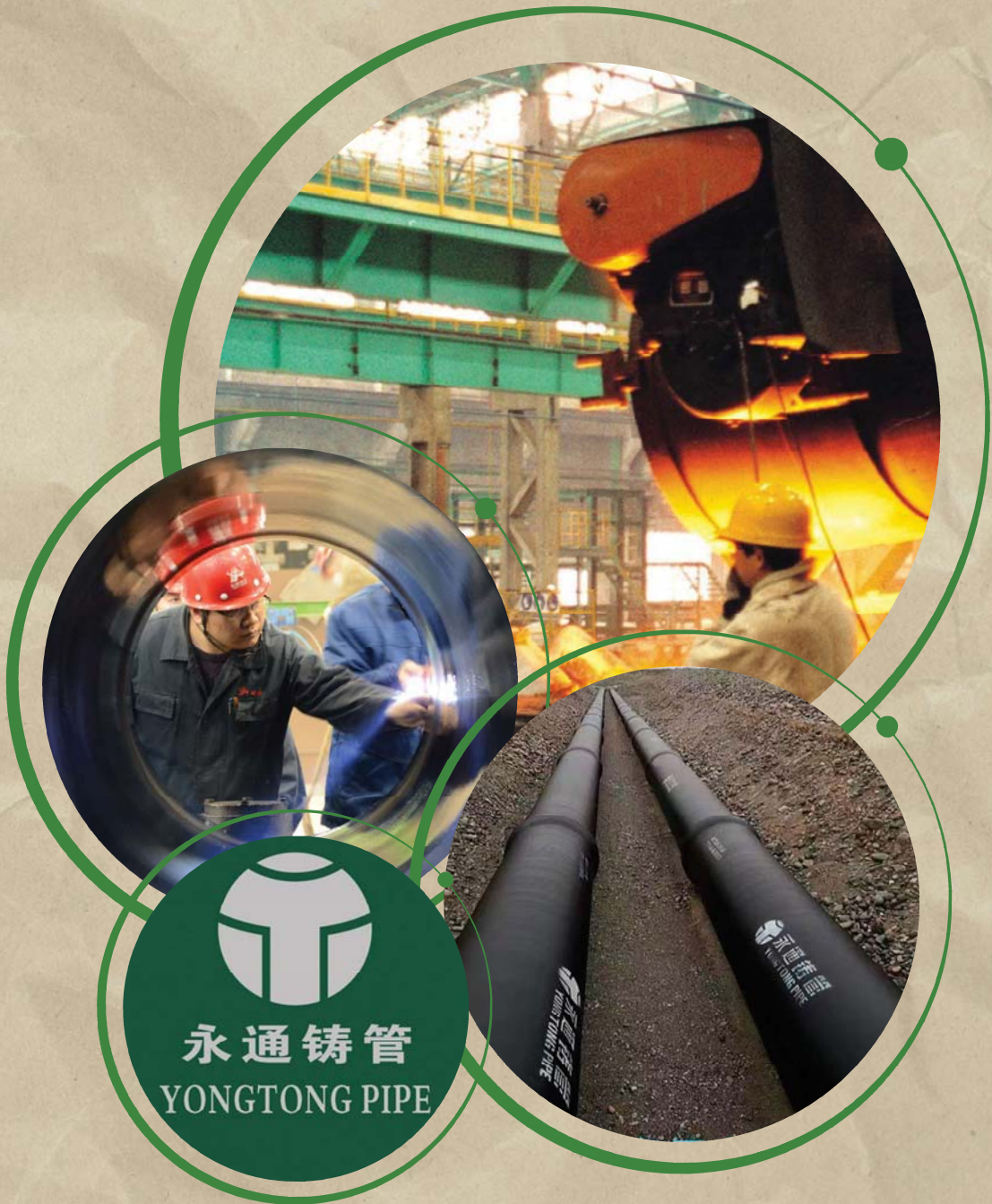


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الشركة الدولية للحلول المتكاملة
INTERNATIONAL INTEGRATED SOLUTIONS Co





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who are we

The International Company for Integrated Solutions was established in 2011. The company specialized in supplying ductile pipes and their accessories. The International Company for Integrated Solutions is the exclusive agent for **(YongTong Ductile Iron Pipes Co. LTD.)** which produces the ductile pipes and their accessories.

(Yongtong Ductile) is considered one of the companies of the **(ANGANG)** group, where the **(Anyang)** group founded to produce the Iron & Steel Group in 1958. **ANGANG** creates an excellent record of continuously making profit for 30 years and becomes one of the super modern steel enterprises in China with annual production exceed 10,000,000 tons. In 2008, the sales reached more than 50 billion yuan. Now **ANGANG's** business fields include mining, coking, smelting, mechanical machining, metallurgical construction, transport, and trading, it can produce more than 30 kinds of different iron and steel products with specifications including middle thick plate, coil plate, high speed wire rod, Reinforced bar round bar Angel, Channel and Ductile iron pipes. In recent years **ANGANG** has been granted the honored titles for many times in China. **ANGANG** is dedicated to sustainable development, to seek harmony between humans and nature.

من نحن

تأسست الشركة الدولية للحلول المتكاملة عام 2011. وهي شركة سعودية من إحدى شركات مجموعة كحيلان العرب القابضة، وتختص الشركة في توريد أنابيب الدكتايل وملحقاتها وهي الوكيل الحصري لمنتجات شركات **YongTong Ductile Iron Pipes** المصنع المعتمد في المملكة العربية السعودية. أنشئ المصنع في عام 1958 وهو متخصص في صناعات الصلب وينتج أنابيب حديد الدكتايل وملحقاتها وبكافة الأقطار من قطر 80 ملم حتى قطر 2600 ملم.

ونظراً للطلب الكبير في السوق السعودي لهذا النوع من الأنابيب والمشاريع العملاقة التي تطرح لتطوير البنية التحتية وتحسين خدمات شبكات المياه بالمملكة العربية السعودية فقد قمنا بتوفير كميات من كافة الأقطار بمستودعاتنا لتلبية هذا الطلب المتزايد للسوق المحلي بالإضافة إلى ذلك فقد حصلت الشركة على عدد من الإعتمادات في عدد من المشاريع الكبرى في كافة أنحاء المملكة

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ANGANG Group Yongtong Ductile Cast Iron Pipe Co., Ltd.

One of the subsidiary companies of the large Chinese state-owned enterprise (**ANGANG Iron & Steel Group Co., Ltd**) and has been established since 1958 as a modern factory with a high start, high level and high quality and considered one of the world's largest companies in the production of ductile pipes and accessories.

YongTong owns production lines of the highest standards with a production capacity of up to 1,200,000 tons per year of ductile iron and produces diameters from 80 mm to 2600 mm with several types of interior and exterior coatings, including cement. Zinc, bitumen, epoxy, PE ceramic epoxy. Polyurethane FBE etc., which are widely used for water supply and sewage drainage.

YongTong pipe pig iron is produced by the same company and has the features of low P. low S. low Ti and so on. This type of iron ore is widely used in drinking water supply and sewage water.

The production process is rigorously tested in accordance with global and international standards, our management system has been evaluated and certified by SGS as meeting the requirements of ISO9001, **YongTong pipes** are certified by SGS to meet the requirements of ISO2531, EN545 and EN598. The inner pipe lining complies with ISO4179, and the outer coating complies with ISO8179. The ISO7186 BS6920 and other certificates have been obtained also.

Through tireless efforts, we have developed self-lifting pipes with no-drilling characteristics. **YongTong** pipes have been exported to countries and regions in the Middle East and Europe. Central and South America, South east Asia, and Africa. There are a lot of qualified managers and technicians and a well-trained team for after-sales service to provides all manufacturing, packaging, transportation, technical support and installation services. Employees will face the future, devote themselves to develop the pipeline system and benefit humanity.

ANGANG Group YongTong Ductile Cast Iron Pipe Co., Ltd.

أنشئت عام 1958 وأصبحت من أفضل المصنعين من خلال إستخدام أحدث المعدات و الإهتمام بالجودة حيث يعتبر المصنع من أكبر مصانع العالم لإنتاج أنابيب الدكتايل وملحقاتها، تمتلك مصانع **YongTong** خطوط إنتاجية تصل طاقتها الى 1,200,000 طن سنوياً من أنابيب حديد الدكتايل وتنتج كافة الأقطار من قطر 80 ملم حتى 2600 ملم وبكافة أنواع الطلاء الداخلي والخارجي بما في ذلك الأسمنت، الزنك، البيتومين، اليبوكسي، السيراميك PE , FBE و التي تستخدم في نطاق واسع لتزويد وتوزيع مياه الشرب وتصريف مياه الصرف الصحي.

تخضع عملية الإنتاج لاختبارات الطرف الثالث وفقاً للمعايير العالمية ، تم تقييم نظام الإدارة وإعتماده من قبل SGS حسب متطلبات ISO9001 وقد تم اعتماد أنابيب **YongTong** من قبل SGS حسب متطلبات المواصفات العالمية EN598, EN545, ISO2531 وتتوافق بطانة الأنابيب الداخلية مع المواصفات العالمية ISO4179 وقد حصل المصنع على شهادات ISO7186 BS6920 وغيرها من الشهادات العالمية وكما قامت الشركة بتطوير أنابيب الرفع ذاتياً بخصائص عدم الحفر.

