




**HANYCO**  
HAMOUN NYZEH CO.  
Manufacturer of ductile iron  
lighting and distribution poles

# Ductile Iron pole

A novel green Solution  
for  
line hardening







Hamoun Nyzeh Company is established in 2008 with nominal production capacity of 100,000 tons per year, aiming to produce ductile Iron fittings and pipes for the purpose of water and sewage distribution and transfer lines. The valuable twelve years of experience of Hamoun Nyzeh and its successful presence in national market as well as the exportation of various types of pipes and fittings to more than 10 countries besides exploiting modern technologies in the field of casting using centrifugal forces and the experiences of this company's experts, support the production of a novel product in the field of electricity, placing our beloved country among the three (3) countries throughout the world manufacturing this product.

The main objective of ductile iron poles is to increase the lifetime and security of distribution lines as well as assisting in renewal the dilapidated constructs particularly in soil-exposed regions with improper climate. Suitable strength, unique corrosion-resistance, beautiful appearance, low weight and easy installation are among the most important advantages of this type of poles.

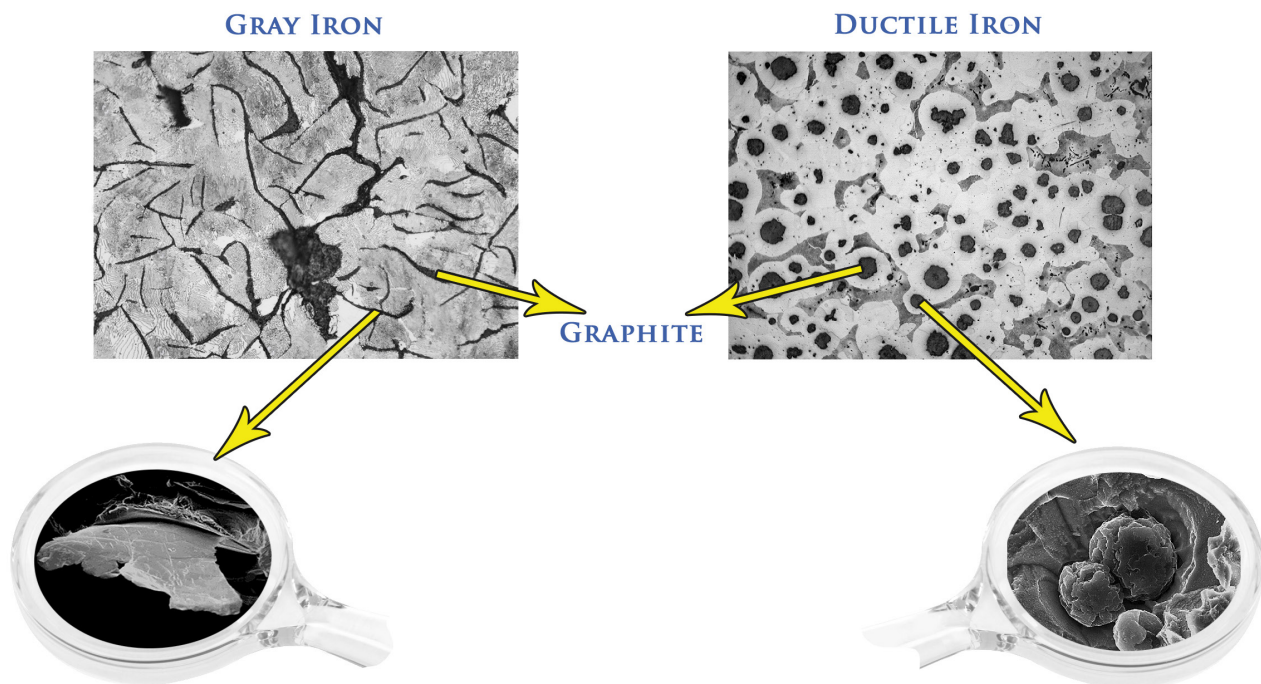


