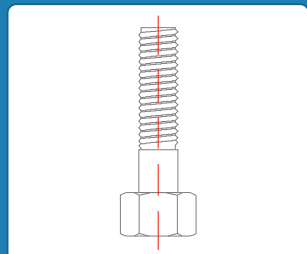
- Fully threaded Studs
- Semi threaded Studs



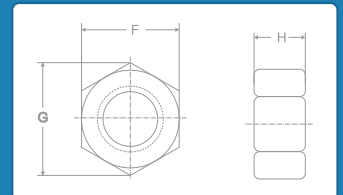
- Fully threaded Stud Bolts
- Semi threaded Stud Bolts



- Washers & Nuts



- Dimensions of Metric Hex Nuts



Nominal Size	Thread Pitch	F		G	H	
		Width Across Flats (Wrench Size)		Width Across Corners	Thickness	
		Max	Min	Min	Max	Min
M1.6	0.35	3.2	3.02	3.41	1.3	1.05
M2	0.4	4	3.82	4.32	1.6	1.35
M2.5	0.45	5	4.82	5.45	2	1.35
M3	0.5	5.5	5.32	6.01	2.4	2.15
M4	0.7	7	6.78	7.66	3.2	2.9
M5	0.8	8	7.78	8.79	4.7	4.4
M6	1	10	9.78	11.05	5.2	4.9
M8	1.25	13	12.73	14.38	6.8	6.44
M10	1.5	16	15.73	17.77	8.4	8.04
M12	1.75	18	17.73	20.03	10.8	10.37
M14	2	21	20.67	23.35	12.8	12.1
M16	2	24	23.67	26.75	14.8	14.1
M20	2.5	30	29.16	32.95	18	16.9
M24	3	36	35	39.55	21.5	20.2
M30	3.5	46	45	50.85	25.6	24.3
M36	4	55	53.8	60.78	31	29.4
M42	4.5	65	63.1	71.3	34	32.4
M48	5	75	73.1	82.6	38	36.4
M56	5.5	85	82.8	93.56	45	43.4
M64	6	95	92.8	104.86	51	49.1

**REFRAHOLD INDUSTRIES PVT LTD**, has its own 100% automated Tube mill - A STATE OF THE ART infrastructure with qualified operators. We are known for our precision and experience in pipe manufacturing.

In Refractory industry, Pipe/Tube is manufactured from a wide range of metal grades (SS304, SS316, SS310, Inconel (600, 601, 800HT), Carbon Steel and more..), by a variety of processes such as welding.

The standard combinations of pipe Nominal Pipe Size and Wall Thickness (schedule) are covered by the ASME B36.10 and ASME B36.19 specifications (respectively, carbon and alloy pipes, and stainless-steel pipes).



### TYPES OF STAINLESS-STEEL PIPES/ TUBES SUPPLIED

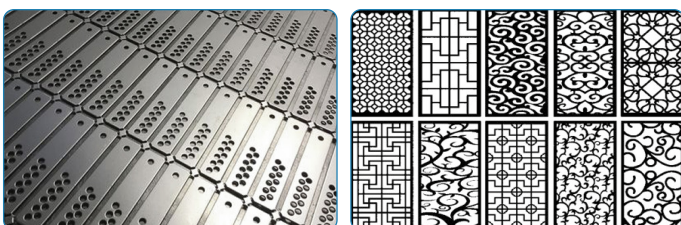
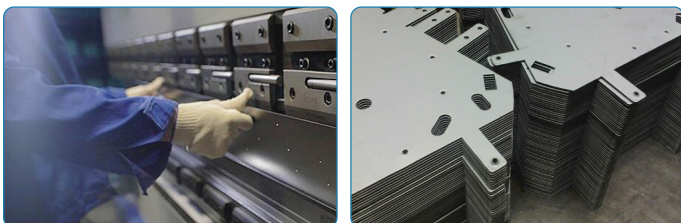
- Stainless Steel Tubing for General Corrosion-Resistance
- Stainless Steel Pressure Pipe
- Stainless Steel Mechanical Tubing

# CNC LASER

Computer numerically controlled (CNC) laser cutting is a sheet metal manufacturing process carried out by CNC laser cutters. The primary form of laser cutting for sheet metal is 'vaporisation cutting', in which the laser beam melts the material and a high-pressure gas removes the molten material.