تم تصدير أنابيب **YongTong** حول العالم بما في ذلك الشرق الأوسط، أوروبا، أمريكا الوسطى والجنوبية، جنوب وشرق آسيا، أفريقيا

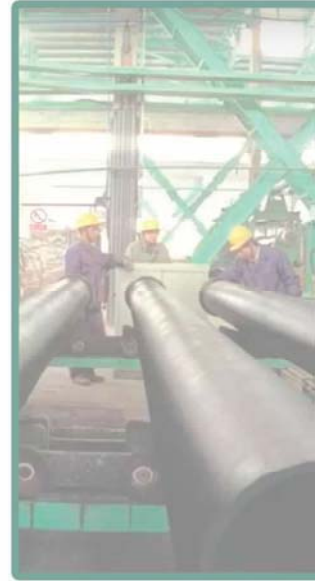
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EXPERIENCE

Brief About some companies, projects implemented during the last 3 years :

- Danaikhan Stroytech LLP : Project TURKESTAN WATER SUPPLY PROJECT – Kazakhstan.
- MISSAN OIL FIELD-WATER PIPELINE PROJECT FROM MUSHARRAH TO BUZURGAN – IRAQ.
- TURKESTAN WATER SUPPLY PROJECT2- Kazakhstan
- WSC 2201/20-LA 228c/20-PD4500004834-MALTA
- NWSDB WATER - SRI LANKA
- construction of engineering networks supplied to new terminal of airport of the city of Shymkent – Kazakhstan
- EMPRESAS DE SERVICIOS PUBLICOS DE CAJICA SA ESP – COLOMBIA
- MYRTOS PROJECT – Greece
- UNION TEMPORAL ACUEDUCTO VILLAPATIOS – COLOMBIA
- TAY27/2022 TERSEFANOU-LARNACA – CYPRUS
- KALAMATA Project – Greece
- INTERHYDRO SAS – SENEGAL
- KEWAKOTO – ETHIOPIA.
- DUHUB INDUSTRIES (M) SDN BHD – MALAYSIA
- HONGKONG GENERAL WATER
- INTERNATIONAL LIMITED – PANAMA.
- STAR SIN TRADING PTE LTD – SINGAPORE
- SARL FILS BENSADA TAYEB – ALGERIA
- CHINA CIVIL ENGINEERING CONSTRUCTION CORPORATION - Benin
- CHINA GEO-ENGINEERING CORPORATION - Cote d'Ivoire
- CHINA RAILWAY SEVENTH GROUP CO.,LTD. ETHIOPIA
- ELECTROSTEEL SALES CO., LTD.- MIDDLE EAST.
- DALIAN TANCO INDUSTRY COMPANY – UAE.
- HENAN WEIN INDUSTRY COMPANY- UAE.



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Factory certificates



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SPECIFICATIONS APPLICATION CERTIFICATE 2531&4179&8179



SPECIFICATIONS APPLICATION CERTIFICATE 545



509001



SPECIFICATIONS APPLICATION CERTIFICATE 7186



SPECIFICATIONS APPLICATION CERTIFICATE 2531&4179&8179



SPECIFICATIONS APPLICATION CERTIFICATE 598



GUARANTEE 50 YEARS



To: International Integrated Solutions LTD (HISCO).
Date: 02/01/2024
Subject: Guarantee for Service Life of Yongnong Ductile Cast Iron Pipe & Fitting

We, Angang Group Yongtong Ductile Cast Iron Pipe Co., Ltd, hereby guarantee the service life of Ductile Iron Pipes & Fittings can last 50 years.

Thanks & Best Regards

Angang Group Xuyi Group Ltd. Cast Iron Pipe Co., Ltd.



地址：河南省安阳市高新技术产业开发区 455131
Address: Yingsong Road, Shajiao Town, Anyang City, Henan Province, 455131 P.R.China
Tel:+86 372 5841772 Fax: +86 372 5807275 <http://www.anyes.com.cn>

SPECIFICATIONS APPLICATION CERTIFICATE WARS

Approval Number 2710541



27 November 2023
Angeng Group Yonglong Ductile Cast Iron Pipe Co., Ltd.
Yonglong Road,
Shuyi Town,
Anyang City,
Henan Province,
China

WATER REGULATIONS APPROVAL SCHEME LTD (WRAS)

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6820 : 2000 and/or BS14 'Suitability of non-metallic products for use in contact with water intended for consumption with regard to their effect on the quality of the water'.

COATINGS, PAINTS & LININGS-FACTORY APPLIED PIPE & FITTINGS COATINGS.

WYTCM-07, Factory applied, grey coloured cement mortar.

Mix cement/sand/water in a 1:3:0.4 weight ratio and apply as per MSIS 301/7050A/47. Air cure for 4 hours@23°C and the steam cure for 4 hours@80°C.

For use with water up to 60°C.

This material is only approved for the moving and curing conditions that appear on the approval. If the moving and/or curing conditions are not as specified, the material is not approved for use. The user must follow the instructions on the approval.

APPROVAL NUMBER: Z310541
APPROVAL HOLDER: ANJANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO.

The Scheme reserves the right to revise approval.

The Directory may be found at: www.wraapproval.co.uk/approvals-directory/

Yours Faithfully

Lee Hughes
WPAZ Associate Manager

The Water Regulations Approval Scheme Ltd, Registered in England No. 1401584 Registered office: 42 Leaden Close, Royal Docks, Docklands, E16 2ED
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永通铸管
YONGTONG PIPE

Pipe catalogue

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永通铸管
YONGTONG PIPE



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永通铸管
YONGTONG PIPE

同心聚进 缔造恒远

Striving together, thriving forever

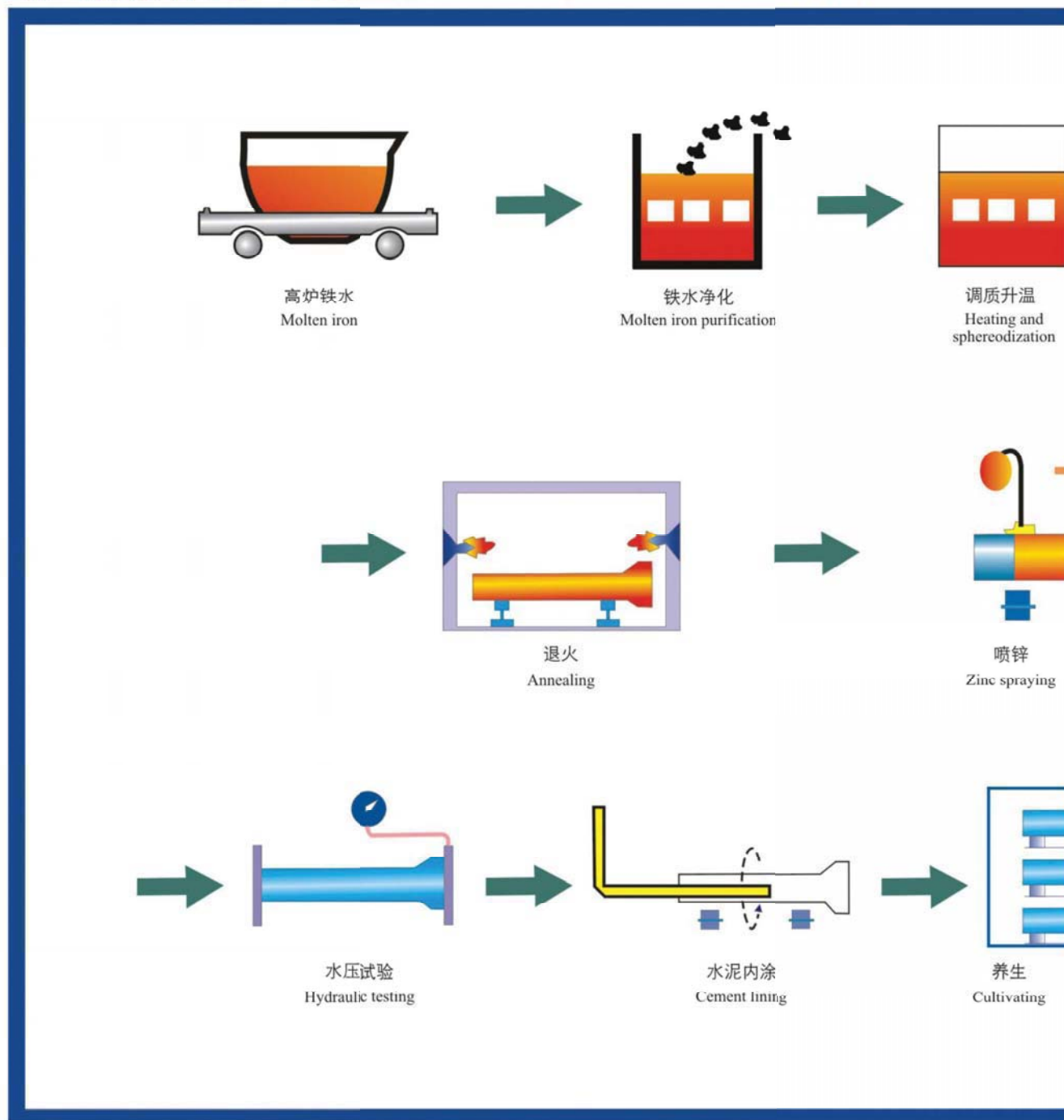
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球墨铸铁管生产工艺流程