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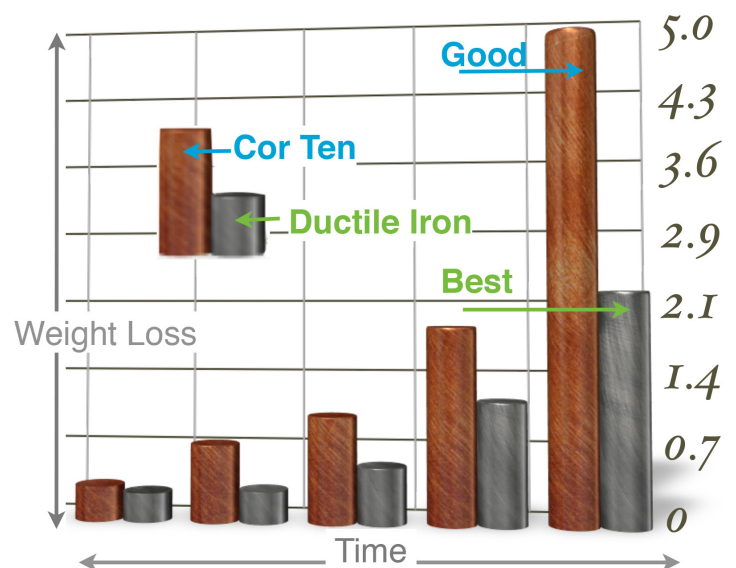
## Ductile cast iron

Ductile iron is a type of gray irons in which the free carbon is in the form of spherical graphite instead of flake like graphite. Therefore, this type of cast iron is sometimes called nodular cast iron and spherical graphite cast iron (SG) in USA and UK respectively. Due to its proper characteristics, ductile cast carbon has gained a huge fame since its discovery namely 1948. Resistance against corrosion instinct of ductile cast iron is among advantages leading this metal to reveal an acceptable performance in environments exposing to corrosion. The protective layer formed on this metal while production process performs as a resistant later against corrosion. On the other hand, applying resistant covers coating with different characteristic including zinc coat, various paints such as Polyurethane, bitumen and epoxy and non-adhesive covers on the surface such as polyethylene sleeve could minimize the corrosion probability. Ductile cast iron pipes buried in soil are estimated life of 80 years.



## Mechanical characteristics of ductile cast iron

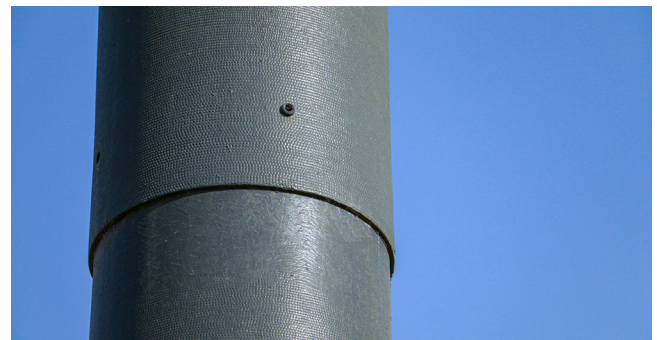
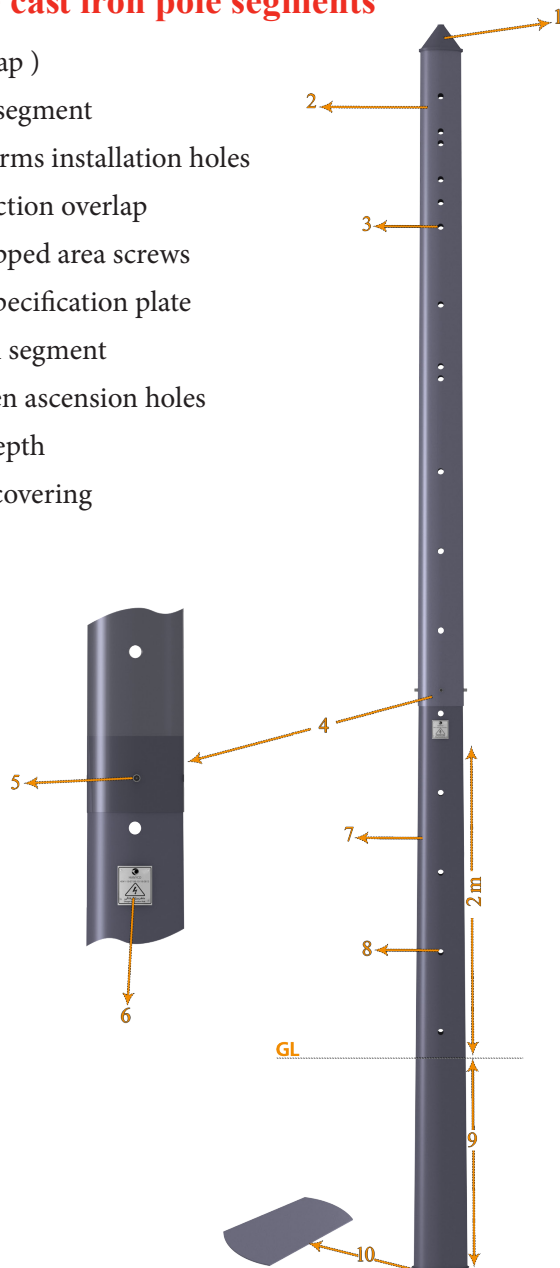
Minimum yield tensile strength : 270 MPa  
 Minimum tensile strength : 410 MPa  
 Minimum percentage of elongation (A): 10  
 Minimum of elasticity module: 165 GPa



