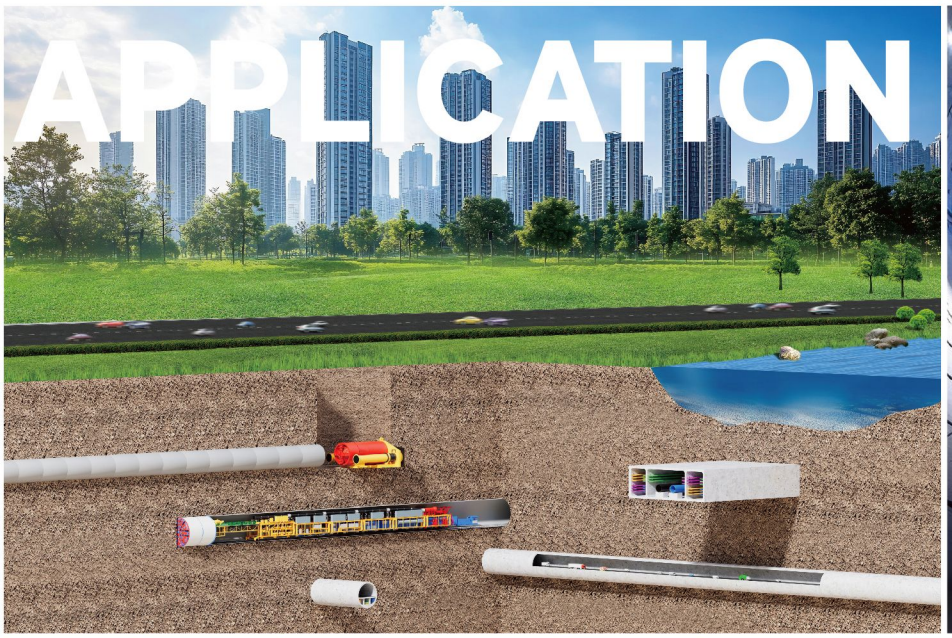
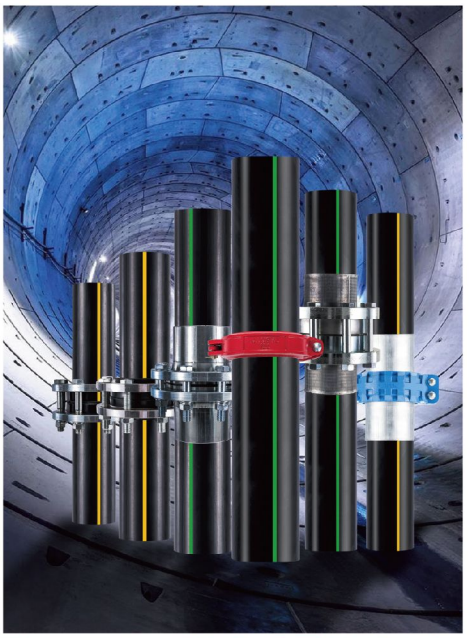
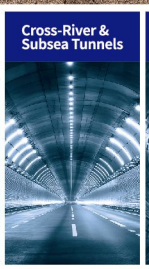
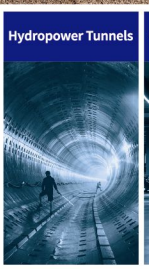
KANGYU

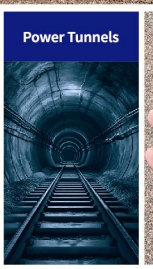
DEDICATED FOR MUDDY WATER SHIELD MACHINE CONSTRUCTION
DEDICATED FOR MUDDY WATER PIPE JACKING CONSTRUCTION











Product Introduction

Wear-resistant pipelines are an important sub-sector of the pipeline industry. They are mainly used for conveying slurry and similar materials through pumping.Because the conveyed medium usually has high hardness, fast flow speed, and large flow volume, wear-resistant pipes can effectively reduce the long-term impact, abrasion, and corrosion caused to the pipe wall by the medium, thus slowing down pipe fatigue and wear-through.Wear-resistant pipes are widely used in slurry balance shield tunneling projects and slurry balance pipe jacking projects: for conveying incoming and outgoing slurry and slurry residues.In the chemical industry: for transporting solid-liquid mixtures such as powders, silica, salt slurry, and alkali slurry.In power plants: for ash removal, slag discharge, and pulverized coal conveying pipelines in thermal power plants.In cement and concrete conveying: for slurry transportation in wet production lines, feeding from bucket elevators, pneumatic conveying of finished cement, and concrete delivery pipelines requiring wear resistance.

