太合石油装备(陕西)有限公司
Taihe Petroleum Equipment(Shaanxi) Co., Ltd.

Address：No. 40, Hangkong 6th Road, Yanliang District,
Xi'an City, Shaanxi Province
Webiste：www.taihepetro.com www.taihedrilling.com
E-mail：wangzhen@taihepetro.com
Tel：13193339483(Manager Wang)

太合钻探
Taihe Drilling

太合石油装备(陕西)有限公司
Taihe Petroleum Equipment(Shaanxi) Co., Ltd.

公司简介
Intro

Taihe Petroleum Equipment (Shaanxi) Co., Ltd. is a subsidiary of Shaanxi Taihe Intelligent Drilling Co., Ltd., located in Yanliang District, Xi'an City, Shaanxi Province, known as China's Aviation City. The company covers an area of over 100 mu,with a workshop construction area of 47,000 square meters.It is a professional enterprise engaged in the R&D, production, sales and technical services of drilling tools. It has now built a complete production line with oil drilling tools as the main products.

The main production equipment includes:1000/500-ton press, 13.5-meter quenching furnace and tempering furnace, American MTI-320BX friction welding machine, high-precision CNC thread machine tool,wear-resistant band automatic welding machine, magnetic particle flaw detector,ultrasonic flaw detector, pressure testing machine and other production and testing equipment. The company can produce products according to API, NS-1, DS-1 and other standards. The main products include drill pipes, heavy weight drill pipes, drill collars and other drill string products.

Oil drill pipes and heavy-weight drill pipes: production specifications are 2 3/8" — 6 5/8", with a production capacity of over 25,000 tons.

Mining drill pipes: including cable drill pipes, reaming drill pipes, and fishing drill pipes, with a production capacity of over 200,000 pieces.

Drill collars: production specifications are 3 1/2" — 14", with a production capacity of 3,000 pieces.

Joints: API series, DS series, HT series, XT series, TH (Taihe proprietary thread), etc., with a production capacity of 30,000 pairs.

Bits: PDC oil bits, PDC mining/geological bits, roller cone bits, composite bits, etc., with a production capacity of over 30,000 pieces.

Adhering to the principle of "putting quality first and enhancing services", the company can also provide customers with the following products and services:

1、Designing and manufacturing non-standard drill string products in accordance with geological conditions and drilling requirements;

2、Upsetting of drill pipe ends;

3、Quenching and tempering heat treatment for oil casings, drill pipes and round steel;

4、Inspection and repair of used drilling tools;

5、Supporting spare parts for drilling rigs, etc.

Innovation is the driving force for an enterprise's development. The company fully leverages the technical advantages of Shaanxi Taihe Intelligent Drilling Co., Ltd., extensively conducts technical exchanges and cooperation with domestic and foreign universities and scientific research institutions, and has developed Taihe's ultra-high torque-resistant double-shoulder thread series connections. These products are suitable for deep wells, ultra-deep wells, high-temperature wells and high-pressure wells to meet customer needs.

The company has established sound cooperative relationships with first-class steel pipe enterprises such as Tianjin Iron and Steel Group, Baoshan Iron and Steel Co., Ltd. and Hengyang Valin Steel Tube Co., Ltd., ensuring the supply of raw materials.

Its products have entered fields including oil and gas drilling and production,coalbed methane development, shale gas development, geothermal energy and geological exploration. Adhering to the path of specialization and high-quality production, the company bases its business scope in Northwest China, expands to the whole country,and radiates to more than 20 countries and regions in the Middle East, Central Asia,South America and Africa, gradually developing into an international professional oil dri1lling tool manufacturing enterprise.

产品质量体系证书
Product Quality System Certificate

Certificate of Authority to use the Official API Monogram
License Number: 5DP-0279
ORIGINAL
TAIHE PETROLEUM EQUIPMENT (SHAANXI) CO. LTD.
No. 40 Hangkong Six Road, Yanliang District
Xi 'an, Shaanxi
People's Republic of China
American Petroleum Institute
Effective Date: MAY 31, 2024
Expiration Date: MAY 31, 2027

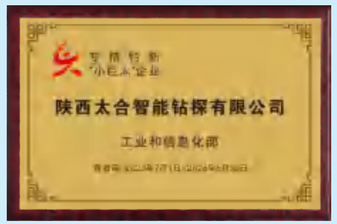
API
REGISTRATION NO. Q1-5124
Certificate of Registration
TAIHE PETROLEUM EQUIPMENT (SHAANXI) CO. LTD.
No. 40 Hangkong Six Road, Yanliang District
Xi 'an, Shaanxi
People's Republic of China
API Spec Q1, 10th Edition
Manufacture of Drill Pipe Body and Drill Pipe Assembly
Design
Effective Date: MAY 31, 2024
Expiration Date: MAY 31, 2027
Registered Since: MAY 31, 2024

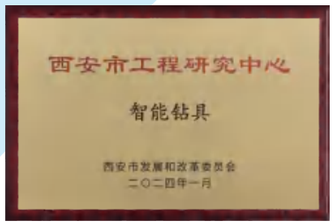
CERTIFICATE
质量管理体系认证证书
太合石油装备（陕西）有限公司

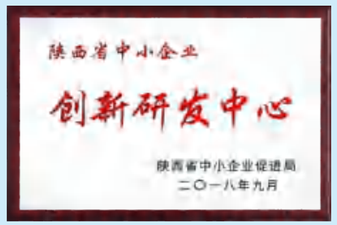
CERTIFICATE
环境管理体系认证证书
太合石油装备（陕西）有限公司

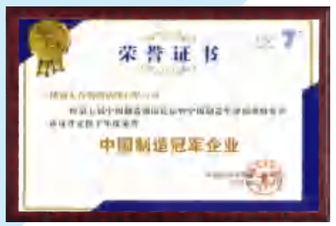
CERTIFICATE
职业健康安全管理体系认证证书
太合石油装备（陕西）有限公司