The salt spray test was carried out according to ASTM B117. Results of tests show that the corrosion rate of ductile iron is about half in comparison with A588 weathering steel.

## Ductile cast iron pole segments

1. Lid ( Cap )
2. Upper segment
3. Cross arms installation holes
4. Two section overlap
5. Overlapped area screws
6. Basic specification plate
7. Bottom segment
8. Linemen ascension holes
9. Bury depth
10. Floor covering



## Specification plate

Iran's power generation and distribution company (Tavanir) a plate carrying unique specifications of each pole is allocated, in order to identify the electricity poles following the installation in site.

This plate consists of pole's identification number based on instruction titled "Coding of electricity distribution networks equipment".

The identification number specifies the manufacturer code, equipment code, production year and month and unique sequential serial number for each pole.

Each pole can be traced during its lifetime, considering the universal tracing system in Hamoun Nayzeh Company. All the controlling and quality records of poles have been registered in this system and are accessible from any time.





## Applications of ductile cast iron pole

- Applicable in 33Kv and 20 Kv lines
- Regions with high corrosion and humidity
- Regions having corrosive soil
- Tensile poles used in extremity and angles of distribution lines
- Enhancement the existing distribution line
- Lighting pole
- Transformer installation pole
- Applicable in telecommunication equipment and warning signs



## Advantages of ductile cast Iron

- Presented in various classes compatible with existing wooden and concrete poles.
- Life time over 80 years in respect to special applied coating on the pole (through proper strength and resistance against corrosion).
- 15 years of guarantee.
- Integrated body (Without weld seams in its body / pole formed through the process of centrifugal casting).
- Easy carrying and installation due to its low weight (30 percent of concrete poles weight in similar class).
- Beautiful appearance in urban furniture in different colors.
- Resistance against firing and destruction caused by insects.
- Recyclable raw materials used in ductile cast iron pole, make it to high value product (green product).
- Easy pole body drilling even on installation site.
- Suitable for impassable regions due to the pole assembly capability in installation site.
- Suitable for regions with variable climate such as snow and frost.
- Short production and casting time for each pole (less than two minutes).



## Accessories

### 1- On-site pole assembly

Ductile cast iron poles are capable to be assembled on customer's site. Assembly ring has been designed for this reason.