Product Performance

Unparalleled Light Weight

During water pressure and pipe jacking construction, due to the limited site space and operating conditions, POE co-extruded wear-resistant pipes, as composite pipes, generally adapt better to environmental terrains. In addition to their ultra-high wear resistance, their most outstanding advantage is the lightweight product weight. Under harsh working conditions requiring wear resistance, lightweight pipes have greater advantages and applicability. For example, compared with the commonly used 4-inch to 6-inch galvanized steel pipes in tailwater jacking, the weight of POE co-extruded wear-resistant pipes is only 1/5. Compared with large-size 12-inch to 16-inch steel pipes commonly used in slurry tailings, the weight of POE co-extruded wear-resistant pipes is only 1/8.

Comparison Table of Galvanized steel pipe (seamless steel pipe) and Polyolefin POE Wear resistant pipe weight (Meter/kg)

specification	4inchx3mm steel pipe	4inchx4mm steel pipe	125mm poe pipe
Weight/m (M/kg)	8.21kg	10.85kg	**2.57kg**
specification	5inchx4mm steel pipe	5inchx4.5mm steel pipe	160mm poe pipe
Weight/m (M/kg)	13.41kg	15.03kg	**3.69kg**
specification	6inchx5mm steel pipe	6inchx6mm steel pipe	180mm poe pipe
Weight/m (M/kg)	19.72kg	23.52kg	**4.6kg**
specification	12inchx8mm steel pipe	12inchx10mm steel pipe	355mm poe pipe
Weight/m (M/kg)	62.53kg	77.67kg	**15.50kg**
specification	14inch steel pipe	14inch steel pipe	400mm poe pipe
Weight/m (M/kg)	90.50kg	108.01kg	**18.73kg**

Excellent wear resistance

By using a special process, the inner layer of the pipeline is compounded with POE polymer-modified wear-resistant polyolefin material.This material is a thermoplastic elastomer with excellent impact resistance.It has self-repairing ability under the impact of high-strength rocks and coarse particles,and does not react with acidic or alkaline components in various slurries, thus achieving anti-corrosion performance.The wear-resistant layer has an extremely low surface friction coefficient. Under working conditions with coarse particle slurry, the pipeline durability is three times better than that of bimetallic pipes,eight times better than UHMWPE ultra-high molecular weight pipes,fifteen times better than HDPE pipes,and dozens of times better than metal steel pipes.

Superior Corrosion Resistance & Environmental Adaptability

Benefiting from the non-polarity, compactness, high crystallinity, and chemical inertness of polyolefin material, POE pipes are highly resistant to ionic or protonic reactions with acids and bases. Suitable for a wide range of acidic and alkaline slurry applications.In outdoor environments such as acid rain and coastal climates, SRTP POE pipes require no additional protection, unlike metal pipes.

Extended Functionality

Customizable external color marking according to project requirements for medium identification.

Compared with steel pipes, POE pipes eliminate the need for painting, improving operational efficiency and reducing cost.

Cost comparison

Economic Comparison with Other Wear-Resistant Pipe Products

1.Initial Procurement Cost

- The price of wear-resistant pipes varies significantly depending on type.
- Under the same pressure conditions, the initial procurement cost of SRTP Polyolefin (POE) Wear-Resistant Composite Pipe is generally higher than rubber hoses and 4–6 inch small-diameter thin-wall steel pipes, but lower than 12-inch and above large-diameter seamless steel pipes and thick-wall cast iron pipes.
- Compared with bimetallic pipes, SRTP pipes have a particularly obvious price advantage.