**REFRAHOLD INDUSTRIES PVT LTD**, has its own laser machine with below capacity:

Description	Size	Unit
Cutting (Mild Steel)	6 mm Max	Thick(mm)
Cutting (Stainless Steel)	4 mm Max	Thick(mm)
Travel	1250 x 2500	Length x Width (mm)

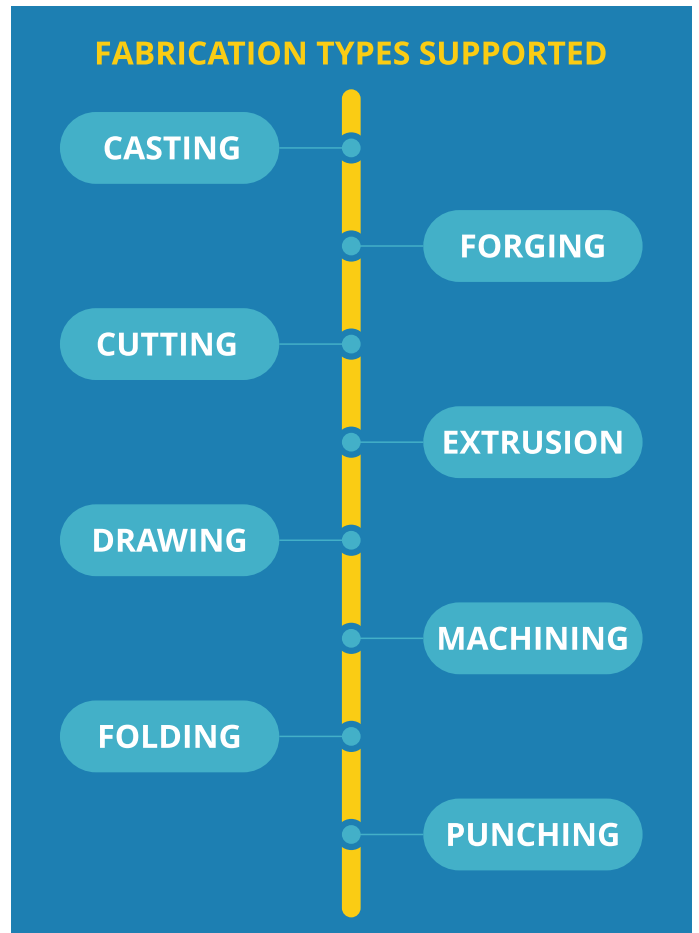


### LASER CUTTING SERVICES RENDERED AT REFRAHOLD

- Design creation
- All SS Grades supported
- Sheet Metal cutting
- Engineering parts manufacture
- Clean cut edges without burr or dust formation
- Versatile range on industries served
  - Mechanical/ Elevator
  - Construction frames/ doors/ windows
  - Agriculture Machinery
  - Electrical parts & Panel boards
  - Steel furniture & railway metal parts
  - Retail designer sheets

Metal fabrication is a broad term referring to any process that cuts, shapes, or moulds metal material into a final product.

Instead of an end product being assembled from ready-made components, fabrication creates an end product from raw or semi-finished materials. There are many different fabrication manufacturing process processes and the process used depends on both the beginning metal material and the desired end product.