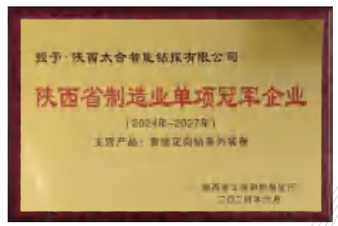
资质与荣誉
Qualifications and Honors

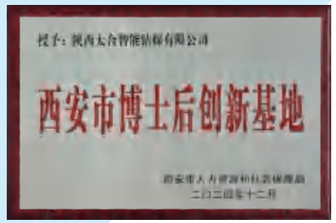








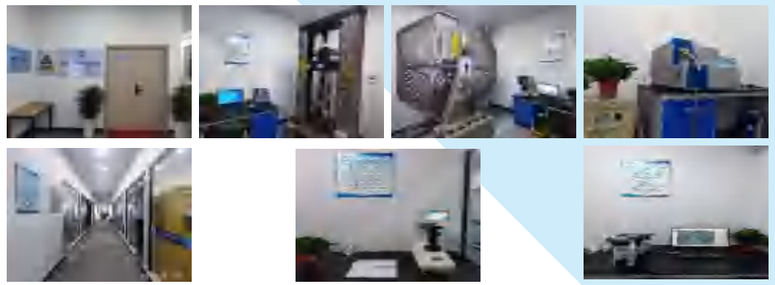




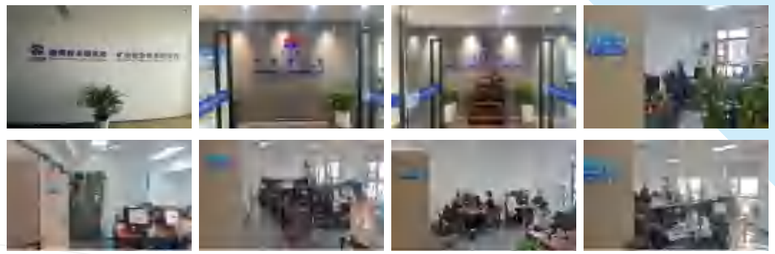
技术与研发
Technology and Research

Guided by the strategic principle of " Grand Drilling Industry ,Big Global Vision", the company has achieved over a decade of rapid development and established a core organizational structure known as the "Eight Business Divisions and One Research Institute". The eight divisions include the Equipment Manufacturing Division, Engineering Technology Division, Materials Division, Oil & Gas Division,Mining Division, New Energy Division, International Operations Division, and Domestic Business Division, while the Research Institute(General Institute) oversees 10 specialized research academies. These academies provide product and technology R&D support for industrial sectors such as mining, petroleum, water conservancy, new materials, and infrastructure construction respectively.The company employs over 900 staff members, among whom more than 200 are professional R&D personnel. This R&D team includes 2 provincial/municipal-level leading talents, 21 senior engineers (including full senior engineers), 4 doctors, 47 masters, and various other professional engineering and technical personnel. The company continuously increases investment in talent development and scientific research, adhering to an innovation-driven development path. It has established an industry-university-research-application collaborative innovation mechanism with multiple universities, including Southwest Petroleum University, Northwestern Polytechnical University, Shanghai Jiao Tong University, and China University of Geosciences, laying a solid foundation for its sustainable developmen.The company has successively won numerous honors, such as the National "Specialized, Refined, Differential, and Innovative" Little Giant Enterprise, High-Tech Enterprise, Shaanxi Provincial "Excellent Manufacturing Enterprise", Shaanxi Provincial "Gazelle Enterprise", Xi'an "Hard Technology Star", Xi'an "Technical Innovation Demonstration Enterprise", and Shaanxi Provincial "Excellent Private Enterprise". It has also obtained more than 100 national patents, including over 30 invention patents, more than 80 utility model patents, and 1 design patent—among which 4 are international firsts and 16 lead the domestic market. Additionally, it holds 6 software copyrights.

实验室
Laboratory



太合研究院
Taihe Institute



校企合作
University Cooperation

China University of Geosciences

Southwest Petroleum University y

China University of Mining and Technology

Xi' an University of Science and Technology

Northwestern Polytechnical University

Shanghai Jiao Tong University

工厂设备
Plant Equipment


管端加厚机
Upset Machine


热处理炉
Quench and Temper Furnace


热处理炉
Quench and Temper Furnace


矫直机
Straightener


超声探伤
Ultrasonic Testing


冷床
Cooling Bed


钻杆车间
Drill pipe workshop


惯性摩擦焊接
Inertia Friction Welding


焊缝热处理
Welding heat treatment


超声探伤
Ultrasonic Testing


耐磨带焊接
Hardbang Machine


产品包装
Packing


耐磨带焊丝生产设备
Welding wire for abrasive belt production equipment


产品发货
Product delivery

产品目录
Product Catalog

API Series Products

石油钻杆 Drill Pipe

- 标准Standard:API Spec 5DP、NS-1、DS-1
- 钢级Grade:E,X,G,S,V,SS75,SS95,SS105
- 规格Dimension:2 3/8"--6 5/8"
- 长度Length:RI，R2，R3
- 端部型式Upset:EU,IU,IEU
- 连接型式Connected Type:NC,FH,THDS,THHT,THXT

加重钻杆 HWDP

- 规格Dimension:3 1/2"--6 5/8"
- 钢级Grade:4145H，1340+4145
- 类型Type:整体Integral，焊接Welding
- 连接型式Connected Type:NC,FH,THDS,THHT,THXT
- 长度Length:9.3—13.5m

方钻杆 Kelly

- 类型Type:四方钻杆Square
- 规格Dimension:21/2"、3 1/2"、4 1/4"、5 1/4"、3 "

- 类型Type:六方钻杆Hexagonal
- 规格Dimension:3"、3 1/2"、4 1/4"、5 1/4"、6"
- 长度Length:12.19m,16.46m

钻铤 Drill Collar

- 标准Standard：API Spec 7-1、7-2，NS-1
- 钢级Grade：4145H、4145HMOD、P530、P550、P650
- 类别Type：光钻铤Slick DC、螺旋钻铤Spiral DC.
  无磁钻铤Non-Magnetic DC

- 规格Dimension:3 1/8"---14"
- 连接型式Connected Type:NC，FH，REG

钻杆
Drill Pipe

标准Standard：API Spec 5DP
钢级Grade：E,X,G,S,V,SS75,SS95,SS105
规格Size：2 3/8"––6 5/8"
连接型式Connected Type:NC,FH,THDS,THHT,THXT