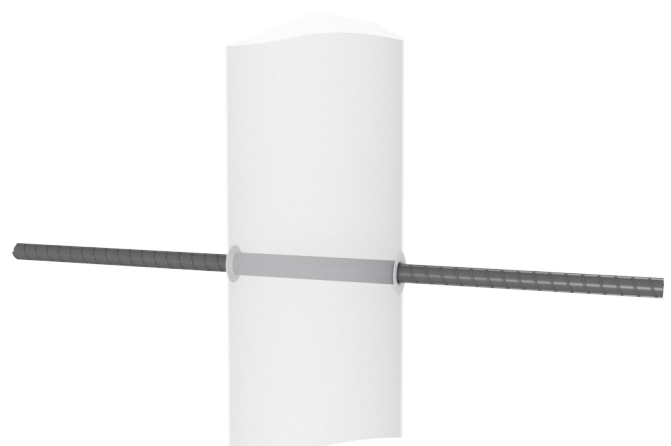
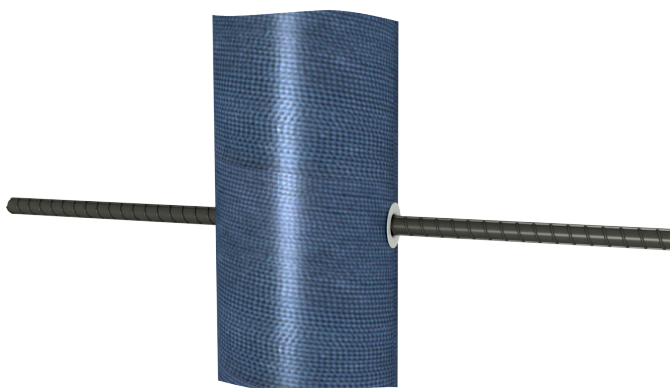


### 2-Installation without crane

One of the advantages of ductile cast iron poles is the capability of installation and assembly of these poles without using crane and manually within impassable regions, due to the light weight of poles as well as the two or three-sectioned pole.

### 3-Ascension stairs instructions

Ascension stairs instructions are offered for the purpose of ease and reduction the ascension time from pole (Stainless, Galvanized or polymerized steel).





## Coverage classes provided based on climate conditions of pole's installation place

Internal surface			External surface			Coating type
Location	Dry film thickness (μm)	Coating	Location	Dry film thickness (μm)	Coating	
2m from pole end	100	Zinc-rich Polyamide Epoxy primer	2m from pole end	130gr/m <sup>2</sup>	Metallic zinc coating	1
2m from pole end	70	Bituminous paint	2m from pole end	70	Bituminous paint	
2m from pole end	100	Zinc-rich Polyamide Epoxy primer	Whole length	130gr/m <sup>2</sup>	Metallic zinc coating	2
2m from pole end	70	Bituminous paint	Whole length	70	Polyurethane paint	
			2m from pole end	70	Bituminous paint	
2m from pole end	70	Bituminous paint	Whole length	130gr/m <sup>2</sup>	Metallic zinc coating	3
			Whole length	70	Intermediate epoxy primer	
			Whole length	70	Polyurethane paint	
			2m from pole end	70	Bituminous paint	

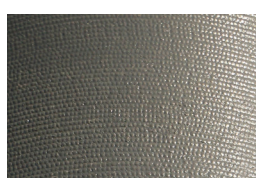
## Ductile cast Iron poles coatings

Various types of resistant coatings against corrosion are applied on conical poles, based on type and place of application. The burial section of pole is always covered by corrosion-resistant covers. However, the upper-ground section of pole could be designed without any covers, due to the natural resistance of ductile cast iron against corrosion. Therefore, the oxidative layer could give a distinctive and beautiful appearance to the pole as well as protecting the pole metal and is not considered as a threat within pole's lifetime.

Moreover, it is possible to offer coatings in different types and colors based on the climate conditions and customer's demands.