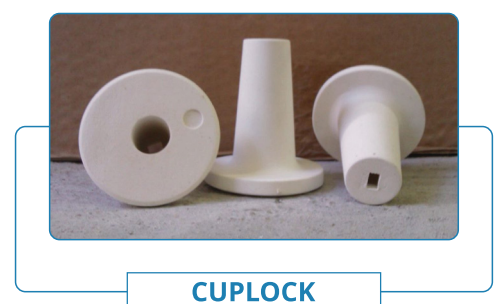


## ANCHOR ACCESSORIES

**REFRAHOLD INDUSTRIES PVT. LTD.** in addition to metallic products also supplies anchor accessories for enable best fit and application. Every anchor is best fit in the refractory castable/ lining using a cap usually made of PVC/ plastic. All refractory Anchors should be capped with Self-sacrificing plastic meltable caps to facilitate thermal expansion of the anchors

### THE SALIENT FEATURES OF THIS CAP FOR A REFRACTORY ANCHOR ARE AS FOLLOWS:

- High flexibility and provides a complete seal which is crack free
- Acts as a protection from dust or other impurities
- Easy to install providing airtight fit
- Withstands high temperatures and has chemical resistance
- Provides natural insulation & durability
- Customizable in length and size





## SOLUTION ANNEALING



Solution annealing is a high temperature heat treat process where the alloying elements of the material are brought into a solid solution. The solid solution condition is maintained by quenching the material in water or polymer.

We have our own annealing furnace with a capacity of up to 1 Metric Ton to a temperature of 1200 degree celcius

Pickling is a metal surface treatment used to remove impurities, such as stains, inorganic contaminants, rust or scale from ferrous metals, copper, precious metals and aluminum alloys. A solution called pickle liquor, which usually contains acid, is used to remove the surface impurities. It is commonly used to descale or clean steel in various steelmaking processes



## PICKLING

## PASSIVATION



In Passivation, the surface of the stainless steel is treated with an oxidizing acid, to dissolve carbon steel, sulfide inclusions and remove iron and other surface contaminants from the stainless. The acid further works to promote the formation of the chromium-rich passive film, which imparts the corrosion resistance quality

Metal polishing can be performed with several varieties of abrasive. The best abrasive for it largely depends on the condition of the material that will be polished. Polishing and buffing can also contribute to workplace safety. Helps prevent corrosion & brings out the shine in metallic surfaces. Our polishing types for anchors- Barrel Tumbling & Vibratory finishing



## POLISHING

## TESTING



### TESTING COVERED BY US

- Positive Material Identification Testing (PMI)
- Chemical Analysis
- Mechanical Testing
- Metallurgical Testing
- Corrosion Testing
- Nondestructive Testing
- Intergranular Corrosion (IGC)

PACKING done as per international Standards to ensure Airway/ container guidelines -- 7-Ply carton Boxes sorted in wooden pallets

### LABELLING

- Shipper's mark
- Country of origin / Port of entry
- Weight marking
- Cautionary markings
- Labels for hazardous materials



## PACKING AS PER INTERNATIONAL STANDARDS

## GUN WELDING SERVICES



A welding gun is a portable device used to achieve semi-automatic or automatic welds on pieces of metal. Used for several types of processes, including spot welding, arc welding and electron-beam welding.

### Benefits of using a welding gun:

- Better productivity due to quicker contact tip change times.
- Improved quality of the welds performed.
- Increased arc-on time due to the comfort of the operator.

**OUR QUALITY POLICY**

We shall endeavor to consistently deliver quality products and services as per industry norms by constant up gradation of manpower resources through proper training, effective material management and safe & best manufacturing practices.