API Implementation Standards for Drill Pipe

代号[a] Designations[a]					管体外径 Pipe Body OD	管子壁厚 Pipe Wall Thickness	钻杆焊颈 Pipe Wall Thickness	钻杆接头Tool Joint				旋转台肩式连接倒角直径 RSC Bevel Diameter	近似质量[c] Approx, Mass[c]
								外径 OD	外螺纹接头内径 Pin ID	外螺纹接头外径段长度 Pin OD Length	内螺纹接头外径段长度 Box OD Length		
代号1 Label 1	代号2 Label 2	钢级 Grade	加厚型式 Upset Type	旋转台肩式连接类型[d] RSC Type[d]	D_{dp} mm	t mm	D_{te}[b] mm	D mm	d_p mm	L_{pb} mm	L_b mm	D_f mm	w_{dp} kg/m
					/	−12.5%	max	±0.79	+0.41 −0.79	±6.35	±6.35	±0.41	计算值 calculated
1	2	3	4	5	6	7	8	9	10	11	12	13	14
外加厚（EU）External Upset(EU)													
$2^3/_8$	6.65	E, SS75	EU	NC26	60.33	7.11	65.10	85.73	44.45	228.60	254.00	82.96	10.48
$2^3/_8$	6.65	X, G, SS95, SS105	EU	NC26	60.33	7.11	65.10	85.73	44.45	228.60	254.00	82.96	10.48
$2^7/_8$	10.40	E, SS75	EU	NC31	73.03	9.19	80.98	104.78	53.98	228.60	279.40	100.41	16.30
$2^7/_8$	10.40	X, G, SS95, SS105	EU	NC31	73.03	9.19	80.98	104.78	50.80	228.60	279.40	100.41	16.41
$2^7/_8$	10.40	S, V	EU	NC31	73.03	9.19	80.98	111.13	41.28	228.60	279.40	100.41	17.20
3 1/2	9.50	E, SS75	EU	NC38	88.90	6.45	98.43	120.65	68.28	254.00	317.50	116.28	15.95
3 1/2	13.30	E, SS75	EU	NC38	88.90	9.35	98.43	120.65	68.28	254.00	317.50	116.28	20.91
3 1/2	13.30	X, SS95	EU	NC38	88.90	9.35	98.43	127.00	65.10	254.00	317.50	116.28	21.68
3 1/2	13.30	G, SS105	EU	NC38	88.90	9.35	98.43	127.00	61.93	254.00	317.50	116.28	21.85
3 1/2	13.30	S, V	EU	NC38	88.90	9.35	98.43	127.00	53.98	254.00	317.50	116.28	22.19
3 1/2	15.50	E, SS75	EU	Nc38	88.90	11.40	98.43	127.00	65.10	254.00	317.50	116.28	24.87
3 1/2	15.50	X, SS95	EU	NC38	88.90	11.40	98.43	127.00	61.93	254.00	317.50	116.28	25.02
3 1/2	15.50	G, SS105	EU	NC38	88.90	11.40	98.43	127.00	53.98	254.00	317.50	116.28	24.96
3 1/2	15.50	S, V	EU	NC40	88.90	11.40	98.43	139.70	57.15	228.60	304.80	127.41	25.79
4	14.00	E, SS75	EU	NC46	101.60	8.38	114.30	152.40	82.55	228.60	304.80	145.26	23.65
4	14.00	X, G, SS95, SS105	EU	NC46	101.60	8.38	114.30	152.40	82.55	228.60	304.80	145.26	23.65
4	14.00	S, V	EU	NC46	101.60	8.38	114.30	152.40	76.20	228.60	304.80	145.26	23.93

代号[a] Designations[a]					管体外径 Pipe Body OD	管子壁厚 Pipe Wall Thickness	钻杆焊颈 Pipe Wall Thickness	钻杆接头Tool Joint				旋转台肩式连接倒角直径 RSC Bevel Diameter	近似质量[c] Approx, Mass[c]
								外径 OD	外螺纹接头内径 Pin ID	外螺纹接头外径段长度 Pin OD Length	内螺纹接头外径段长度 Box OD Length		
代号1 Label 1	代号2 Label 2	钢级 Grade	加厚型式 Upset Type	旋转台肩式连接类型[d] RSC Type[d]	D_{dp} mm	t mm	D_{te}[b] mm	D mm	d_p mm	L_{pb} mm	L_b mm	D_f mm	w_{dp} kg/m
					/	−12.5%	max	±0.79	+0.41 −0.79	±6.35	±6.35	±0.41	计算值 calculated
1	2	3	4	5	6	7	8	9	10	11	12	13	14
外加厚（EU）External Upset (Continued)													
$4^1/_2$	13.75	E,SS75	EU	NC50	114. 30	6.88	127. 00	168. 28	95.25	228.60	304. 80	154. 00	23.69
$4^1/_2$	16.60	E,SS75	EU	NC50	114. 30	8.56	127. 00	168. 28	95.25	228.60	304. 80	154. 00	27.50
$4^1/_2$	16.60	X,G, SS95, SS105	EU	NC50	114. 30	8.56	127. 00	168. 28	95.25	228.60	304. 80	154. 00	27.50
$4^1/_2$	16.60	S, V	EU	NC50	114. 30	8.56	127. 00	168. 28	88.90	228.60	304. 80	154. 00	27.83
$4^1/_2$	20.00	E,SS75	EU	NC50	114. 30	10.92	127. 00	168. 28	92.08	228.60	304. 80	154. 00	32.98
$4^1/_2$	20.00	X, G, SS95, Ss105	EU	NC50	114. 30	10.92	127. 00	168. 28	88.90	228. 60	304. 80	154. 00	33.14
$4^1/_2$	20.00	S, V	EU	NC50	114. 30	10.92	127. 00	168. 28	76.20	228. 60	304. 80	154. 00	33.72
内加厚（IU）Internal Upset (IU)													
4	14.00	E,SS75	IU	NC40	101.60	8.38	106.38	133.40	71.45	228.60	304.80	127.41	22.22
4	14.00	X,SS95	IU	NC40	101.60	8.38	106.38	133.40	68.28	228.60	304.80	127.41	22.34
4	14.00	G, SS105	IU	NC40	101.60	8.38	106.38	139.70	61.93	228.60	304.80	127.41	23.14
4	14.00	S, V	IU	NC40	101.60	8.38	106.38	139.70	50.80	228.60	304.80	127.41	23.48
$4^1/_2$	13.75	E,SS75	IU	NC46	114.30	6.88	119.08	152.40	85.73	228.60	304.80	145.26	22.31
内外加厚（IEU）Internal–External Upset (IEU)													
$4^1/_2$	16.00	E,SS75	IEU	NC46	114.30	8.56	158.75	82.55	44.45	228.60	304.80	145.26	27.68
$4^1/_2$	16.00	X,G, SS95, SS105	IEU	NC46	114.30	8.56	158.75	76.20	44.45	228.60	304.80	145.26	27.95
$4^1/_2$	16.00	S, V	IEU	NC46	114.30	8.56	158.75	69.85	53.98	228.60	304.80	145.26	28.22
$4^1/_2$	20.00	E, Ss75	IEU	NC46	114.30	10.92	158.75	76.20	50.80	228.60	304.80	145.26	27.68
$4^1/_2$	20.00	X, Ss95	IEU	NC46	114.30	10.92	158.75	69.85	41.28	228.60	304.80	145.26	33.11
$4^1/_2$	20.00	G, SS105	IEU	NC46	114.30	10.92	158.75	63.50	68.28	228. 60	304.80	145.26	33.38
$4^1/_2$	20.00	S, V	IEU	NC46	114.30	10.92	158.75	57.15	68.28	228. 60	304.80	145.26	33.60
5	19. 50	E, SS75	IEU	NC50	127. 00	9. 19	130.2	168. 28	95. 25	228. 60	304.80	153.99	31. 79
5	19. 50	X, SS95	IEU	NC50	127. 00	9. 19	130.2	168. 28	88. 90	228. 60	304.80	153.99	32. 58