Bituminous



Polyurethane

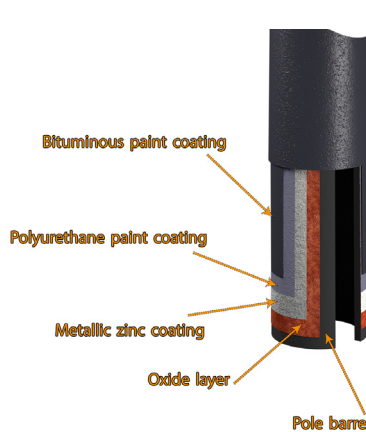


Without Cover

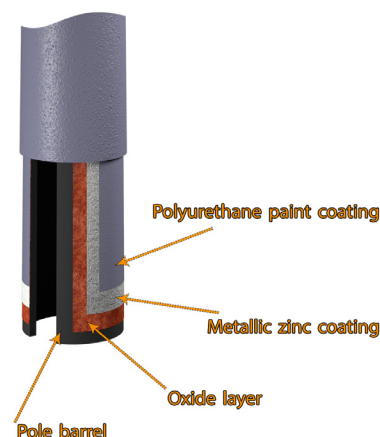


Zinc Cover

### Burial Segment



### Body Segment





## Technical specifications of conical electricity poles

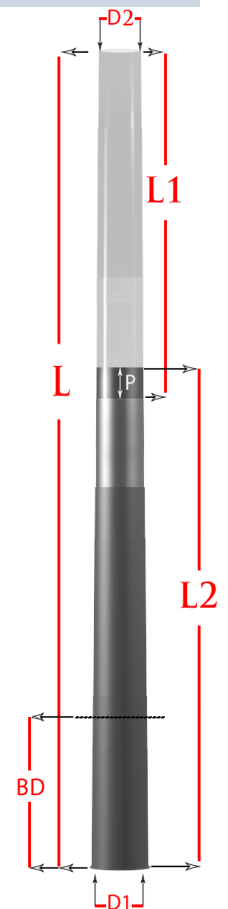
### Conical ductile iron pole

Insertion depth (mm) P		Embedded Depth (cm) BD	Total weight (Kg)	Upper section weight (Kg)		Bottom section weight (Kg)			Base diameter of bottom section (mm) D1	Top diameter of top section (mm) D2	* Bottom section height (m) L2		Upper section height (m) L1	Pole height (m) L	Min bending moment at GL (KN-m)	Max working Tip Load (Kgf)
Upper section	Bottom section			Upper section	Upper Cap	Middle section	Bottom section	Floor covering			Bottom section	Middle section				
-	300	10% of pole height+60 cm	186	25	3/5	-	155	2/5	276	266	6	-	1/5	7/5	10/9	C200
-	300		226	65	3/5	-	155	2/5	276	175/3	6	-	3	9	13/9	
-	300		265	105	2	-	155	3	276	115	6	-	6	12	18/1	
-	300		230/5	155	5	-	68	2/5	285	188	1/5	-	6	7/5	21/8	C400
-	300		275	155	5	-	112	3	306	188	3	-	6	9	27/1	
-	300		369	155	5	-	205	4	348	188	6	-	6	12	37/7	
300	330		517	155	5	205	146	6	382	188	3	6	6	15	48/3	
300	330		681	155	5	205	304/5	11/5	421	188	6	6	6	18	58/9	C600
-	300		266/5	205	8	-	50	3/5	357	261	1/5	-	6	7/5	32/7	
-	300		353	205	8	-	136	4	379	261	3	-	6	9	40/7	
-	300		499	205	8	-	280	6	421	261	6	-	6	12	56/5	
300	330		660	205	8	280	159	8	452	261	3	6	6	15	72/4	C800
300	330		808/5	205	8	280	304	11/5	494	261	6	6	6	18	88/3	
-	300		411	280	11	-	115	5	431	334	1/5	-	6	7/5	43/6	
-	300		512	280	11	-	215	6	452	334	3	-	6	9	54/2	
-	300		603	280	11	-	304	8	494	334	6	-	6	12	75/4	

Ductile iron poles with more than 12 meters height are delivered in three sections.

\*In ductile iron pole with less than 12 meters height, L2 is the height of bottom section while pole with more than 12 meters L2 is total heights of middle and bottom sections.