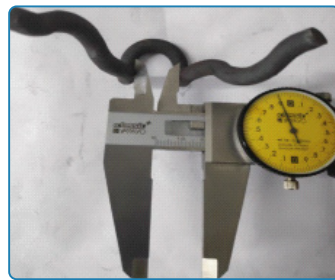


**OUR QUALITY BEST PRACTICES**

- All our products are manufactured only from Prime Raw materials
- Raw materials are sourced only from genuine mills with appropriate Mill Test Certificate (MTC)
- In-house experienced quality assurance team available throughout
- 3-Part QA done for every product
  - 1st piece validation done at peer level & Quality approver
  - Every 100th piece validated & passed against drawing & dimensions
  - Final verification done before packing against quality checklist
- Inhouse & external inspection carried out as per. Inspection Test Certificate (ITC) shared for all products

Sample Test Certificate

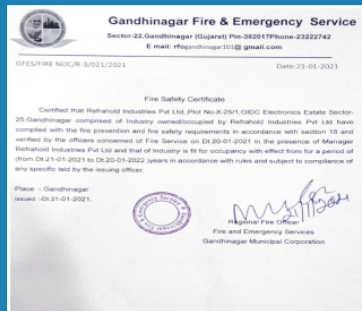
REFRAHOLD INDUSTRIES PRIVATE LTD.		INSPECTION REPORT	
JOB: UDHYM TUBES		IN UDHYM PIPE 2.1	
Customer:	Region No:	Lot No:	Part No:
Job No:	Date:	Inspector:	Inspector (By hand):
Task Name:	Material Type & Specs:	Qty:	Qty (By hand):
Item No:	Grade:	Batch No:	Drawing Ref:
DIMENSIONS DETAILS			
Characteristics	Drawing Dimension (mm)	Actual Dimension (mm)	
Dia. ID	5.0	5.0	
Tube Length	20.0	20.0	
Number Length	15.0	15.14	
SAR MATERIAL TEST RESULTS			
Grade:	ASTM 304	MECHANICAL ANALYSIS	
Temp. (°C)	500	TS (MPa)	515
Yield (MPa)	205	RA (%)	0.04
U.T.S (MPa)	515	EL (%)	40.0
Impact (J)	27	METALLURGICAL ANALYSIS	
Charpy (J)	27	Grain Size	8.5
TD (MPa)	27	Grain Size	8.5
AS. (H)	27	Grain Size	8.5
REMARKS: ALL TEST RESULTS ACCORDING TO THE REQUIREMENTS OF THE CUSTOMER. ALL TESTS WERE DONE WITH THE APPROPRIATE INSTRUMENTS.			