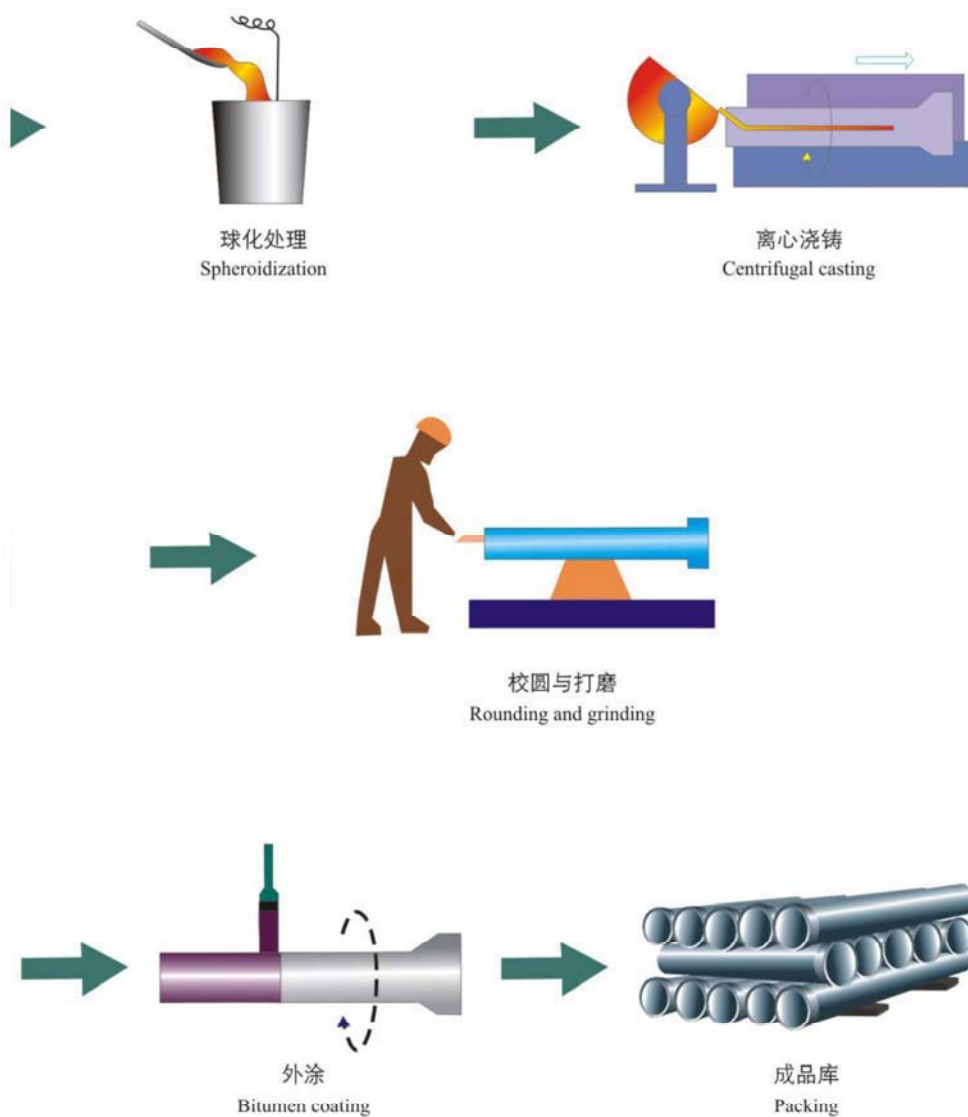
Production process flow of ductile cast iron pipes





安钢集团永通球墨铸铁管有限责任公司

ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD





安钢集团永通球墨铸铁管有限责任公司

ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD



高炉炼铁 Blast furnace



电炉升温及调质 Heating and sphereodization in induction furnace

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ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD



拔管过程 Pipe extracting

60米退火炉
60m annealing furnace



离心浇铸 Centrifugal casting



安钢集团永通球墨铸铁管有限责任公司
ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD



沥青喷涂 Bitumen coating



Zinc spraying



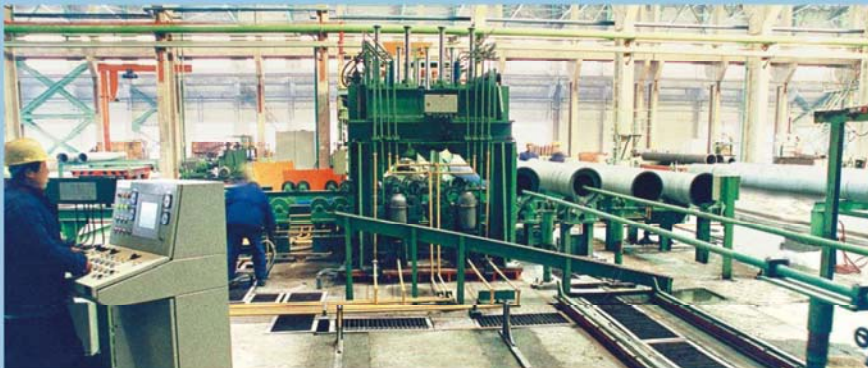
水压试验 Hydraulic pressure testing

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ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD



水泥衬层 Cement lining



Final inspection

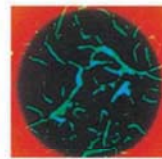


质量控制

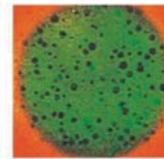
Quality control

球墨铸铁是铸铁的一种，是一种铁、碳和硅的合金。球墨铸铁中石墨是以球状形式存在的，一般石墨的大小为6~7级，质量上要求铸管的球化等级控制为1~3级（球化率 $\geq 80\%$ ），因而材料本身的机械性能得到了较好的改善，具有铁的本质，钢的性能。退火后的球墨铸铁管，其金相组织为铁素体加少量珠光体，机械性能较好。

Ductile cast iron is a kind alloy of iron, carbon and silicon, in which graphite exists in the type of spherical, generally the size of graphite is 6~7 class, and spheroidization grade of the pipe should be controlled 1~3 class (spheroidization rate is not below 80%). Thus after spheroidization, ductile cast iron possesses the nature of iron as well as the characteristics of steel. After annealing, its microstructure contains ferrite and a little pearlite possessing excellent mechanical properties.



灰铸铁金相
Grey iron



球墨铸铁金相
Ductile cast iron



金相检验 Metallographic examination

快速分析 Fast analysis



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Quality control

质量控制



压扁试验 Flat-pressing test



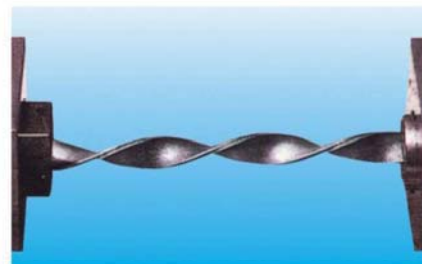
拉伸试验 Elongation test



破坏性试验 Damage test



压环试验 Hardness test



扭曲试验 Twist test

	离心球墨铸铁管 Ductile cast iron pipe	普通灰铁管 Grey iron pipe	钢管 Steel pipe
抗拉强度 (Mpe) Tensile strength	≥420	150—260	≥400
屈服强度 (Mpe) Yield strength	≥300	未定义 No confirmation	未定义 No confirmation
抗弯强度 (Mpe) Bending strength	≥590	200—360	≥400
延伸率 (%) Elongation	≥10	忽略 Neglected	≥18
布氏硬度 (HBS) Brinell hardness	≤230	≤230	约140

退火后球墨铸铁管，其金相组织为铁素体加少量珠光体，机械性能较好。
After annealing, the microstructure of ductile cast iron pipes is ferrite and a little pearlite, possessing excellent mechanical properties.



型式试验 Type test



在线检测

Test on line

* 永通球墨铸铁管有限责任公司对所生产的球墨铸管进行严格的在线检测，检测项目有水压试验压力、水泥内衬厚度、喷锌厚度、沥青厚度，以及尺寸检验和压痕检验等。公司拥有国际先进的 γ 射线在线壁厚检测仪，对每支管子的壁厚进行精确测量，确保质量符合ISO2531标准。

球墨铸管的水压试验压力如下表：

The hydraulic test pressure of the ductile cast iron pipes is as follows:

公称直径DN (mm) Nominal diameter	水压试验压力 (Mpa) Hydraulic test pressure
$80 \leq DN \leq 300$	5
$350 \leq DN \leq 600$	4
$700 \leq DN \leq 1000$	3.2
$1100 \leq DN \leq 2000$	2.5

球墨铸铁管的水泥内衬厚度如下表：

The thickness of cement lining is as follows:

公称直径DN (mm) Nominal diameter	最小厚度 (mm) Minimum wall thickness
$80 \leq DN \leq 300$	3
$350 \leq DN \leq 600$	5
$700 \leq DN \leq 1200$	6

During production process, we carry out tests on line strictly and test items includes: hydraulic pressure, cement lining thickness, zinc spraying thickness, bitumen coating thickness, dimension test, impressing test and so on. Especially, we have the most advanced γ -ray detector to test wall thickness of each pipe precisely so that we could ensure pipes quality conform to ISO2531 standard.