2.Installation Cost

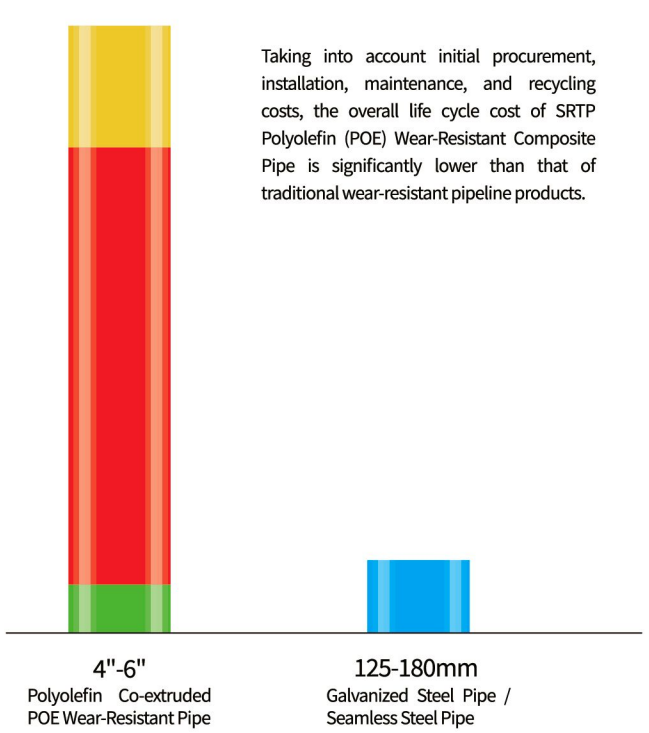
- SRTP Polyolefin (POE) Wear-Resistant Composite Pipe is extremely lightweight, saving labor during installation and significantly reducing installation costs.

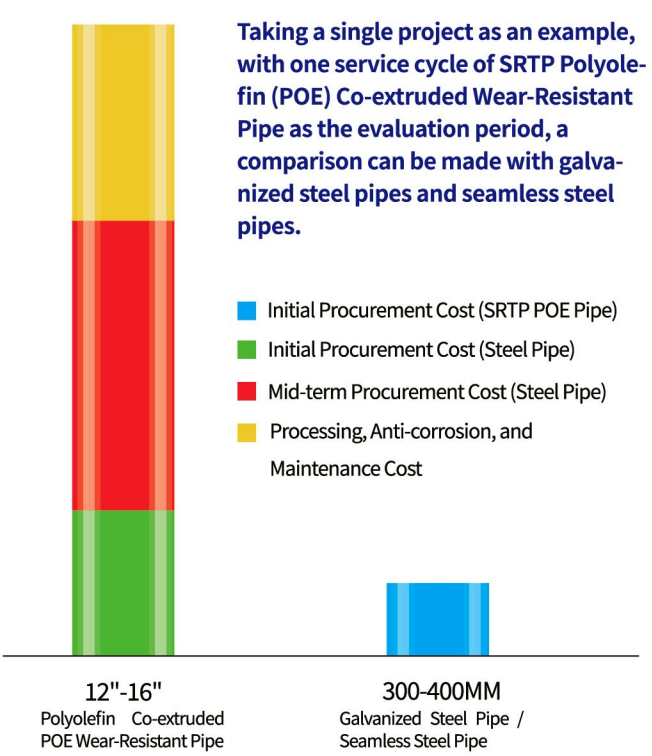
3.Maintenance Cost

- With excellent wear resistance and corrosion resistance, SRTP pipes outperform traditional wear-resistant products, leading to extended service life and lower maintenance costs.