**OUR CERTIFICATIONS**



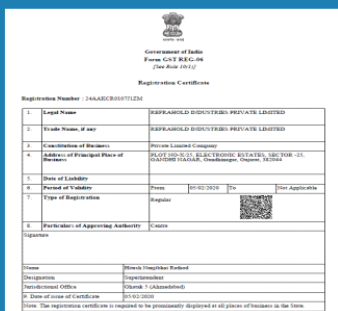
**IMPORT & EXPORT**



**FIRE & SAFETY**



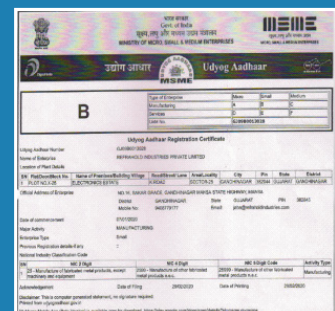
**UDHYAM**



**GST CERTIFICATE**



**ISO**



**MSME**



**REFINERY  
INDUSTRIES**



**OIL & GAS  
INDUSTRIES**



**FERTILIZER  
INDUSTRIES**



**STEEL  
INDUSTRIES**



**CEMENT  
INDUSTRIES**



**MINING  
INDUSTRIES**



**NON-FERROUS  
INDUSTRIES**



**PETROCHEMICAL  
INDUSTRIES**

# OUR GLOBAL SPECTRUM



## ALLOY GRADES & PROPERTIES

GRADE	Type of SS	Heat Resistance	Density	Corrosive Resistance	Nickel content	Cromium Content	Tensile Strength (Mpa)	Elongation %
CS	Ferritic/Pearlitic	540 C	7870	Low	0.3	10.5	415	10
409	Ferritic	675-815 C	7700	Moderate	0.5	10.5 - 11.7	380	20
410/ 410S	Martensitic	400-580 C	7700	Moderate	-	11.5 - 13.5	480	16
304	Austenitic	425-860 C	7900	Very Good	8.0 - 10.5	17.5 - 19.5	515	40
304L	Austenitic	500-800 C	7900	Very Good	8.0 - 12.0	17.5 - 19.5	485	40