水压试验 Hydraulic pressure test



尺寸检验 Dimension test

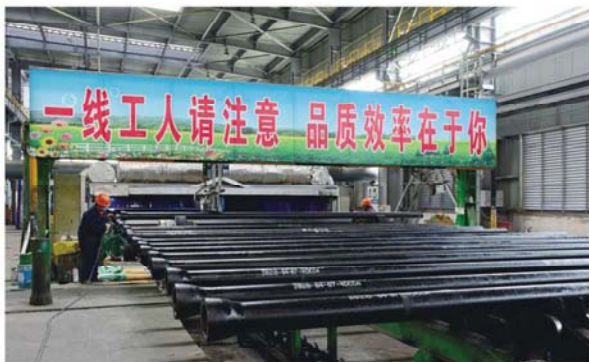


压痕检验 Impressing test



Advanced technology

先进工艺



自动喷码 Automatically printing



智能打包 Intelligent packaging



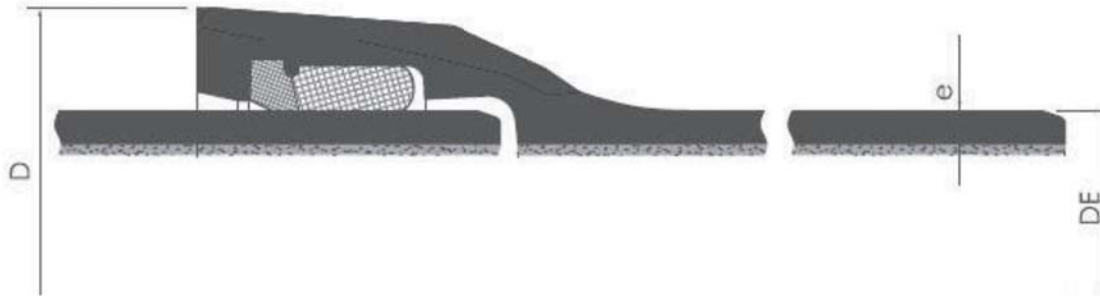
砂芯智能制造中心 Intelligent Manufacturing Center of Sand Core

水冷金属型球墨铸管离心机，无芯中频感应电炉，先进的60m长蓄热式退火炉，西门子PLC自动拉管技术，钝化镁铁水净化球化工艺，全自动智能制芯中心，智能精整、打磨、喷码、包装等工艺和主体设备都达到国际领先水平。

Water-cooling centrifugal casting machine, coreless medium-frequency induction furnace, advanced 60m regenerative annealing furnace, as well as Siemens PLC automatic tube drawing technology, passivated magnesium used in molten iron purification and spheroidization process, full-automatic intelligent core making center, the technology of intelligent finishing, grinding, marking, packing and so on, all these techniques and main equipments have reached the international advanced level.



T型接口球铁管重量 (ISO2531 / GB/T13295-2013标准)



Technical of T-Type Joint Ductile Iron Pipes

DN (mm) Size(mm)	D (mm)	DE (mm)	K9		C-Class	
			e _{non} mm	PFA (bar)	e _{non} mm	PFA (bar)
80	98	95.2/99	6	64	4.4	40
100	118	115.2/119	6	64	4.4	40
150	170	167.1/171	6	64	4.5	40
200	222	219.9/223	6.3	62	4.7	40
250	274	270.9/275	6.8	54	5.5	40
300	326	322.7/327	7.2	49	6.2	40
350	378	374.6/379	7.7	45	6.3	30
400	429	425.5/430	8.1	42	6.5	30
450	480	476.4/481	8.6	40	6.9	30
500	532	528.2/533	9	38	7.5	30
600	635	631/636	9.9	36	8.7	30
700	738	733.8/739	10.8	34	8.8	25
800	842	837.5/843	11.7	32	9.6	25
900	945	940.2/946	12.6	31	10.6	25
1000	1048	1043/1049	13.5	30	11.6	25
1100	1152	1146.8/1153	14.4	29	12.6	25
1200	1255	1249.5/1256	15.3	28	13.6	25
1400	1462	1463/1462	17.1	28	15.7	25
1500	1565	1566/1565	18	27	16.7	25
1600	1668	1669/1668	18.9	27	17.7	25
1800	1875	1876/1875	20.7	26	19.7	25
2000	2082	2083/2082	22.5	26	21.8	25
2200	2288	2289/2288	24.3	26	23.8	25
2400	2495	2496/2495	26.1	25	25.8	25
2600	2702	2703/2702	27.9	25	27.9	25



顶管

Jacking Pipe

顶管具有：强度高，承受顶力大，施工时不开挖地面，不拆迁，不破坏地面建筑物，不影响交通，不破坏环境，施工不受气候和环境的影响，省时、高效、安全、综合造价低。

顶管通过了河南省住房和城乡建设厅以及河南省科学技术厅的新产品新技术鉴定，荣获河南省住房和城乡建设厅颁发“河南省建设新产品新技术推广证”。起草了T/CFA 02010202.4—2017国家团体标准。

顶管长度Lu为：2000mm、4000mm、6000mm。

DI jacking pipe possess high strength, so it can bear large jacking force. During pipeline construction, the advantages of non-excavation, no destroy on surface buildings and no impact on traffic, enable the pipes to be used in almost any climate and environment. Such kind of pipe can meet the requirements of saving operation time, higher efficiency, high safety and low cost.

Jacking pipe has got approval of new products and technologies by the housing and urban rural development department of Henan Province and the Department of science and technology of Henan Province, as well as "promotion certificate of new products and technologies of construction of Henan Province" issued by the Department of housing and urban rural development of Henan Province. Yongtong company plays leading roles in setting the T / CFA 02010202. 4-2017 national association standard.

Jacking pipe effective length Lu is 2000mm, 4000mm and 6000mm.



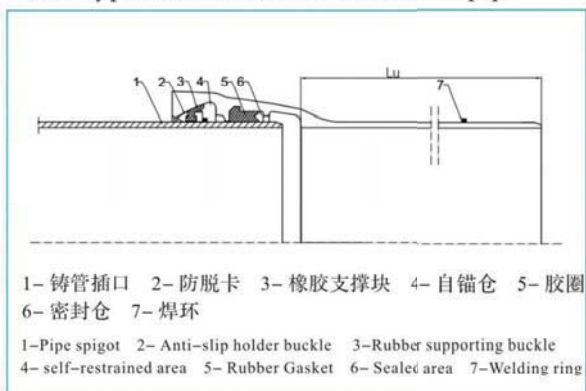


内自锚管

Inner self-restrained pipe

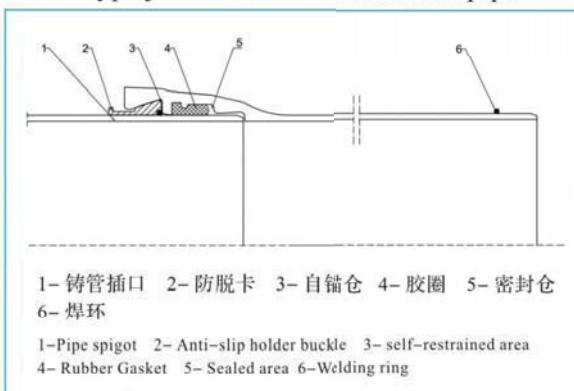
SIA接口内自锚管

SIA-type Joint inner self-restrained pipe



RJS接口内自锚管

RJS-type joint inner self-restrained pipe



内自锚管具有：接口简单、承压能力高、高抗拔脱力、高可抗性能等特点。我公司研发自锚管有RJS接口和SIA接口两种形式，可应用于拖拉管。

适用于：软土地基；易发生沉降地基；对管道安全性要求较高地区；一些弯管和不宜设置支墩的管线部位；架空线路铺设。

The inner self anchored pipe has the characteristics of simple joint structure, high pressure capacity, high anti pull-out force and high resistance. The self anchored pipe invented by our company has two types: RJS and SIA, which both can be applied to drag pipe.

This kind of pipe is applicable to below conditions: 1. Soft soil foundation; 2. Foundation prone to settlement; 3. Areas with high requirements for pipeline safety; 4. For some bends and pipeline parts where buttress is not suitable; 5. Overhead line laying.



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外自锚管

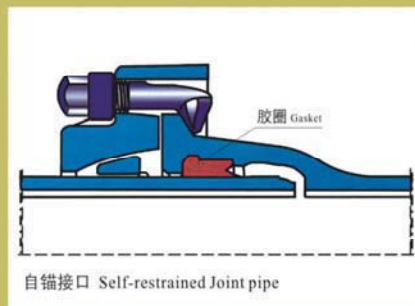
Self-restrained joint pipe

外自锚式接口具有：防脱性能好，对管道内水压造成的地基不均匀沉降有一定的适应性，柔性连接和刚性连接的特点。

适用于：有一定坡度及地形复杂地区管道的铺设。

The external self anchored joint can prevent the pipeline from slipping effectively. Comparing with T-type joint, a set of gland is added in the joint area which is composed of locking ring, welded bead at the pipe spigot end, retaining ring with curvature, special gland and bolts with hooked head. It has the characteristics of flexible connection as well as rigid connection.

The external self anchored joint has good anti-stripping performances, which is adaptable with the foundation settlement caused by internal hydraulic pressure in the pipeline. And it is used in areas with certain slope and complex terrain.