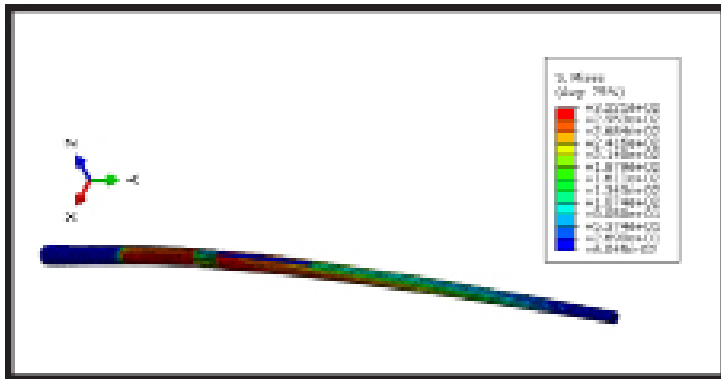
All of presented weight are theoretical.





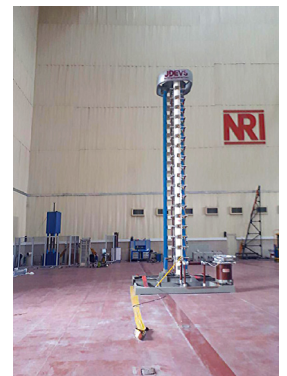
## Performance tests

1. Ductile cast iron poles are tested from the point of performance up to three (3) times the maximum permitted workforce, and passed successfully all the relevant tests. These tests were performed by the reference laboratory of power research institute.
2. Ductile cast iron poles performance was examined using “finite element software”, and the obtained results were verified using practical tests.



## Electricity conductivity tests


According to the conductivity test performed by Iranian Niroo research institute (NRI), the conductivity amount of ductile cast iron poles is equal to a copper 4 wire. The Earthing (grounding) system of ductile cast iron poles is made through the earth screw embedded on the pole body which is made of stainless steel. The earth screw height from ground can be determined by the customer upon request.





## Standards

Ductile cast iron poles are produced according Tavanir Company instructions titled “Instruction for requirement technical criteria and performance tests of ductile iron poles”. Moreover, ductile cast iron poles are test from the point of performance, according to Tavanir instructions and national and international standards. Hamoun Nyzeh is the exclusive producer of ductile cast iron distribution poles in Iran.



شرکت مدیریت تولید، انتقال و توزیع نیروی برق ایران (توانیر)

**Requirements, technical evaluation criteria and cast iron pole tests  
determination instructions**


Approval authority: Tavanir Company general manager

Instrument receivers:

- Distribution coordination deputy of Tavanir Company ☐
- Electricity distribution companies ☐

Prepared by: Distribution coordination deputy – Distribution engineering and technical  
office- Special committee of special poles (cast iron)

[www.tavanir.org.ir/de](http://www.tavanir.org.ir/de)



جمهوری اسلامی ایران  
وزارت صنعت، معدن و تجارت  
دفتر دفتر ثبت

Official Translation  
Emblem  
Islamic Republic of Iran  
Ministry of Industry, Mine and Trade

No.: 60/174763  
Date: 18/09/2019

**Certificate**

Mr. Takian  
Managing Director of HAMOON NAYZEH CO.

Greetings,

By virtue of the application No. 98/F/H/177 dated 16 September 2019 by that company, and according to the carried out inspection and negotiation with Iran Casting Union under registered letter No. 60/173284 dated 17 September 2019, this is to notify that, concerning on producing cast iron hard power base in the various classes, except that company has been introduced no other producer by this office at the mean time.

Signed and sealed by:  
General Manager of Machinery and Equipment Industry Office, Mr. Amir Hossein Shiravi

True Translation Certified, N/A

Sep. 28, 2019

29 SEP 2019 3 5 1 4 8 4



**CERTIFICATE**

This is to certify that

**Hamoun Nyzeh Co. (HANYCO)**  
Factory: 14<sup>th</sup> Km of Ardestan Road, Kachan - Iran

has implemented and maintains a **Quality Management System** with the organizational units/activities as follows:

Scope: Design and Manufacturing of Ductile Iron Pipes, Fittings & Light Pipes (L.Pipe) and Ductile Iron Pole & Lighting Pole

An audit, conducted and documented in a report, has verified that the requirements of the following standard:

**DIN ISO 10004 : 2012**

Certificate registration no: 356475 CSDA  
Valid from: 2018-03-19  
Valid until: 2021-03-18  
Date of certification: 2018-03-19

**DQS CFS GmbH**  
Division: Certification for Sustainability  
Dr. Ingrid Böhme  
Managing Director

Authorized Body: DQS GmbH, Augustenburger Straße 21, 69126 Frankfurt am Main, Germany.  
Administration Office: DQS Iran, No. 28, Naeef St., North-Napoleon St., Shiraz Branch Ave., Tehran - Iran.