Total lifecycle cost of pipeline usage

Taking into account factors such as initial procurement cost, installation cost, maintenance cost, and recycling cost, the overall life cycle cost of SRTP/polyolefin POE wear-resistant composite pipes is significantly lower than that of traditional wear-resistant pipeline products

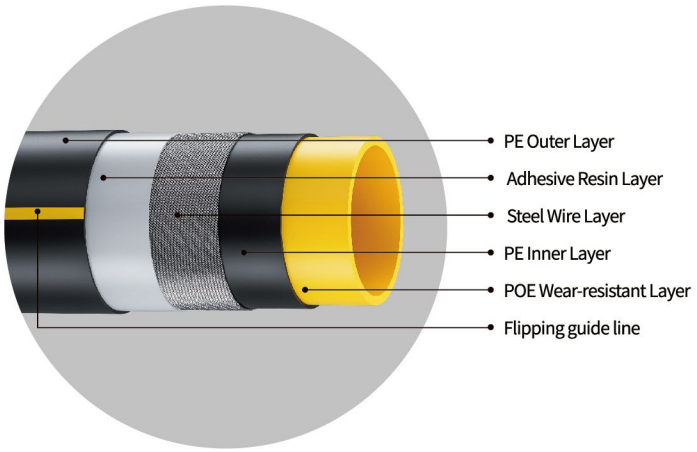




Product Specifications

Polyolefin POE wear-resistant pipe

dn/mm	MPa															
	PN	0.8	1.0	1.25	1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.3	7.0	8.0	9.0	10.0
90	total thickness		8.0	8.0	8.0	8.5	8.5	9.0	9.0	13.0	13.5					
	wear-resistant thickness		2.0	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0					
110	total thickness		8.0	8.0	9.5	10.0	10.5	11.5	11.5	14.0	15.0	15.0	15.0	15.5	16.5	16.5
	wear-resistant thickness		2.0	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
125	total thickness		8.0	8.0	10.0	11.0	11.5	12.5	12.5	14.0	15.0	15.0	15.0	16.5	16.5	18.5
	wear-resistant thickness		2.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
140	total thickness		8.0	8.0	10.5	11.5	12.0	12.5	12.5	14.0	15.0	16.0	16.0	18.5	18.5	18.5
	wear-resistant thickness		2.0	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5
160	total thickness		9.0	9.0	12.0	13.0	13.5	14.0	14.0	14.5	15.5	17.5	17.5	19.0	19.0	19.0
	wear-resistant thickness		2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
180	total thickness		9.0	9.0	12.0	13.5	14.0	14.5	15.0	15.0	15.5	18.0	18.0	19.0	19.0	19.0
	wear-resistant thickness		2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5
200	total thickness		9.0	9.0	12.5	14.0	14.5	15.5	16.0	16.5	16.5	18.5	18.5	19.0	19.0	
	wear-resistant thickness		2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5	
225	total thickness		11.0	11.0	13.0	14.0	14.5	15.5	16.5	16.5	16.5	19.0	19.0			
	wear-resistant thickness	11.0	2.5	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.5			
250	total thickness	2.5	13.5	13.5	15.0	15.0	16.0	17.5	17.5	17.5	18.5					
	wear-resistant thickness	13.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5					
280	total thickness	2.5	14.5	14.5	16.5	17.0	19.0	19.0	21.0	21.5	22.5					
	wear-resistant thickness	13.0	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0					
315	total thickness	2.5	15.0	15.0	16.5	17.0	19.0	19.0	22.0	22.5						
	wear-resistant thickness	13.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0						
355	total thickness	3.0	15.5	15.5	17.5	18.0										
	wear-resistant thickness	14.0	3.0	3.0	3.5	3.5										
400	total thickness	3.0	16.0	16.0	18.5											
	wear-resistant thickness	15.5	3.5	3.5	3.5											
450	total thickness	3.0	17.5	17.5	20.0											
	wear-resistant thickness	16.5	3.5	3.5	4.0											
500	total thickness	3.5	19.5	19.5	22.0											
	wear-resistant thickness	21.0	3.5	3.5	4.0											
560	total thickness	4.0	24.0	24.0	26.0											
	wear-resistant thickness	24.0	4.0	4.0	4.0											
630	total thickness	4.0	27.0	27.0	30.0											
	wear-resistant thickness		4.0	4.0	4.0											



Product structure

SRTP Polyolefin POE Wear-resistant Composite Pipe Display

Unique Flip-Guiding Line Design

During construction, slurry discharge and slag removal pipelines often suffer one-sided wear. For Polyolefin (POE) Wear-Resistant Composite Pipes, it is recommended to adopt a pipe-flipping method according to the wear condition of the wear-resistant layer. This method fully maximizes the pipe' s wear resistance, effectively doubling its service life and achieving better economic performance.