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ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD

排污管

Sewage pipe

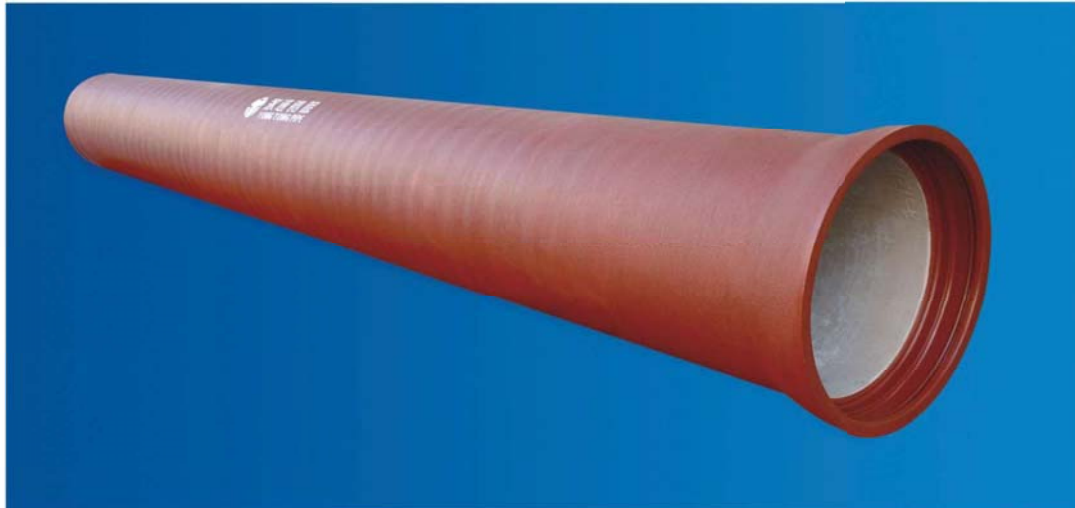


排污管具有：耐腐蚀和耐磨性，环氧层厚度 $\geq 200\mu\text{m}$ 。采用内衬高铝水泥、外喷环氧树脂。

适用于：PH 值为 4~12 的较强酸、碱排污系统用管道；含有一定的化学物质的工业和生活废水输送管道。

Sewage pipe: with the high aluminum cement inner lining, epoxy resin coating outside. The thickness of epoxy layer is $\geq 200\mu\text{m}$, It has excellent corrosion and wear resistance.

It applies in strong acid and alkali sewage pipeline system with pH value of 4 ~ 12, Industrial effluent as well as domestic wastewater transmission pipelines.



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聚氨酯管

DI pipes with polyurethane (PU) printing

聚氨酯管具有：高耐磨、耐腐蚀、零渗透、表面光滑阻力系数小、防结垢、无挥发性有机物、符合环保要求等特点。

适用于：内衬要求较高、阻力系数较小的给水管道；腐蚀性较大的排污管道；含有酸碱类的生活污水、矿山废水及海水淡化等输送管道。

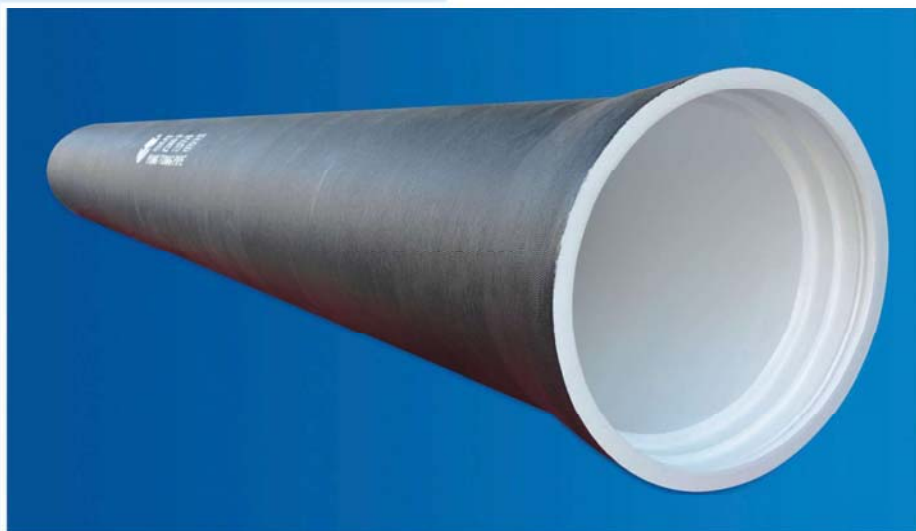
PU printing has the characteristics of high abrasion resistance, corrosion resistance, zero permeation, smooth surface and low resistance coefficient, anti-scaling and no volatile organic compounds etc. It can completely meet the requirements of environmental protection. Coating: thickness of internal coating $\geq 1000 \mu\text{m}$, thickness of external coating ≥ 700 microns. Scope of application: water supply pipeline with high requirements of internal coating, low resistance coefficient and smooth surface, as well as the drainage pipeline with high corrosion, domestic sewage water containing acid and alkali, mine wastewater and seawater desalination, etc.





水性环氧树脂管

DI pipes with water soluble epoxy paint



铸管水泥内衬完成后，在水泥内衬表面喷涂一层水性环氧树脂形成坚韧的保护层，涂层厚度 $\geq 200\mu\text{m}$ 。该涂层具有附着力强，使铸管具有耐酸、耐碱、耐盐性，解决了PH值升高而影响输水水质的难题，主要用于直饮水工程。

After finishing cement mortar coating , spraying a layer of water soluble epoxy paint on the cement lining to form a tough protective layer, thickness of epoxy paint $\geq 200\text{ }\mu\text{m}$. Such paint has characteristic of strong adhesion, acid resistance, alkali resistance and salt resistance, solves the problem of water quality resulting from the increasing of PH value. Water soluble epoxy paint is mainly used for direct drinking water project.



中水管

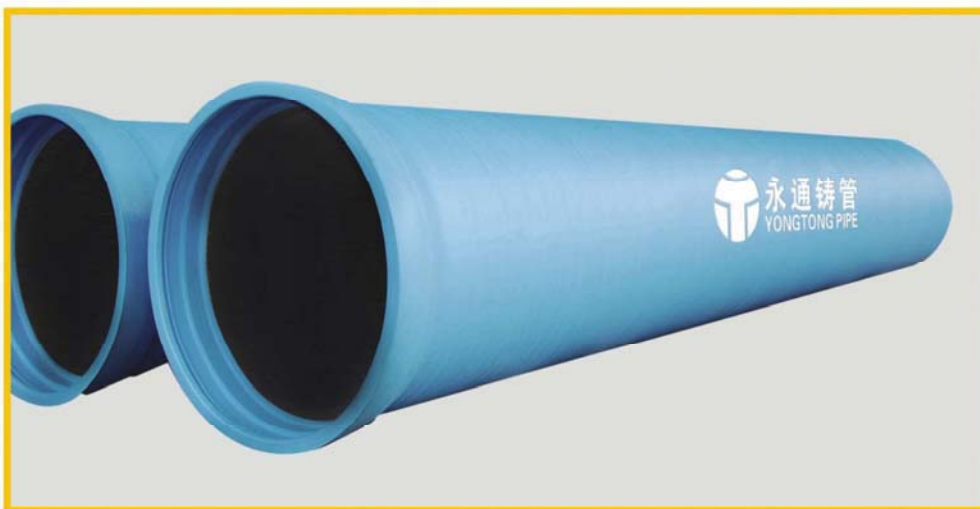
DI pipes of Gray-water

中水管具有：抗硫酸腐蚀和抗冻的功能，耐磨性较强，对各种恶劣气候的抵抗力极佳。采用外涂厚度 $\geq 200\mu\text{m}$ 蓝色环氧树脂漆，内衬高铝水泥。

适用于：经处理后的杂用水管道输送，例如厕所冲洗、道路绿化、洗车、消防、娱乐景观等用水；城市中水输送。

Pipes with external coating of blue epoxy resin and internal coating of high-alumina cement have the function of sulfuric acid corrosion resistance, freezing resistance. It has the characteristic of abrasion resistance and excellent resistance to all kinds of bad weather, thickness of blue epoxy resin $\geq 200\mu\text{m}$.

DI pipes are suitable for: 1. Transportation pipeline for treated waste water, including toilet flushing water, road greening water, car washing water, fire water and water for entertainment landscape etc. 2. Transportation pipeline for city gray-water, especially suitable for gray-water transportation and disposal projects.





安钢集团永通球墨铸铁管有限责任公司

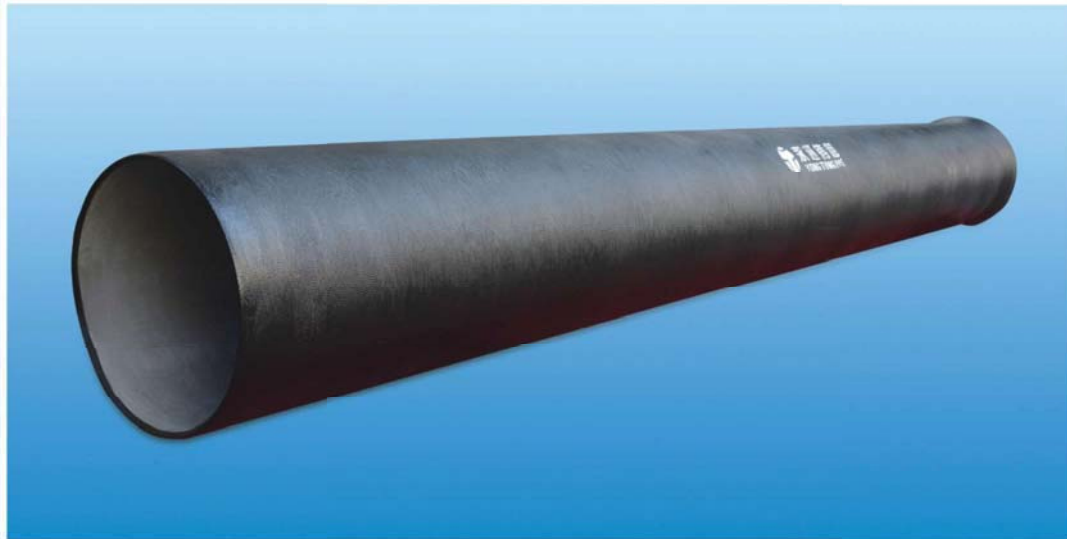
ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD

内衬抗硫水泥管

Di pipes with internal coating of sulfur-resistance cement

内衬抗硫水泥管又称抗硫酸盐水泥管，具有：高抗化学腐蚀、良好的粘和性和较好的密实性能。多用于输海水工程用管道和排污管道。

It is also known as sulfate resistant cement pipe, possess the advantages of high chemical corrosion resistance, favorable adhesiveness and nice Compaction. Mainly Used for seawater transportation engineering and drainage pipeline.