**CERTIFICATE**

This is to certify that

**Hamoun Nyzeh Co. (HANYCO)**  
Factory: 14<sup>th</sup> Km of Ardestan Road, Kachan - Iran

has implemented and maintains a **Environmental Management System** with the organizational units/activities as follows:

Scope: Design and Manufacturing of Ductile Iron Pipes, Fittings & Light Pipes (L.Pipe) and Ductile Iron Pole & Lighting Pole

Through an audit, documented in a report, it was verified that the requirements of the following standard:

**ISO 14001 : 2015**

Certificate registration no: 356475 LMB15  
Valid from: 2018-03-19  
Valid until: 2021-03-18  
Date of certification: 2018-03-19

**DQS GmbH**  
Division: Environmental Management  
Dr. Ingrid Böhme  
Managing Director

Authorized Body: DQS GmbH, Augustenburger Straße 21, 69126 Frankfurt am Main, Germany.  
Administration Office: DQS Iran, No. 28, Naeef St., North-Napoleon St., Shiraz Branch Ave., Tehran - Iran.



**CERTIFICATE**

This is to certify that

**Hamoun Nyzeh Co. (HANYCO)**  
Factory: 14<sup>th</sup> Km of Ardestan Road, Kachan - Iran

has implemented and maintains a **Occupational Health and Safety Management System** with the organizational units/activities as follows:

Scope: Design and Manufacturing of Ductile Iron Pipes, Fittings & Light Pipes (L.Pipe) and Ductile Iron Pole & Lighting Pole

Through an audit, documented in a report, it was verified that the requirements of the following standard:

**ISO 45001 : 2018**

Certificate registration no: 356475 CH18  
Valid from: 2018-03-19  
Valid until: 2021-03-18  
Date of certification: 2018-03-19

**DQS GmbH**  
Division: Occupational Health and Safety  
Dr. Ingrid Böhme  
Managing Director

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Administration Office: DQS Iran, No. 28, Naeef St., North-Napoleon St., Shiraz Branch Ave., Tehran - Iran.



**CERTIFICATE**

This is to certify that

**Hamoun Nyzeh Co. (HANYCO)**  
Factory: 14<sup>th</sup> Km of Ardestan Road, Kachan - Iran

has implemented and maintains a **Integrated Quality Management System** with the organizational units/activities as follows:

Scope: Design and Manufacturing of Ductile Iron Pipes, Fittings & Light Pipes (L.Pipe) and Ductile Iron Pole & Lighting Pole

Through an audit, documented in a report, it was verified that the requirements of the following standards:

**ISO 9001 : 2015**    **ISO 45001 : 2018**    **ISO 14001 : 2015**

Certificate registration no: 356475 CSDA  
Valid from: 2018-03-19  
Valid until: 2021-03-18  
Date of certification: 2018-03-19

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## Final words

Using novel technologies in Water and Electricity industry does not only make us committed to supply and establish fundamental infrastructures, but also could bring about a brilliant future for next generations. This is the crossbar switch of industry and our patriotism, where obliged ourselves to become the third producer of ductile cast iron distribution poles in the world, relying on our experience for several decades on centrifugal casting of ductile cast iron pipes as well as our engineering team. The poles whose stability and antiquity could be more than a century and could be protected against any types of damage such as climate condition, heat, fire, frost and snow.

Moreover, we realize our social responsibility regarding environment by producing green and recyclable products and preventing directly or indirectly from deforesting and adding non-recyclable materials to the nature. Now ductile iron poles are used widely in Iran and some countries in harsh environment corrosive areas. Thanks to their lighter weight Hanyco ductile iron poles are also less expensive to transport and install. we hope with developing this product, the electricity industry convert to more engineering, cost effective and safer industry in world.





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