304H	Austenitic	425-860 C	7900	Very Good	8.0 - 10.5	18.0 - 20.0	515	40
321	Austenitic	425-900 C	7900	Very Good	9.0 - 12.0	17.0 - 19.0	515	40
316	Austenitic	425-860 C	8000	Excellent	10.0 - 14.0	16.0 - 18.0	515	40
314	Austenitic	649-816 C	7900	Very Good	19.0 - 22.0	24.0 - 26.0	15	40
310	Austenitic	650-900 C	7750	Very Good	19.0 - 22.0	24.0 - 26.0	515	40
310S	Austenitic	650-900 C	7750	Very Good	19.0 - 22.0	24.0 - 26.0	515	40
600	Austenitic	900-1100 C	8470	Very Good	>72.0	14.0 - 17.0	760	20
601	Austenitic	1300-1400 C	8100	Excellent	58.0 - 63.0	21.0 - 25.0	>600	20
800	Austenitic	1100-1300 C	8100	Excellent	30.0 - 35.0	19.0 - 23.0	>600	20
800/HT	Austenitic	1100-1300 C	8100	Excellent	30.0 - 35.0	19.0 - 23.0	>600	20

## EXPORT & LOGISTICS



### EXPORT TYPES

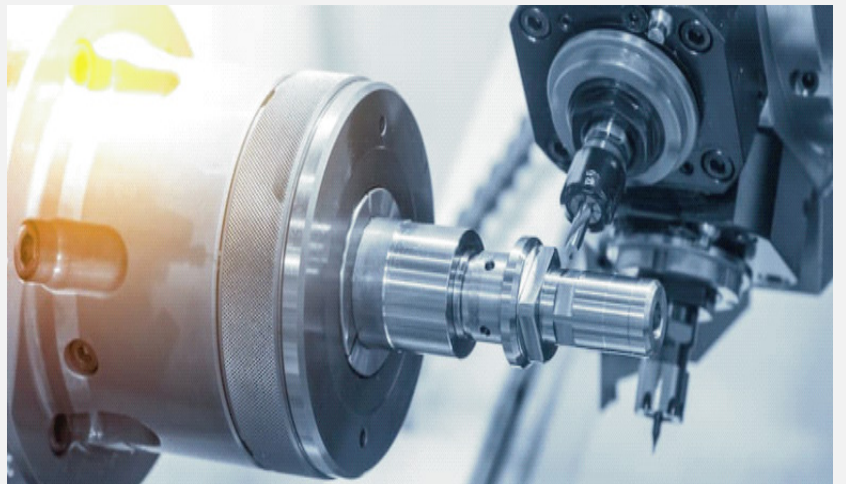
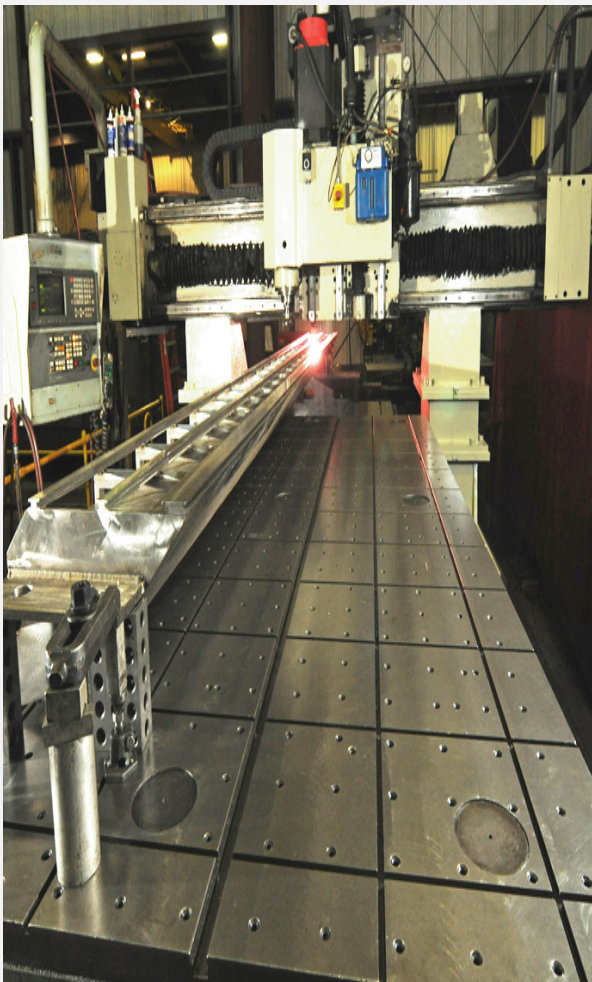
- Direct Export
- Indirect Export
- Merchant Export
- Deemed Export