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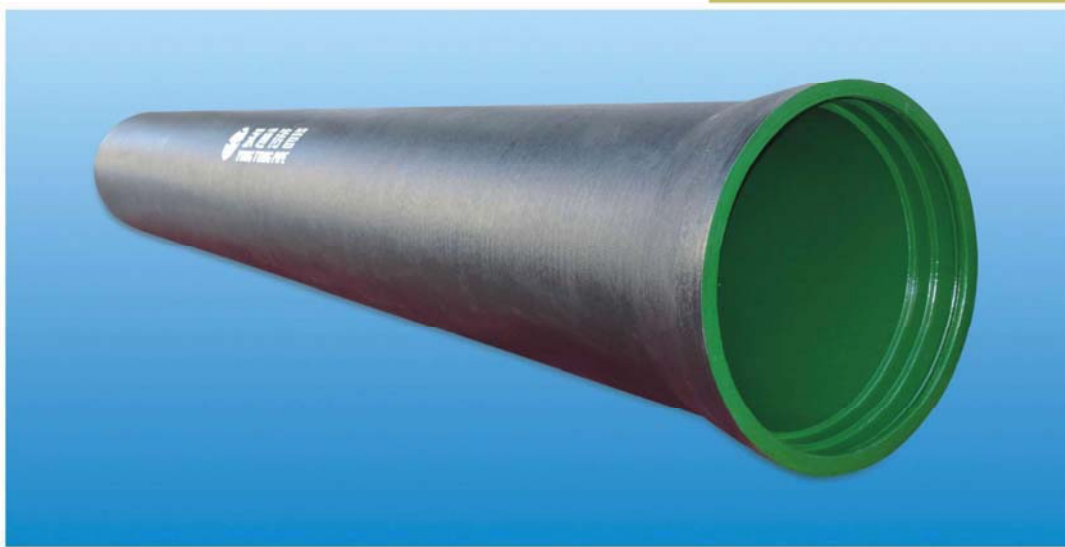
环氧陶瓷管

Epoxy ceramic Pipe

环氧陶瓷管具有：抗腐蚀性、抗静电、耐磨性强、寿命长。

广泛应用于：供水工程、城市污水排放工程，尤其在沙漠等干旱地区，优势明显。

Pipes with epoxy ceramic have advantages of corrosion resistance, antistatic property, high abrasion resistance and long service life, etc, widely used for water supply project and urban sewage discharge project. Especially it has significant advantages when using in desert region or water-deficient area.





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ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD

法兰管

Flange pipe

法兰管规格：DN80~1200mm，压力等级：PN10、PN16、PN25，长度：2米、3米、4米、5米、6米(或根据用户所需长度)。

适用于：管线阀门连接处以及不同管材之间的连接；常规滑入式柔性接口不宜适用的特殊地段。

Size range: DN80~1200mm, pressure class: PN10、PN16、PN25, unit length: 2m、3m、4m、5m、6m (or according to the requirements of clients).

Flange pipes are suitable for: pipe and valve connection, and the connection between different kinds of pipes. Special area where conventional flexible pipes can't be used.



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管件和胶圈

Fittings and rubber rings

管 件

采用真空消失模铸造工艺装备生产的球墨铸铁管配套管件，严格按照国际标准ISO2531及BS EN545组织生产和检验，产品规格为DN80--DN2400，年生产能力1.2万吨。

Fittings

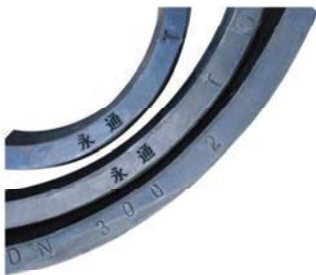
We supply DN80mm- DN2400mm with the capacity of 12000 MT. Which is produced strictly according to ISO2531 and BS EN545 standard by using advanced EPC process.

胶 圈

橡胶密封圈严格按照国际标准ISO4633组织生产和检验，通过了ISO9001质量体系认证，产品规格为DN80--DN1400。

Rubber rings

Rubber ring are produced strictly according to ISO4633 standard. And we have been awarded ISO9001 certificate. Products ranging, DN80mm--DN1400mm.



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球墨铸铁管的吊装与运输

吊 装



吊运管子要小心，不要让管子晃动，吊运管子可用钢丝绳、吊装带及专用吊索具，使用钢丝绳时不许用单根，为保护管子外防腐层，可用橡胶皮或类似的材料将钢丝绳包起来。使用吊钩时，为保护水泥衬层不受破坏，也要将吊钩用橡胶皮或类似材料包起来，特别是在吊运大口径管子时，应在吊钩上装一个与管子内径形状相似的垫块。吊运成捆的管子时，不许将吊钩固定在捆装用钢带上或管子的承插口端。



Hoisting

Take precaution of handling pipe with steel cable, hoisting belts and specialized rigging avoiding from pipe's rocking. While using steel cable, single cable is not admitted, for the purpose of protecting outer anti-corrosion layer, steel cable should be packed by rubber or other similar material. While using hook, it also should be covered with rubber or other similar material for protecting cement lining layer. Especially for pipe with relative large diameter, hook should be mounted a gasket with same shape as internal diameter of pipes while handling. It is not available fixing hook on the steel belts or socket side and spigot side of pipe while handling pipes in bundle.





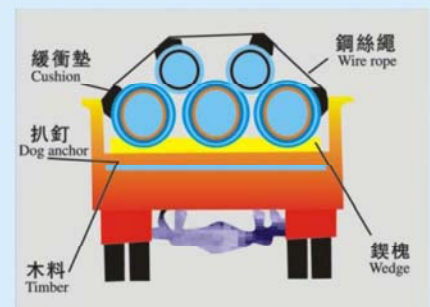
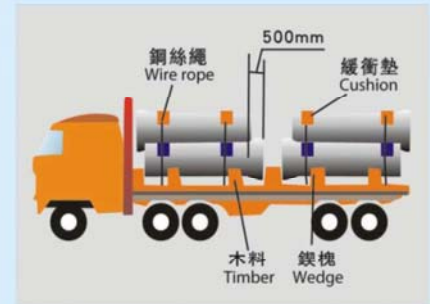
Handling and transportation of ductile cast iron pipes

运输

用汽车运输管子时，应在汽车平台上放两块或更多木料，管子置于木料上用楔块固定。管子伸出车体外部分不得超过管长的 $1/4$ 。所装管子多于一层时，每一层都要倒转管子方向，两层管子中间应加缓冲胶垫或垫木。最后用钢丝绳加缓冲垫固定牢靠。在搬运过程中要经常检查管子有无掉落的危险，检查止动楔块是否松动，遇不平的道路或急转弯时要慢行。

Transportation

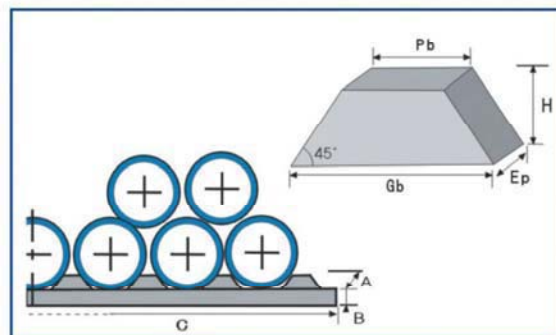
Put two pieces or more woods on the platform of the vehicle while transporting, pipes are laid on the wood and fixed by wedge. The part over the vehicle body should not be more than $1/4$ of overall length of pipe. If pipes are piled up more than one layer, each layer of pipes should reverse, and buffering rubber or gasket should be put on the space between two layers of pipes, at last pipes are fixed up with steel cable and buffering gasket. Check often if pipes can fall out during conveying, and check if stop wedge is not hard up. The vehicle should slow down on the uneven road or while swerving.





堆放

堆放管子时，在管子下部应垫上枕木或垫块，管子的承插口相互交错，必须放止动楔块以防管子滚动。不允许堆放在沼泽地、不平坦、斜坡或污染严重的地方。



Storage

Under pipes there should be put wedge or crosstie while stacking pipes, and socket and spigot of pipes should be interleaved and on the stop wedge in cast of pipe's rolling. Uneven and serious polluted ground, or slope and marshy are not available.

允许堆放层数应符合下表要求:

Layer number should accord with following table:

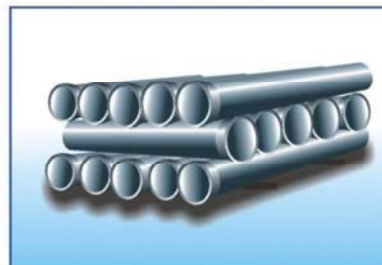
	100	150	200	250	300	350	400	500
标准式 Standard type	27	22	18	16	14	12	11	10
金字塔式 Pyramid stacking	58	40	31	25	21	18	16	14
	600	700	800	900	1000	1200		
标准式 Standard type	8	7	5	2	2	2		
金字塔式 Pyramid stacking	12	10	7					



夹板堆放 Plywood storage



少量堆放 Less pipes storage



四方形堆放 Rectangle storage



球墨铸铁管的安装

Assembly of ductile cast iron pipe

1、开沟前，首先清除障碍，挖掘管沟时，应当考虑将来回填时，土砂能够充分地回填至管底部位。

挖掘接口处的沟槽时，为了接口操作容易，应尽量留有余地，必须保证接口操作能够充分用上力气。

除了特殊情况之外，管沟边线应是一条直线，沟底应在一平面，用机械挖沟时，槽底应留0.2-0.3m厚的土层暂不开挖，最后应当用人工清理沟底至标高。

2、挖掘管沟尺寸(不用钢板桩时)。(见图a及对应表格)

3、用毛刷和干净的抹布清理承口内部，特别是放橡胶密封圈的位置。不要留有漆、土、砂子等残物。清扫插口，光滑边缘。(见图1)

4、对DN100~300mm小口径球铁管如图所示，将折叠起的密封圈插入到承口中，使密封圈的硬制动垫块紧紧地嵌入到底座中；压密封圈的凸起处，直到密封圈均匀地稳固在承口内；对DN400mm以上的球铁管，将密封圈弯曲两处，然后轮流向外按两个凸起处，这样将密封圈插入其底座就容易些。制动垫块的内缘不能从承口制动处伸出。按右图检查密封圈是否正确。(见图2-1、图2-2、图2-3)

1.Before the ditch is dug, obstacles on the digging area should be cleared away.