To ensure accurate positioning during pipe flipping, each pipe is marked with a clear flip-guiding line, allowing for quick and precise on-site operation.

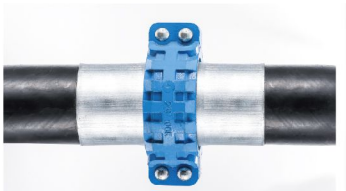
SRTP Polyolefin POE wear-resistant composite pipe bend

DN (mm)	MPA	BEND RADIUS(D)	BENDING ANGLE (°)	LENGTH/mm
90	1.6-10.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1000
110	1.0-10.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1000
125	1.0-10.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1000
140	1.0-10.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1500
160	1.0-10.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1500
180	1.0-9.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1500
200	1.0-8.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾1500
225	1.0-6.3	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2000
250	1.0-5.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2000
280	1.0-5.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2000
315	1.0-4.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2500
355	1.0-4.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2500
400	1.0-4.0	1.5D、3D、5D、BOOK	45°-135°、BOOK	⩾2500

Connection Method

Quick-connect crimping clamp connection

Pipeline connection surface display



Thermoforming reinforced clamp connection

Pipeline connection surface display

dn/mm	MPa												
	1.0	1.25	1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.3	7.0	8.0	9.0	10.0
50	○	○	○	○	○	●	●	●	●	●	●	●	●	●
63	○	○	○	○	○	●	●	●	●	●	●	●	●	●
75	○	○	○	○	○	●	●	●	●	●	●	●	●	●
90	○	○	○	○	○	●	●	●	●	●	●	●	●	●
110	○	○	○	○	○	●	●	●	●	●	●	●	●	●
125	○	○	○	○	○	●	●	●	●	●	●	●	●	
140	○	○	○	○	○	●	●	●	●	●	●	●	●	
160	○	○	○	○	○	●	●	●	●	●	●	●	●	
180	○	○	○	○	●	●	●	●	●	●	●	●		
200	○	○	○	○	●	●	●	●	●	●	●			
225	○	○	○	○	●	●	●	●	●	●				
250	○	○	○	○	●	●	●	●	●					
280	○	○	○	○	●	●	●	●	●					
315	○	○	○	●	●	●	●	●						
355	○	○	○	●	●	●	●	●						
400	○	○	○	●	●	●	●	●						

Note: In the table, ○ indicates a single-bolt quick clamp connection, while ● indicates a hot-formed reinforced clamp double-seal connection

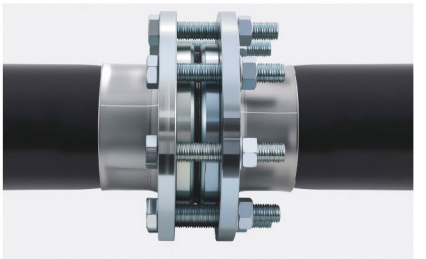
Connection Method

Flange Pipe Body Connection

Pipeline connection surface display

dn/mm	MPa									
	0.8	1.0	1.25	1.6	2.0	2.5	3.0	3.5	4.0	5.0
90	○	○	○	○	○	○	○	○	○	○
110	○	○	○	○	○	○	○	○	○	
125	○	○	○	○	○	○	○	○	○	
140	○	○	○	○	○	○	○	○		
160	○	○	○	○	○	○	○	○		
180	○	○	○	○	○	○	○	○		
200	○	○	○	○	○	○	○	○		
225	○	○	○	○	○	○	○			
250	○	○	○	○	○	○				
280	○	○	○	○	○					
315	○	○	○	○	○					
355	○	○	○	○	○					
400	○	○	○	○	○					
450	○	○	○	○	○					
500	○	○	○	○	○					
560	○	○	○	○	○					
630	○	○	○	○	○					