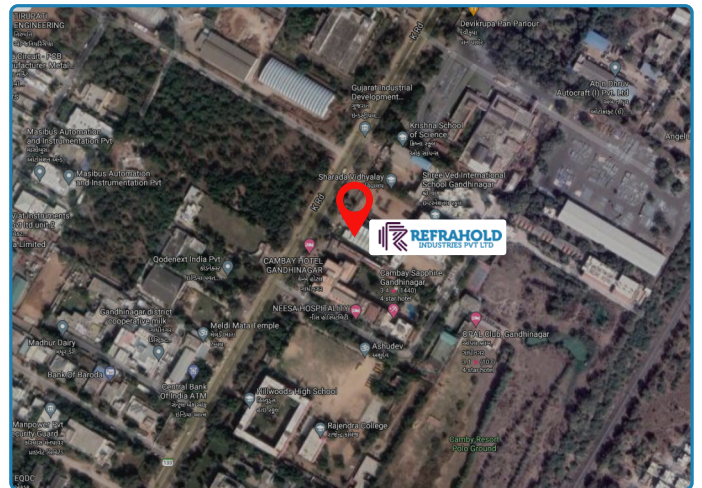
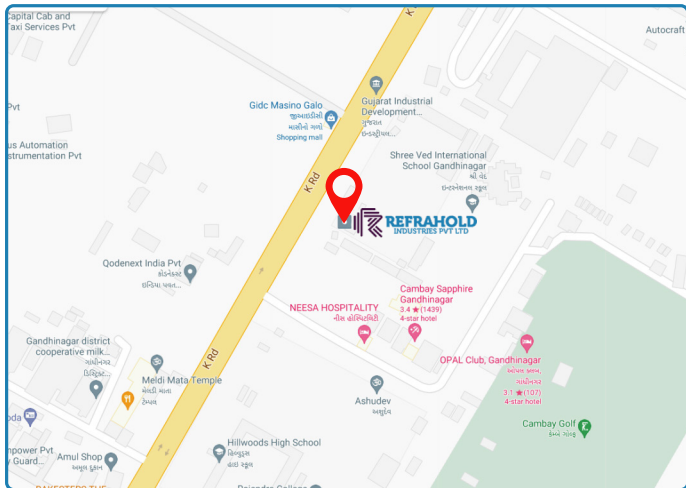
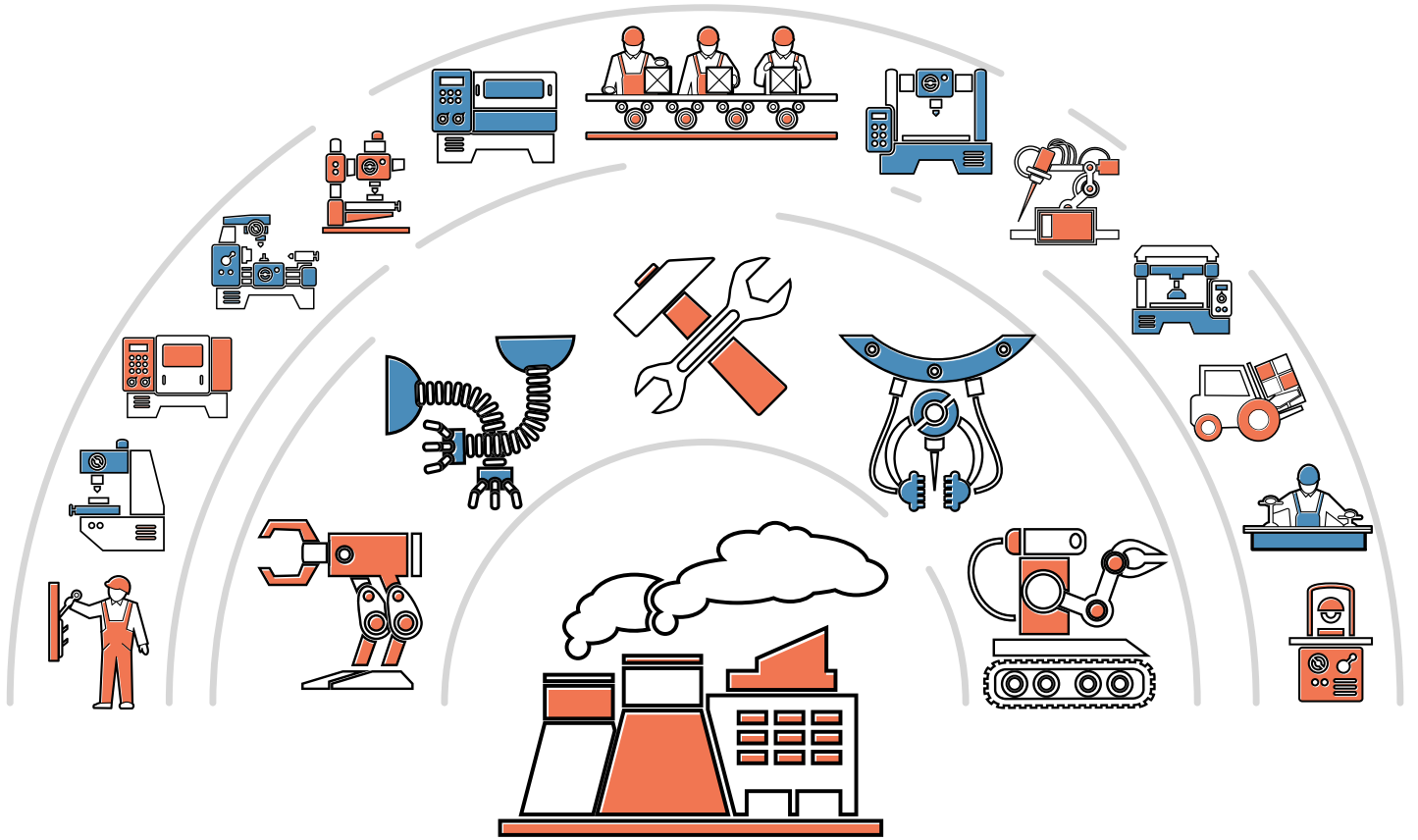
### EXPORT DOCUMENTATIONS

- Product's quality Certificate
- Invoice & Packing list (Commercial invoice and tax invoice )
- Fumigation Certificate
- COO Certificate
- AWB / BL / Courier Booking Details / Rial - Road Booking Details
- Any other technical certificate as per custom's requirements.

### EXPORT FREIGHT MODE

- AIRWAY
- SEA SHIPMENT- Container
- RAIL/ROAD
- COURIER





**REFRAHOLDINDUSTRIES PVT. LTD.**

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