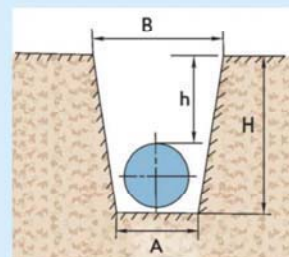
Ensuring that the soil can be backfilled sufficiently to the area below the pipes for the future backfill should be taken into account. More space of the ditch should be kept at pipe joints in order to operate easily.

Except for special situation, the verge of the ditch should be a straight line and the bed should be on the same level. When dug by mechanical method, 0.2-0.3m soil layer should be remained for manual operating.

2.Dimensions of the ditch (without steel plate stage).(see figure a and the corresponding table)

3.Using a wire brush and a clean rag, carefully clean the inside of the socket particularly the gasket recesses. In particular, remove any deposits of earth, sand, etc. also clean the spigot of the pipe to be jointed and the gasket itself, get smooth edge. (See figure 1)

4.For ductile cast iron pipe typed DN100~300mm, insert folded gasket into the socket end to make brake facing block embed tightly in the base. Press the protrude of gasket till the gasket fixed evenly in the socket. For pipe typed above DN400mm, bend two ends of the gasket, then press two protrudes outwards one by one, thus more easily insert the gasket into the base. The internal face of brake facing block can't be extend from the brake of the socket. Check the gasket proper or not in respect of the right figure. (See fig2-1, fig2-2, fig2-3)



图a

挖掘管沟尺寸表 Dimension table of the ditch

口径mm	A(m)	B(m)	h(m)	H(m)
75	0.50	0.76	1.20	1.29
100	0.50	0.76	1.20	1.32
150	0.50	0.76	1.20	1.37
200	0.60	0.88	1.20	1.42
250	0.60	0.89	1.20	1.47
300	0.60	0.90	1.20	1.52
350	0.70	1.01	1.20	1.57
400	0.80	1.15	1.30	1.73
500	1.10	1.47	1.30	1.83
600	1.30	1.73	1.50	2.13
700	1.50	1.95	1.50	2.23
800	1.70	2.17	1.50	2.34
900	1.90	2.39	1.50	2.44

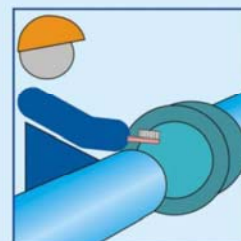


图1

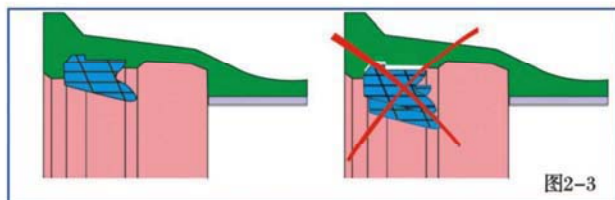


图2-3



图2-1



图2-2



5、润滑密封圈内表面和插口处，润滑剂用肥皂水或无毒无味的碱性润滑剂。（见图3）

6、将插口插入承口中直到与密封圈同轴接触，必须正确地校直，使要连接的管子或管件的中轴线相重合。连接管子时，对不同管径的管子应采用不同的工具，小心地将管子连续插入，如发现插入时阻力过大，应立即停止，将管子拔出，检查橡胶密封圈位置和承插口，查明原因并妥善处理，再行插入。要求插入的深度在两条白线中间即可（见图4-1、图4-2、图4-3）

7、将金属直标尺插入承口内和管壁之间的环形空间直至碰到橡胶密封圈，沿管一周测量深度是否均匀。检查相互连接在一起的管子是否同轴心，否则应调整沟底可能出现的凹凸不平。（见图5）

8、当接口安装完毕后，可根据管径调整偏移角，偏移的角度应符合右表要求。（见图6-1、图6-2）

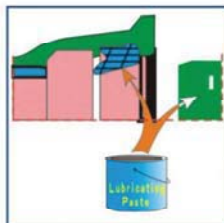


图3

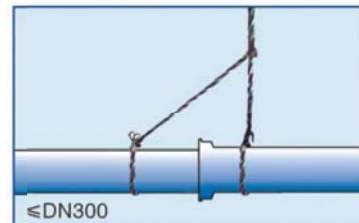


图4-1

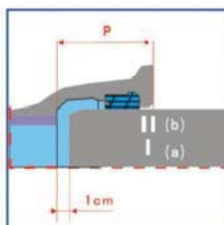


图4-3

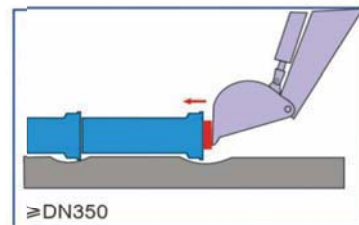


图4-2

5. Lubricate interface of gasket and spigot end. Lubrication could be soap water or nonpoisonous alkaline lubrication.

6. Insert spigot into socket till touch gasket at the same axle. It must be straightened properly to make the central axle of pipe or fittings coincide. While connecting pipe, different pipe adopts different tools. Insert pipe carefully and continuously, if existing larger resistance force, pipe connection should be stopped immediately then draw out the pipe and check the position of rubber gasket and socket and spigot end. After removing troubles, insert again. The insert depth required should be between two white lines (See fig 4-1, fig 4-2, fig 4-3)

7. Insert straight scale into the circular space between socket and pipe wall till touch the rubber gasket and measure the depth even or not along pipe's cycle. Check the pipes connected with each other whether along the same axle, otherwise the ditch bottom should be adjusted to make irregularity even. (See fig.5)

8. After finish assembling joint, in respect of diameter adjust angular deflection which should satisfy the requirements mentioned in the right list. (See fig6-1, fig6-2)

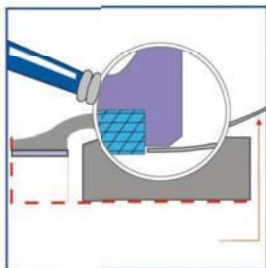


图5

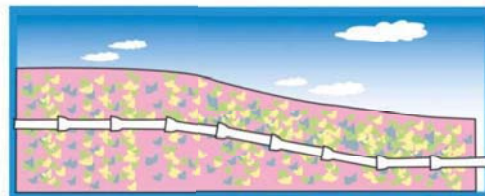


图6-1



图6-2

DN (mm)	铺设允许偏移角度 Permissible angular deflection while laying
80-150	5° 00'
200-300	4° 00'
350-600	3° 00'
700-800	2° 00'
900-2600	1° 30'



9、回填：一般来说，试压的管线均应在全部回填后再试水压。如遇有特殊要求时，可留出接口部分不回填，而管身中间要充分回填以避免试压过程中管体的移动。对回填用土进行特别选定没有必要，但是直接与管子接触的部分最好选用砂子或者挖方当中的良质土砂用于回填，应当注意使管子的两侧均等地填充土砂，管底也应被土砂充分包围填充。特别需注意的是地下水要尽量排除，以防安装好的管子产生下沉。

球墨铸铁管安装时安全注意事项

- 1、进入管沟时必须戴安全帽。
 - 2、应仔细检查管沟是否有塌方危险，不安全时绝对不要进入沟内。
 - 3、在大口径管上使用矫正千斤顶时，应上下两人撑握着进行。
 - 4、在进行接口操作时，应当尽可能使用棉手套。
 - 5、进入已安装好了接口的管内或为了进行水压试验管内深处时，不可一个人单独进入。
- 特别是埋设后经过一段时间的管子内或者由于事故而中断使用的管线中，往往充满一氧化碳气体，应当充分注意。这种情况下，应携带一氧化碳探测器。



9. Backfill: Generally, pipeline needed testing should be tested water pressure after all backfilled, in particular, the joints could be not backfilled, but the middle part of pipe should be backfilled completely for avoiding pipe movement prior to testing. It is not essential to select earth for backfilling, whereas the part touching with the pipe directly had better select sand or fine earth while excavating. Attention that at the both sides of pipeline should all be filled with sand, same as the pipeline bottom, in particular try to exhaust groundwater and avoid the pipeline subsiding after installation.

Safety points for attention while assembling pipeline

- ①.It is necessary to wear safety helmet while entering the pipeline ditch.
 - ②.It is necessary to inspect the pipeline ditch whether existing dangerous landslide, if exist, absolutely prohibited to enter the ditch.
 - ③.While assembling large-diameter pipes with correction jack, the jack must be grasped up and down by two persons.
 - ④.While installing joint, cotton padded gloves must be used as far as possible.
 - ⑤.It is prohibited to enter the pipe deeply alone after finishing assembling pipeline or for inspecting hydraulic pressure.
- In particular, if entering the pipeline which have been assembled and buried for a while or broken off for accident, in which would be often filled with CO (carbon monoxide), under this situation, the person should pay full attention and take CO (carbon monoxide) detector.