代号[a] Designations[a]					管体外径 Pipe Body OD	管子壁厚 Pipe Wall Thickness	钻杆焊颈 Pipe Wall Thickness	钻杆接头Tool Joint				旋转台肩式连接倒角直径 RSC Bevel Diameter	近似质量[c] Approx, Mass[c]
								外径 OD	外螺纹接头内径 Pin ID	外螺纹接头外径段长度 Pin OD Length	内螺纹接头外径段长度 Box OD Length		
代号1 Label 1	代号2 Label 2	钢级 Grade	加厚型式 Upset Type	旋转台肩式连接类型[d] RSC Type[d]	D_{dp} mm	t mm	D_{te}[b] mm	D mm	d_p mm	L_{pb} mm	L_b mm	D_f mm	w_{dp} kg/m
					/	−12.5%	max	±0.79	+0.41 −0.79	±6.35	±6.35	±0.41	计算值 calculated
1	2	3	4	5	6	7	8	9	10	11	12	13	14
内外加厚（IEU） Internal–External Upset (IEU)													
5	19. 50	G, SS105	IEU	NC50	127. 00	9. 19	130.2	168. 28	82.55	228. 60	304.80	153.99	32.95
5	19. 50	S, V	IEU	NC50	127. 00	9. 19	130.2	168. 28	69.85	228. 60	304.80	153.99	33.60
5	19. 50	E, SS75	IEU	5 1/2 FH	127. 00	9. 19	130.2	177. 80	95.25	254. 00	304.80	170. 66	33.22
5	19. 50	X,G, SS95, SS105	IEU	5 1/2 FH	127. 00	9. 19	130.2	177. 80	95.25	254. 00	304.80	170. 66	33.61
5	19. 50	S, V	IEU	5 1/2 FH	127. 00	9. 19	130.2	184. 15	88.90	254. 00	304.80	170. 66	34.89
5	25. 60	E, SS75	IEU	NC50	127. 00	12. 70	130.2	168. 28	88.90	228. 60	304.80	153. 99	40.73
5	25. 60	X,SS95	IEU	NC50	127. 00	12. 70	130.2	168. 28	76.20	228. 60	304.80	153. 99	41.80
5	25. 60	G, SS105	IEU	NC50	127. 00	12. 70	130.2	168. 28	69.85	228. 60	304.80	153. 99	42.11
5	25. 60	E, SS75	IEU	5 1/2 FH	127. 00	12. 70	130.2	177. 80	88.90	254. 00	304.80	170. 66	42.14
5	25. 60	X,SS95	IEU	5 1/2 FH	127. 00	12. 70	130.2	177. 80	88.90	254. 00	304. 80	170. 66	42.51
5	25. 60	G, SS105	IEU	5 1/2 FH	127. 00	12. 70	130.2	184. 15	88.90	254. 00	304. 80	170. 66	43.35
5	25. 60	S, V	IEU	5 1/2 FH	127. 00	12.70	130.2	184.15	82.55	254. 00	304.80	170. 66	43.75
5	TW 0. 750	S, V	IEU	5 1/2 FH	127. 00	19.05	130.2	184.15	82.55	254. 00	304.80	170. 66	57.29
5 1/2	21.90	E,SS75	IEU	5 1/2 FH	139.70	9.17	144.5	177.80	101.60	254. 00	304.80	170. 66	35.43
5 1/2	21.90	X, SS95	IEU	5 1/2 FH	139.70	9.17	144.5	177.80	95.25	254. 00	304.80	170.66	36.36
5 1/2	21.90	G, SS105	IEU	5 1/2 FH	139.70	9.17	144.48	184.15	88.90	254. 00	304.80	170.66	37.38
5 1/2	21.90	S, V	IEU	5 1/2 FH	139.70	9.17	144.48	190.50	76.20	254. 00	304.80	180.19	38.87
5 1/2	24.70	E,SS75	IEU	5 1/2 FH	139.70	10.54	144.48	177.80	101.60	254. 00	304.80	170. 66	39.54
5 1/2	24.70	X, G, SS95, SS105	IEU	5 1/2 FH	139.70	10.54	144.48	184.15	88.90	254. 00	304.80	170. 66	41.04
5 1/2	24.70	S, V	IEU	5 1/2 FH	139.70	10.54	144.48	190.50	76.20	254. 00	304.80	180.19	42.52
5 1/2	TW 0. 500	S, V	IEU	5 1/2 FH	139.70	12.70	144.48	184.15	88.90	254. 00	304. 80	170. 66	46.30
5 1/2	TW 0. 625	S,V	IEU	5 1/2 FH	139.70	15.88	144.48	184.15	79.38	254. 00	304. 80	170.66	54.57
5 1/2	TW 0. 750	S, V	IEU	5 1/2 FH	139.70	19.05	144.48	190.50	76.20	254. 00	304.80	180.19	62.86
5 7/8	23.40	E, SS75	IEU	5 1/2 FH	149.23	9.17	152.40	177.80	101.60	254.00	304.80	170.66	37.80