Connection Method



Riveting / thermoforming / double seal connection

Pipeline connection surface display

dn/mm	MPa							
	1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.3
110	○	○	○	○	○	○	○	●
125	○	○	○	○	○	○	●	
140	○	○	○	○	○	○	●	
160	○	○	○	○	○	○	●	
180	○	○	○	○	○	○	●	
200	○	○	○	○	○	○	●	
225	○	○	○	○	○	○	●	
250	○	○	○	○	○	○	●	
280	○	○	○	○	○	●		
315	○	○	○	○	○	●		

Note:○ indicates riveted-reinforced double-seal connection ● indicates thermoformed-reinforced double-seal connection

Connection Method

Riveting / thermoforming / double seal connection

Pipeline connection surface display

dn/mm	MPa									
	2.5	3.0	3.5	4.0	5.0	6.3	7.0	8.0	9.0	10.0
110						○	○	○	○	○
125					○	○	○	○	○	○
140					○	○	○	○	○	○
160					○	○	○	○	○	
180				○	○	○	○	○	○	
200				○	○	○	○	○	○	
225				○	○	○	○			
250			○	○	○					
280	○	○	○	○	○					
315	○	○	○	○	○					

SHANGHAI SAILWAY CERTIFICATION CO.,LTD.

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Certificate Number: SW24E20452R8S

This is to Certify that the Environmental Management System of

Shandong Kangyu Pipe Industry Co., Ltd.

Organization Code/Unified Social Credit Code: 91371302493279707R

Registration Address:Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.
Production/Business Address:150 meters East of Daliuwang Village, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.

Has been Audited to Conform to the Following Environmental Management System Standard:

GB/T24001-2016/ISO14001:2015

for the Scope of Registration:

Production of Plastic Pipes (PE,PPR,PERT Pipes) (within the Scope of the License) and Related Management Activities.

(Issued By)

Date of Issue: May 29, 2024
Date of Expiry: May 28, 2027

IAF CNAS MANAGEMENT SYSTEM CNAS C001-M

SHANGHAI SAILWAY CERTIFICATION CO.,LTD.

QUALITY MANAGEMENT SYSTEM CERTIFICATE

Certificate Number: SW24Q20649R0S

This is to Certify that the Quality Management System of

Shandong Kangyu Pipe Industry Co., Ltd.

Organization Code/Unified Social Credit Code: 91371302493279707R

Registration Address:Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.
Production/Business Address:150 meters East of Daliuwang Village, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.

Has been Audited to Conform to the Following Quality Management System Standard:

GB/T19001-2016/ISO9001:2015

for the Scope of Registration:

Production of Plastic Pipes (PE,PPR,PERT Pipes) (within the Scope of the License).

(Issued By)

Date of Issue: May 29, 2024
Date of Expiry: May 28, 2027

IAF CNAS MANAGEMENT SYSTEM CNAS C001-M

SHANGHAI SAILWAY CERTIFICATION CO.,LTD.

OCCUPATIONAL HEALTH SAFETY MANAGEMENT SYSTEM CERTIFICATE

Certificate Number: SW24S20364R0S

This is to Certify that the Occupational Health & Safety Management System of

Shandong Kangyu Pipe Industry Co., Ltd.

Organization Code/Unified Social Credit Code: 91371302493279707R

Registration Address:Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.
Production/Business Address:150 meters East of Daliuwang Village, Wanggou Town, Lanshan District, Linyi City, Shandong Prov.

Has been Audited to Conform to the Following Occupational Health & Safety Management System Standard:

GB/T45001-2020/ISO45001:2018

for the Scope of Registration:

Production of Plastic Pipes (PE,PPR,PERT Pipes) (within the Scope of the License) and Related Management Activities.