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ANGANG GROUP YONGTONG DUCTILE CAST IRON PIPE CO., LTD





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Technical Data Sheet

Client > NWC

RFQ No.: YONGTING-NWC Date: 2024-01

Item: DUCTILE IRON PIPES AND FITTINGS (DN100-DN2600mm)

Item	Description	Unit	Manufacturers technical specifications
01	<p>Manufacturer</p> <ul style="list-style-type: none"> •Name of Manufacture: •Place of Manufacture (City & country) <p>Annual Capacity for pipes totally</p> <p>Name of Local Agent</p>		<ul style="list-style-type: none"> •Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd •West part of Yongtong Road, Shuiye Town, Anyang County, Henan province, China <p>1.9 Million Tons</p> <p>International Integrated Solutions LTD (IISCO)</p>
02	<p>Applicable Standards</p> <p>Pipe material Ductile</p> <p>Wall thickness</p> <p>Cement lining</p> <p>External Coating</p> <p>Rubber gaskets for joints</p> <p>Flange drilling</p>	mm	<p>ISO 2531-2009/EN 545-2010</p> <p>$e_{min} = \frac{PFA \times SF \times DE}{20Rm + (PFA \times SF)}$</p> <p>ISO 4179-2005</p> <p>ISO 8179-1:2017</p> <p>ISO 4633-2015</p> <p>ISO 7005-2/ EN 1092-2, Raised Face with PN value as per B.O.Q i</p>
03	<p>Pipe and Fitting class/size/length:</p> <p>Pipe class</p> <p>Fitting class</p> <p>K value except Tees</p> <p>K value of Tees</p> <p>Size (shall be metric sizes)</p> <p>Length (Pipe)</p>	m m	<p>Preferred class C40/C30/C25, plus others-C20/C50 etc. according to ISO 2531:2009/EN 545:2010</p> <p>C40 for DN100-DN300mm Pipes</p> <p>C30 for DN350-DN600mm Pipes</p> <p>C25 for DN700mm Pipes and Above</p> <p>K12/K14 according to ISO 2531:2009/EN545:2010</p> <p>K12</p> <p>K14</p> <p>As per the B.O.Q</p> <p>6 mtrs. for DN 100mm to 2600mm</p>
04	<p>Type of joints</p> <p>Pipe</p> <p>- Push-on joint</p> <p>- Locked push-on</p>		<p>T-Type push-on joint</p> <p>joint Restrained, TF Self Anchored</p> <p>Restrained, SIA Wb Self Anchored</p> <p>Restrained, Xanchor Self Anchored</p>

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	Flanged joints		PN10/PN16/PN25 Raised Face according to ISO 7005-2:1998 or EN 1092-2:1998
05	Rubber gasket material: Pipes Socketed joints Flanged joints		EPDM (Ethylene Propylene Diene Monomer) suitable for drinking water EPDM gasket with metal reinforcement insert for PN10/PN16/PN25.
06	Surface protection Internal protection material application method:- for pipes finish coat Internal Socket end of pipe External Protection (Pipes) Additional protection on site		Sulphate resistant cement mortar lining as per ISO 4179. Portland cement mortar lining as per ISO4179. Centrifugally cast inside the pipes. No seal coat Layer of zinc rich paint plus layer of a layer of non-toxic bituminous paint or epoxy. pipes Layer of metallic zinc (= 200 g/m ²) coating covered with a bituminous or epoxy paint min.70 microns. To be provided by contractor
07	Hydro test at manufacturer's plant: Pipes	Bar Bar Bar	40 bar for DN100-DN300 30 bar for DN350-DN600 25 bar for DN700- DN2600
08	Pipe at site		ISO2531:2009/EN 545-2010 (in Contractor's scope)
	Inspection standard/codes		ISO 9001:2015 (Quality System - Models for Quality assurance in design, development, production, installation)
09	Material Physical properties Min. tensile strength	MPa MPa % % HB	<div>PIPES</div> <div>420</div> <div>300(*)</div> <div>10</div> <div>7</div> <div>230</div> <div>values of Rp0.2 is not less than 270 MPa when A ≥ 12% for DN ≤ 1000 or when A ≥ 10% for DN > 1000.</div>





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10	Marking: Pipes (general) shall have cast-on OR painted marking listing : Spigot ends of pipes shall be		Name of the manufacturer or mark, year of manufacture, DN in mm, By stenciling on pipes: Number of standards, Manufacturing Batch No., type of socket and class Client's name, etc. Double striped Insertion marks to be painted at the pipe spigot
11	Calibration of pipes:		a percentage of pipes, defined by agreement between manufacturer and purchaser, shall be calibrated 'pipes, for the purpose of cutting on site, with clear mark "R" on the socket face
12	Delivery period	weeks	As per requirement of project status & mutual discussion and agreement

Supplier
Signature and Stamp



Manufacturer
Signature and Stamp



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Technical Data Sheet

Client > NWC

RFQ No.: YONGTING-NWC Date: 2024-02

Item: DUCTILE IRON PIPES AND FITTINGS (DN100-DN2600mm)

Item	Description	Unit	Manufacturers technical specifications
01	<p>Manufacturer</p> <ul style="list-style-type: none"> •Name of Manufacture: •Place of Manufacture (City & country) <p>Annual Capacity for pipes totally</p> <p>Name of Local Agent</p>		<ul style="list-style-type: none"> •Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd •West part of Yongtong RoadmShuiye Town Anyang County <p>1.0 Million Tons</p> <p>International Integrated Solutions LTD (IISCO)</p>
02	<p>Applicable Standards</p> <p>Pipe material Ductile</p> <p>Wall thickness</p> <p>Cement lining</p> <p>External Coating</p> <p>Rubber gaskets for joints</p> <p>Flange drilling</p>	mm	<p>ISO 2531-1998/EN 545-2006</p> <p>e (iron) = K(05+0.001 DN)</p> <p>ISO 4179-2005</p> <p>ISO 8179-1:2017</p> <p>ISO 4633-2015</p> <p>ISO 7005-2/ EN 1092-2, Raised Face with PN value as per B.O.Q</p>
03	<p>Pipe and Fitting class/size/length:</p> <p>Pipe class</p> <p>Fitting class</p> <p>K value except Tees</p> <p>K value of Tees</p> <p>Size (shall be metric sizes)</p> <p>Length (Pipe)</p>	m m	<p>K9 according to ISO 2531:1998/EN 545:2006</p> <p>K12/K14 according to ISO 2531:1998/EN 545:2006</p> <p>K12</p> <p>K14</p> <p>As per the B.O.Q</p> <p>6 mtrs. for DN 100mm to 2600mm</p>
04	<p>Type of joints</p> <p>Pipe</p> <p>- Push-on joint</p> <p>- Locked push-on</p> <p>Flanged joints</p>		<p>T-Type push-on joint</p> <p>Self-Restrained,</p> <p>SIA, RJS, Self Anchored</p> <p>PN10/PN16/PN25 Raised Face according to ISO 7005-2:1998 or EN 1092-2:199</p>



05	Rubber gasket material: Pipes Socketed joints Flanged joints		EPDM (Ethylene Propylene Diene Monomer) suitable for drinking water EPDM gasket with metal reinforcement insert for PN10/PN16/PN25.
Item	Description	Unit	Manufacturers technical specifications
06	Surface protection Internal protection material application method: - for pipes finish coat Internal Socket end of pipe External Protection (Pipes) Additional protection on site		Sulphate resistant cement mortar lining as per ISO 4179. Portland cement mortar lining as per ISO4179. Centrifugally cast inside the pipes. No seal coat Layer of metallic zinc (≥ 130 g/m ² , zing content $\geq 85\%$). Plus layer of a layer of non-toxic bituminous paint or epoxy to minimum DFT of 100 microns and a total average DFT of 120 microns Layer of metallic zinc (≥ 130 g/m ² , zing content $\geq 99\%$) coating covered with a bituminous or epoxy paint min.70 microns. To be provided by contractor
07	Hydro test at manufacturer's plant: Pipes	Bar Bar Bar Bar	50 bar for DN100-DN300 40 bar for DN350-DN600 32 bar for DN700- DN1000 25 bar for DN700- DN1000
08	Pipe at site		ISO2531:1998/EN 545-2006 (in Contractor's scope)
	Inspection standard/codes		ISO 9001:2015 (Quality System - Models for Quality assurance in design, development, production, nstallation
09	Material Physical properties Min. tensile strength	MPa MPa % % HB	PIPES 420 300(*) 10 7 230 values of Rp0.2 is not less than 270 MPa when A $\geq 12\%$ for DN ≤ 1000 or when A $\geq 10\%$ for DN >1000 .



10	Marking: Pipes (general) shall have cast-on OR painted marking listing : Spigot ends of pipes shall be		Name of the manufacturer or mark, year of manufacture, DN in mm, By stenciling on pipes: Number of standards, Manufacturing Batch No., type of socket and class Client's name, etc. Double striped Insertion marks to be painted at the pipe spigot
11	Calibration of pipes:		a percentage of pipes, defined by agreement between manufacturer and purchaser, shall be calibrated 'pipes, for the purpose of cutting on site, with clear mark "R" on the socket face
12	Delivery period	weeks	As per requirement of project status & mutual discussion and agreement



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