代号[a] Designations[a]					管体外径 Pipe Body OD	管子壁厚 Pipe Wall Thickness	钻杆焊颈 Pipe Wall Thickness	钻杆接头Tool Joint				旋转台肩式连接倒角直径 RSC Bevel Diameter	近似质量[c] Approx, Mass[c]
								外径 OD	外螺纹接头内径 Pin ID	外螺纹接头外径段长度 Pin OD Length	内螺纹接头外径段长度 Box OD Length		
代号1 Label 1	代号2 Label 2	钢级 Grade	加厚型式 Upset Type	旋转台肩式连接类型[d] RSC Type[d]	D_{dp} mm	t mm	D_{te}[b] mm	D mm	d_p mm	L_{pb} mm	L_b mm	D_f mm	w_{dp} kg/m
					/	−12.5%	max	±0.79	+0.41 −0.79	±6.35	±6.35	±0.41	计算值 calculated
1	2	3	4	5	6	7	8	9	10	11	12	13	14
内外加厚（IEU） Internal–external Upset (Continued)													
5 7/8	23.40	X, SS95	IEU	5 1/2 FH	149.23	9.17	152.40	184.15	88.90	254. 00	304.80	170. 66	39.35
5 7/8	23.40	G, SS105	IEU	5 1/2 FH	149.23	9.17	152.40	184.15	88.90	254. 00	304.80	170. 66	39.35
5 7/8	23.40	S, V	IEU	5 1/2 FH	149.23	9.17	152.40	184.15	76.20	254. 00	304.80	170. 66	40.00
5 7/8	26.30	E, SS75	IEU	5 1/2 FH	149.23	10.54	152.40	177.80	82.55	254. 00	304.80	170.66	42.86
5 7/8	26.30	X, G, SS95, SS105	IEU	5 1/2 FH	149.23	10.54	152.40	184.15	88.90	254. 00	304.80	170.66	43.31
5 7/8	26.30	S, V	IEU	5 1/2 FH	149.23	10.54	152.40	190.50	82.55	254. 00	304.80	180.19	44.48
5 7/8	TW 0.625	S, V	IEU	5 1/2 FH	149.23	15.88	152.40	190.50	76.20	254. 00	304.80	180.19	59.72
5 7/8	TW 0.750	S, V	IEU	5 1/2 FH	149.23	19.05	152.40	190.50	76.20	254. 00	304.80	180.19	67.77
5 7/8	TW 0.813	S, V	IEU	5 1/2 FH	149.23	20.65	152.40	190.50	76.20	254. 00	304.80	180.19	72.19
6 5/8	25.20	E, SS75	IEU	6 5/8 FH	168.28	8.38	176.23	203.20	127.00	254. 00	330.20	195.66	40.91
6 5/8	25.20	X, SS95	IEU	6 5/8 FH	168.28	8.38	176.23	203.20	127.00	254. 00	330.20	195.66	40.91
6 5/8	25.20	G, SS105	IEU	6 5/8 FH	168.28	8.38	176.23	209.55	120.65	254. 00	330.20	195.66	42.34
6 5/8	25.20	S, V	IEU	6 5/8 FH	168.28	8.38	176.23	215.90	107.95	254. 00	330.20	195.66	44.26
6 5/8	27.70	E, SS75	IEU	6 5/8 FH	168.28	9.19	176.23	203.20	127.00	254. 00	330.20	195.66	43.63
6 5/8	27.70	X, G, SS95, SS105	IEU	6 5/8 FH	168.28	9.19	176.23	209.55	120.65	254. 00	330.20	195.66	45.06
6 5/8	27.70	S, V	IEU	6 5/8 FH	168.28	9.19	176.23	215.90	107.95	254. 00	330.20	195.66	46.97
6 5/8	TW 0.522	S, V	IEU	6 5/8 FH	168.28	13.26	176.23	215.90	107.95	254. 00	330.20	195.66	57.34
6 5/8	TW 0.625	S, V	IEU	6 5/8 FH	168.28	15.88	176.23	215.90	107.95	254. 00	330.20	195.66	67.22
6 5/8	TW 0.750	S, V	IEU	6 5/8 FH	168.28	19.05	176.23	215.90	107.95	254. 00	330.20	195.66	77.96
6 5/8	TW 0.813	S, V	IEU	6 5/8 FH	168.28	20.65	176.23	215.90	107.95	254. 00	330.20	195.66	83.16

a.标注用于识别订购。 Designations are shown for identification in ordering.

b. Dte最大值以确保与吊卡匹配。 Dteis held to a maximum to ensure fit with elevator.

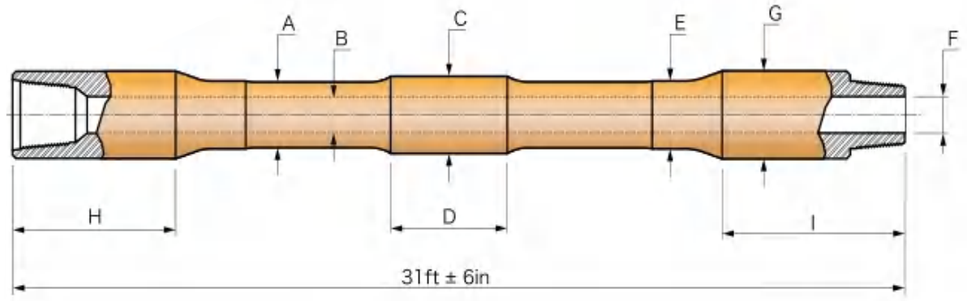
c.这些数值基于钻杆体长为8.96米，仅供参考。其他长度请参阅API 7G的计算方法。 These values have been based on a drill pipe body length of 8.96m and are provided for d. information only.For other lengths, see API7Gfor the method of calculation.

d.RSC类型表示适用RSC的尺寸和样式。 The RSC type indicates the size and style of the applicable RSC.

加重钻杆
Heavy Weight Drill Pipe

执行标准Standard：API Spec 7–1，API Spec 7–2
加工方式Processing：整体Integral、焊接Welding
规格Size：3 1/2"––6 5/8"
长度Length：9.2m––13.5m
类别Type：加重钻杆HWDP、螺旋加重钻杆Spiral–HWDP

规格 Size		管体Drill Pipe Bady						接头Tool Joint							最小通经 Min Drift Diameter
		内径 Inside Diameter		中部加厚外径 Center Upset Diameter		加厚长度 Length Upset	Max Elevator Diameter	接头类型 Connection Type	外径Outside diameter		内径Inside diameter		Pin Length	Box Length	
in	mm	in	mm	in	mm	in	in		in	mm	in	mm	in	in	
A		B		C		D	E		G		F		I	H	
3 1/2	88.9	2 1/4	57.2	4	101.6	25	3 7/8	NC38	5	127	2 1/4	57.2	27	21	2
		2 1/16	52.4								2 1/16	52.4			1 13/16
4	101.6	2 1/2	63.5	4 1/2	114.3	25	4 3/16	NC40	5 1/4	133.4	2 1/2	63.5	27	21	2 1/4
		2 9/16	65.1								2 9/16	65.1			2 5/16
4 1/2	114.3	2 11/16	68.3	5	127	25	4 11/16	NC46	6 1/4	158.8	2 11/16	68.3	27	21	2 7/16
		2 3/4	69.9								2 3/4	69.9			2 1/2
		2 13/16	71.4								2 13/16	71.4			2 9/16
5	127	3	76.2	5 1/2	139.7	25	5 1/8	NC50	6 5/8	168.3	3	76.2	27	21	2 3/4
5 1/2	139.7	3 1/4	82.6	6	152.4	25	5 11/16	5 1/2FH	7 1/4	184.2	3 1/4	82.6	27	21	3
		3 3/8	85.7								3 3/8	85.7			3 1/8
		3 7/8	98.4								3 7/8	98.4			3 5/8
		4	101.6								4	101.6			3 3/4
6 5/8	168.3	4	101.6	7 1/8	181	25	6 15/16	6 5/8FH	8	203.2	4	101.6	27	21	3 3/4
		4 1/2	114.3								4 1/2	114.3			4 1/4
		5	127								5	127			4 3/4