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Date of Issue: May 29, 2024
Date of Expiry: May 28, 2027

IAF CNAS MANAGEMENT SYSTEM CNAS C001-M

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Assessment Report Presented to

Shandong Kangyu Pipe Industry Co., Ltd
山东康雨管业有限公司

Assessment Report

Report number	156205464_P+T	Assessment Type	Production Trading Assessment
Report date	2024-05-17	Assessor's Name	Mingxing Yang
Report started	2024-05-18 ~ 2025-05-17	Reviewed by	Lihua Wu
Verification Address	https://assessed-suppliers.chn.tuv.com		

Important Notes

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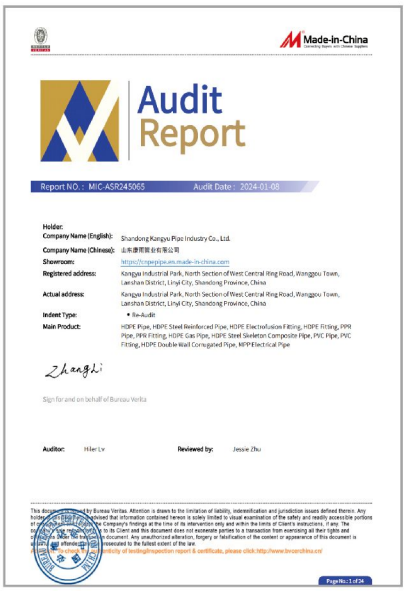


Made-in-China

Audit Report

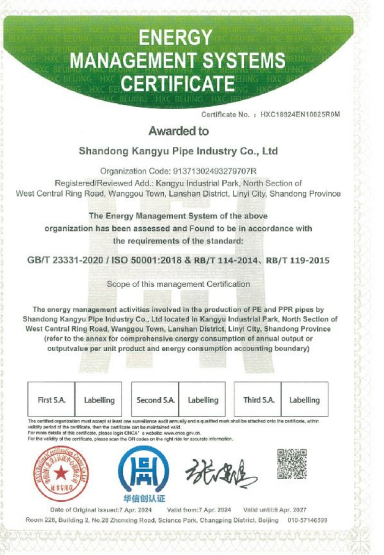
Report NO.: MIC-ASR245065 Audit Date: 2024-01-08

Holder:
Company Name (English): Shandong Kangyu Pipe Industry Co., Ltd.
Company Name (Chinese): 山东康雨管业有限公司
Showroom: https://sqangyupe.en.made-in-china.com
Registered address: Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Province, China
Actual address: Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Province, China
Indent Type: Re-Audit
Main Product: HDPE Pipe, HDPE Steel Reinforced Pipe, HDPE Electrofusion Fitting, HDPE Fitting, PPR Pipe, PPR Fitting, HDPE Gas Pipe, HDPE Steel Skeleton Composite Pipe, PVC Pipe, PVC Fitting, HDPE Double-Wall Corrugated Pipe, MPP/Electrical Pipe

Sign for and on behalf of Bureau Veritas

Auditor: Hller Lv Reviewed by: Jessie Zhu

Page No.: 1 of 24



ENERGY MANAGEMENT SYSTEMS CERTIFICATE

Certificate No. : HXC18824EN10625R0M

Awarded to

Shandong Kangyu Pipe Industry Co., Ltd

Organization Code: 91371302493279707R
Registered/Reviewed Add.: Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Province

The Energy Management System of the above organization has been assessed and found to be in accordance with the requirements of the standard:

GB/T 23331-2020 / ISO 50001:2018 & RB/T 114-2014、RB/T 119-2015

Scope of this management Certification

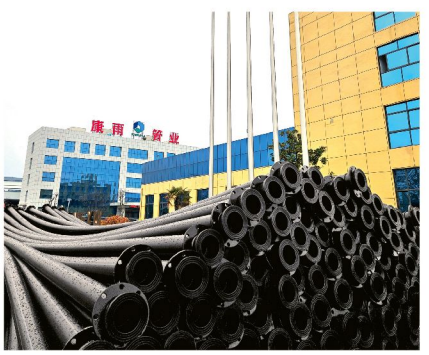
The energy management activities involved in the production of PE and PPR pipes by Shandong Kangyu Pipe Industry Co., Ltd located in Kangyu Industrial Park, North Section of West Central Ring Road, Wanggou Town, Lanshan District, Linyi City, Shandong Province (refer to the annex for comprehensive energy consumption or unit output or outputvalue per unit product and energy consumption accounting boundary)

First S.A. Labelling | Second S.A. Labelling | Third S.A. Labelling

华信创认证

Date of Original Issue:17 Apr. 2024 Valid from:7 Apr. 2024 Valid until:6 Apr. 2027

Room 226, Building 2, No.20 Zhanxing Road, Science Park, Changping District, Beijing 010-57146599



ADD:

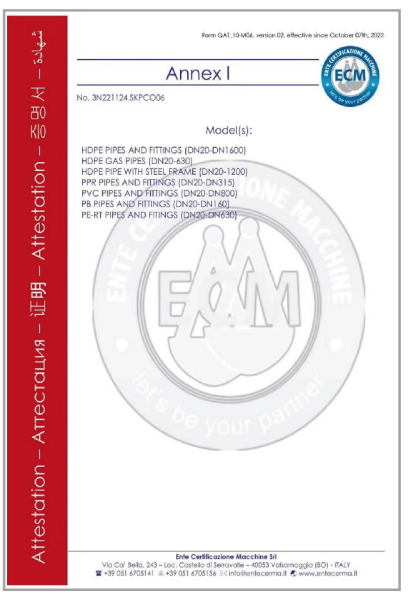
Kangyu industry park, Wanggou town,Lanshan district,Linyi city,Shandong province,china

WEB:

www.kangyupipe.com

https:

sdkangyu.en.alibaba.com



Attestation – Аттестация – 证明 – Attestation – 증명서 – شهادة

Form QAT_10-M06, version 02, effective since October 07th, 2022

Annex I

No. 3N221124.SKPCO06

Model(s):

HDPE PIPES AND FITTINGS (DN20-DN1600)
HDPE GAS PIPES (DN20-630)
HDPE PIPE WITH STEEL FRAME (DN20-1200)
PPR PIPES AND FITINGS (DN20-DN315)
PVC PIPES AND FITTINGS (DN20-DN800)
PB PIPES AND FITTINGS (DN20-DN160)
PE-RT PIPES AND FITINGS (DN20-DN630)

Ente Certificazione Macchine Srl
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☎ +39 051 6705141 🖷 +39 051 6705156 ✉ info@entecerma.it 🌐 www.entecerma.it

Attestation – Аттестация – 证明 – Attestation – 증명서 – شهادة

Form QAT_10-M06, version 02, effective since October 07th, 2022

ATTESTATION

No. 3N221124.SKPCO06

Attestation's Holder: SHANDONG KANGYU PIPE INDUSTRY CO., LTD. 150m east of Daliuwang Village, Wanggou Town, Lanshan District, Linyi City

Attestation ECM Mark:

Product: Plastic Pipe and Pipe fittings
Model(s): (see the following annex)

Verification to: Standard:
EN 12201-1:2011, EN 12201-2:2011+A1:2013, EN 12201-3:2011+A1:2012, EN 1555-1:2021, EN 1555-2:2021, EN 1555-3:2021,
EN ISO 15874-1:2013+A1:2022,
EN ISO 15874-2:2013+A2:2022,
EN ISO 15874-3:2013+A2:2021,
EN ISO 15874-5:2013+A1:2018, EN 12050-4:2015,
EN ISO 21003-2:2008+A1:2014

reigted to CE Directive(s):
R 305/2011 (Regulation for the Marketing of Construction Products)

This document has been issued in accordance with the European Commission's note of 14 September 2022 ref. Ares (2022) 6342894 concerning voluntary certifications with a non-notified procedure as it does not fall within the scope of Ente Certificazione Macchine notification under harmonised Union legislation.

The manufacturer has voluntarily decided to submit its documents concerning the above-mentioned product for verification. Ente Certificazione Macchine confirms that the documentation made available and immediately returned to it as containing sensitive data, meets the essential requirements of the above-mentioned directives. The verification activity carried out particularly concerned the technical documentation and no verification was carried out on the product. This document cannot replace the EC Declaration of Conformity. The above conformity mark can be affixed to the technical documentation in accordance with the ECM regulation on its issue and use, published on the website www.entecerma.it

Issuance date: 24 November 2022
Expiry date: 23 November 2027

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Lucio Barabani

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