方钻杆
Kelly

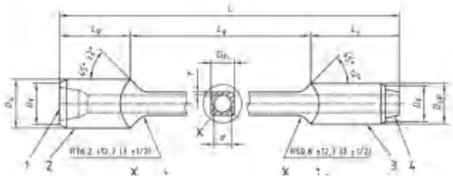
执行标准Standard：API Spec 7–1,API Spec 7–2
材质Grade：4145H
类型Type：四方钻杆Square Kelly
规格Size：2 1/2"––5 1/4"
类型Type：六方钻杆Hexagonal Kelly
规格Size：3"––6"
长度Length：12.2米、16.46米

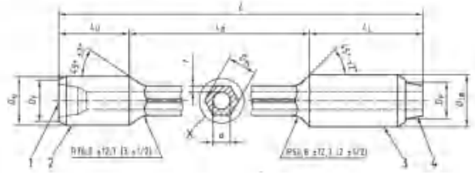
四方钻杆 Square Kelly

规格 Size		驱动部分长度 length Drive Section		总长度 Length Overall		上端连接Upper Connection		下端连接Lower Connection		内径ID
		标准 Standard	选用 Optional	标准 Standard	选用 Optional	扣型(左旋) Connection (LH)	外径 OD	扣型 Connection	外径OD	
in	mm	m	m	m	m		mm		mm	in
2 1/2	63.5	11.28		12.19		6 5/8 Reg	196.8	NC26	85.4	1 1/4
3	76.2	11.28		12.19		6 5/8 Reg	196.8	NC31	104.8	1 3/4
3 1/2	88.9	11.28		12.19		6 5/8 Reg	196.8	NC38	120.7	2 1/4
4 1/4	108.0	11.28	15,54	12.19	16.46	6 5/8 Reg	196.8	NC46 NC50	158.8 161.9	2 4/5
5 1/4	133.4	11.28	15.54	12.19	16.46	6 5/8 Reg	196.8	5 1/2FH NC56	177.8	3 1/4

六方钻杆 Hexagonal Kelly

规格 Size		驱动部分长度 length Drive Section		总长度 Length Overall		上端连接Upper Connection		下端连接Lower Connection		内径ID
		标准 Standard	选用 Optional	标准 Standard	选用 Optional	扣型(左旋) Connection (LH)	外径 OD	扣型 Connection	外径OD	
in	mm	m	m	m	m		mm		mm	in
3	76.2	11.28		12.19		6 5/8 Reg	196.8	NC26	85.4	1 3/4
3 1/2	88.9	11.28		12.19		6 5/8 Reg	196.8	NC31	104.8	2 1/4
4 1/4	108.0	11.28	15,54	12.19	16.46	6 5/8 Reg	196.8	NC38	120.7	2 4/5
5 1/4	133.4	11.28	15.54	12.19	16.46	6 5/8 Reg	196.8	NC46 NC50	158.8 161.9	3" 3 1/4
6	152.4	11.28	15.54	12.19	16.46	6 5/8 Reg	196.8	5 1/2FH NC56	177.8 177.8	3 1/4





钻铤
Drill Collar

执行标准Standard：API Spec 7–1、API Spec 7–2、 NS–1
类型Type：光钻铤Slick、螺旋钻铤Sprial、无磁钻铤Non–Magnetic
材质Grade： 4145H、4145HMOD、P530 、P550、P650
规格范围Size：3 1/8"––14"

钻铤代号 Drill collar number	外径Outside diameter		内径Bore diameter		长度Length		倒角直径 Bevel diameter	弯曲强度比 Bending strength ratio
	D		d		L		DF	BSR
	in	mm	in	mm	ft	m	mm	
NC23–31	3 1/8	79.4	1 1/4	31.8	30	9.14	76.2	2.57:1
NC 26–35	3 1/2	88.9	1 1/2	38.1	30	9.14	82.9	2.42:1
NC31–41	4 1/8	104.8	2	50.8	30or31	9.14or9.45	100.4	2.43:1
NC 35–47	4 3/4	120.7	2	50.8	30or31	9.14or9.45	114.7	2.58:1
NC 38–50	5	127	2 1/4	57.2	30or31	9.14or9.45	121	2.38:1
NC 44–60	6	152.4	2 1/4	57.2	30or31	9.14or9.45	144.5	2.49:1
NC 44–60	6	152.4	2 13/16	71.4	30or31	9.14or9.45	144.5	2.84:1
NC 44–62	6 1/4	158.8	2 1/4	57.2	30or31	9.14or9.45	149.2	2.91:1
NC46–62	6 1/4	158.8	2 13/16	71.4	30or31	9.14or9.45	150	2.63:1
NC46–65	6 1/2	165.1	2 1/4	57.2	30or31	9.14or9.45	154.8	2.76:1
NC46–65	6 1/2	165.1	2 13/16	71.4	30or31	9.14or9.45	154.8	3.05:1
NC46–67	6 3/4	171.4	2 1/4	57.2	30or31	9.14or9.45	159.5	3.18:1
NC 50–70	7	177.8	2 1/4	57.2	30or31	9.14or9.45	164.7	2.54:1
NC 50–70	7	177.8	2 13/16	71.4	30or31	9.14or9.45	164.7	2.73:1
NC50–72	7 1/4	184.2	2 13/16	71.4	30or31	9.14or9.45	169.5	3.12:1
NC56–77	7 3/4	196.8	2 13/16	71.4	30or31	9.14or9.45	185.3	2.70:1
NC56–80	8	203.2	2 13/16	71.4	30or31	9.14or9.45	190.1	3.02:1
6 5/8 REG	8 1/4	209.6	2 13/16	71.4	30or31	9.14or9.45	195.6	2.93:1
NC61–90	9	228.6	2 13/16	71.4	30or31	9.14or9.45	212.7	3.17:1
7 5/8 REG	9 1/2	241.3	3	76.2	30or31	9.14or9.45	223.8	2.81:1
NC70–97	9 3/4	247.6	3	76.2	30or31	9.14or9.45	232.6	2.57:1
NC70–100	10	254	3	76.2	30or31	9.14or9.45	237.3	2.81:1
8 5/8 REG	11	279.4	3	76.2	30or31	9.14or9.45	266.7	2.84:1

机械性能Mechanical Property

外径OD		屈服强度 Yield Strength σ 0.2 MPa	抗拉强度 Tensile Strength σ b MPa	延伸率 Elongation δ 4 %	硬度HB	冲击功Charpy V Ak J
mm	in					
79.4~171.4	3 1/8~6	≥758	≥965	≥13	≥285	≥54
177.8~279.4	7~11	≥689	≥930			

Spiral Drill Collar

Slick Drill Collar

Non-ma gnetic Drill Collar

Буровой долот

PDC Drill Bit

Product Brief

This type of drill bit adopts professional software for PDC cutter layout design and mechanical analysis. It uses high-end PDC cutters with high wear resistance and strong impact resistance, featuring a wide range of applicable formations, high drilling efficiency, long service life, and excellent comprehensive performance. The structure can be adjusted according to different lithologies and requirements.

Product Specification Parameters

常用规格 (Inches) Common specification		8-1/2"	9-1/2"	12-1/4"	17-1/2"
钻头参数 Bit parameters	刀翼数 Blade numbers	3-6	3-6	5-6	5-8
	主切削齿尺寸 Main cutterdimensions	15.88/19.05	15.88/19.05	15.88/19.05	15.88/19.05
	主切削齿数量 Main cutternumber	31-36	31-44	49-56	62-72
	保径长度 Gauge length	2.0"(50.8mm)	2.5"(63.5mm)	3.0"(76.2mm)	3.0"(76.2mm)
	喷嘴数 Holes	5-7SP	5-7SP	5-8SP	6-9SP
	有效长度 Effective length	13.2"(335.3mm)	14.3"(363.2mm)	14.5"(368.3mm)	20.3"(515.6mm)
	API接头 API connection	4-1/2 REG	6-5/82 REG	6-5/8 REG	7-5/8 REG
钻进参数 Drilling parameters	推荐钻压(kN) Drilling pressure	20~110	30~1310	50~160	80~210
	推荐转速(RPM) Rotary speed	60~300	60~260	60~260	60~220
	推荐排量(L/s) Pump capacity	20~35	20~45	40~60	50~80
	最大钻压(kN) Max drilling pressure	130	150	180	230

PDC core drill bit

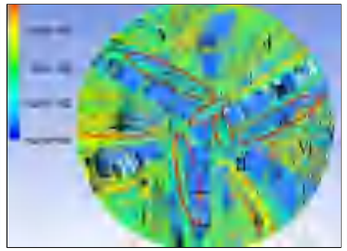
Product Specification Parameters

The PDC (Polycrystalline Diamond Compact) core bit is a high-efficiency tool specifically designed for coring operations in oil, gas, and geological exploration. Its primary function is to efficiently and intactly retrieve subsurface rock samples during drilling, providing crucial data for geological analysis and reservoir evaluation.By optimizing its cutting structure and hydraulic system, the PDC core bit achieves a balance between coring efficiency and core quality. This makes it particularly suitable for continuous coring in medium to hard formations.

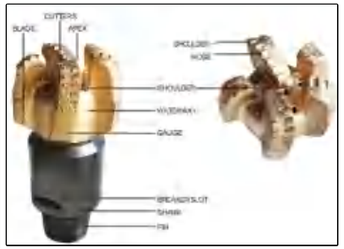
Product Specification Parameters

常用规格(Inches) Common specification	8-1/2*4"	8-3/8*4"	6*2-5/8"	5-7/8*2-5/8"
TFA流道面积(In^2) TFA runner area	0.6-1.5	0.5-1.5	0.2-1.2	0.2-1.2
保径长度(Inches) GaugeLength	1-1/2"	1-1/2"	1-1/8"	1-1/8"
取芯筒尺寸 (Inches) CoreBarrel	6-3/4*4"	6-3/4*4"	4-3/4*2-5/8"	4-3/4*2-5/8"
推荐钻压(kN) Drilling pressure	22~80	22~80	8.8~66	8.8~66
推荐转速(RPM) Rotaryspeed	60~300	60~300	60~300	60~300
推荐排量(L/s) Pumpcapaclty	11~20	11~20	6.3~16	6.3~16

布齿设计分析软件
Tooth design analysis software



井底流线
Bottom hole flow line



钻头结构
Bit structure

PDC roller cone composite drill bit

Product Specification Parameters

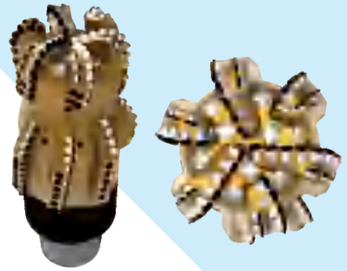
The PDC roller cone composite drill bit is an innovative drilling tool that combines the advantages of PDC bits and roller cone bits. It is mainly used for efficient rock breaking in complex formations and directional drilling.Its core design lies in overcoming the limitations of traditional single-type bits in complex conditions such as hard formations and gravel-bearing interlayers through structural integration and

PDC Eccentric Bit

Product Specification Parameters

The eccentric bit is a specialized tool designed for hole enlargement operations in oil and gas drilling engineering. Its core feature lies in its eccentric structure, which allows it to expand the wellbore diameter during drilling. This capability is crucial for addressing challenges such as formation collapse and difficulties in casing running, thereby enhancing cementing quality and overall drilling efficiency.

Common bit sizes range from 3 1/4" to 26".



PDC twin - diameter bit

Product Specification Parameters

The PDC twin - diameter bit is mainly characterized by having two drill body parts with different diameters. It enhances the overall performance of the bit through the PDC cutters distributed on each blade. Compared with traditional PDC bits, the concentric twin - diameter bit can reduce the stress of the rock around the well, thus having the advantage of increasing the mechanical drilling rate in hard - to - drill formations. Additionally, this bit can eliminate the "stick - slip" phenomenon of PDC bits, protect the main cutting structure and shoulder cutters of the bit, and extend the service life of the bit.

Non-API Series Products

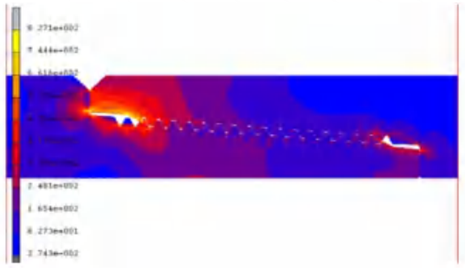
All non-API series products can be custom-designed, processed,and manufactured according to customer requirements, aiming to provide customers with products of thehighest cost-performance ratio.

high-torsion resistance Double Shoulder High-Torque Drill Pipe

01 Taihe DS Series Double-Shoulder Thread - THDS

It is interchangeable with API connection types. Compared with API threads, under the same inner and outer diameter conditions, it significantly improves torque resistance by 20%-40%; compared with API NC threads of the same torque resistance, the waterway can be larger, reducing hydraulic pressure drop; and compared with API NC threads of the same torque resistance, the outer diameter can be smaller, improving wear life.

High-Torque Double-Shoulder Threaded Connection



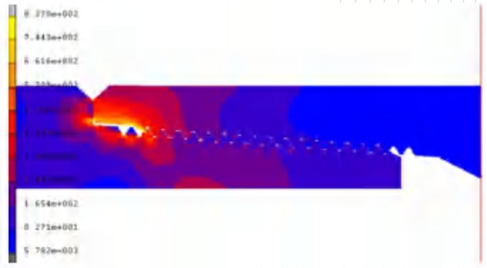
The primary and secondary shoulders share the load,significantly enhancing torsional strength.

The uniform load-bearing capacity of the threads improves fatigue life.

The secondary shoulder protects the thread root,reducing hydraulic stress.

This design allows for an increased inner diameter or a decreased outer diameter of the joint.

API Standard Single-Shoulder Threaded Connection



Only the first shoulder bears the torque.

Thread stress is concentrated on the main shoulder's bearing surface.

Without a second shoulder, the thread root suffers severe hydraulic erosion.

As the steel grade increases, the joint's inner diameter decreases, leading to increased fluid resistance.

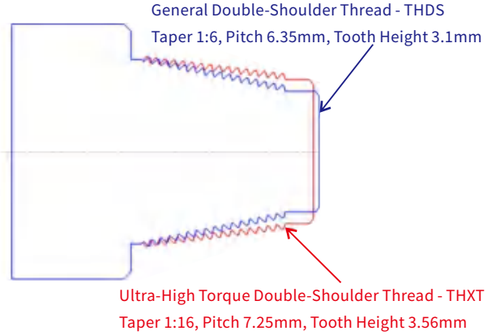
太合石油装备（陕西）有限公司
Taihe Petroleum Equipment（Shaanxi）Co., Ltd

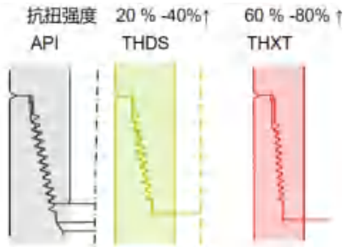
Product Specification Parameters

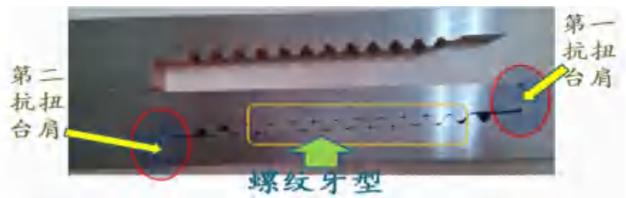
Joint specification parameters					Joint mechanical parameters					
Thread type	外径OD		内径ID		tensile strength		torsion strength		Make-up Torque	
	in	mm	in	mm	lb	kN	ft. lb	N.m	ft. lb	N.m
DS26	3 1/2	88.9	1 5/8	41.3	353400	1572.63	10500	14236	6300	8542
DS26	3 1/2	88.9	1 1/2	38. 1	390300	1736.84	11200	15185	6720	9111
DS31	4 1/8	104.8	2	50.8	495700	2205.87	17200	23320	10320	13992
DS31	4 1/8	104.8	1 7/8	47.6	529400	2355.83	19300	26167	11580	15700
DS38	5	127.0	2 9/16	65.1	649200	2888.94	25900	35116	15540	21069
DS38	5	127.0	2 7/16	61.9	708100	3151.05	29200	39590	17520	23754
DS38	5	127.0	2 3/8	60.3	722000	3212.90	30800	41759	18480	25056
DS38	5	127.0	2 1/4	57.2	790900	3519.51	33900	45962	20340	27577
DS40	5 1/4	133. 4	2 11/16	68. 3	776400	3454.98	32700	44335	19620	26601
DS40	5 1/4	133. 4	2 9/16	65.1	838300	3730. 44	36500	49487	21900	29692
DS40	5 1/4	133. 4	2 1/2	68.5	852600	3794.07	38300	51928	22980	31157
DS40	5 1/4	133. 4	2 7/16	61.9	897200	3992.54	39800	53962	23680	32377
DS46	6 1/4	158.8	3 1/4	82.6	901200	4010.34	43300	58707	25980	35224
DS46	6 1/4	158.8	3	76.2	1048400	4665.38	53400	72401	32040	43440
DS46	6	152.4	3	76.2	1030800	4587.06	53000	71858	31800	43115
DS46	6	152.4	2 3/4	69.9	1166300	5190.04	62100	84196	37260	50518
DS50	6 5/8	168. 3	3 1/2	88.9	1110200	4940.39	60500	82027	36300	49216
DS50	6 5/8	168. 3	3 1/4	82.6	1269200	5647.94	72200	97890	43320	58734
DS50	6 1/2	165. 1	3 1/2	88.9	1090700	4853.62	60300	81756	36180	49053
DS50	6 1/2	165. 1	3 1/8	79.4	1324800	5895.36	77500	105076	46500	63046
DS55	7 1/2	190.5	3 3/4	95.3	1619200	7205.44	89100	120803	53460	72482
DS55	7 1/8	181.0	3 3/4	95.3	1475100	6564.20	88200	119583	52920	71750
DS55	7	177.8	4	104.8	1292500	5751.63	65200	88399	39120	53040
DS55	7	177.8	4 1/8	101.6	1292500	5751.63	73000	98975	43800	59385
DS65	8 1/4	209.6	4 7/8	123.8	1596400	7103.98	106700	144666	64020	86799
DS65	8	203.2	4 7/8	123.8	1596400	7103.98	106000	143717	63600	86230

02 Taihe XT Series Double-Shoulder Thread - THXT

- 1.Not interchangeable with API connection types.
- 2.Compared with API threads, under the same inner and outer diameter conditions, the torque resistance is significantly improved by 60%-80%.
- 3.Capable of meeting the requirements of ultra-deep well operations and ultra-high torque working environments with lon horizontal sections.
- 4.Enables window milling and sidetracking operations in old wellbores.







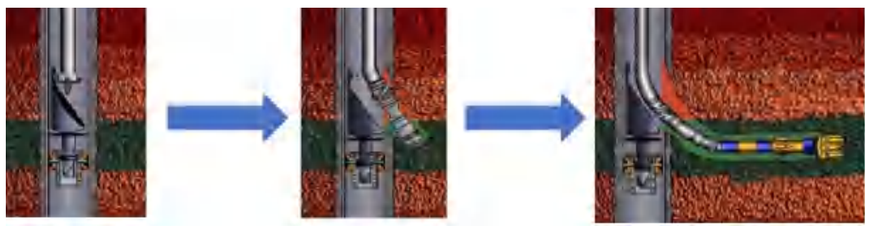
Attention:According to customers' different requirements for torquere sistance under operating environments,the company can design threads with different outer and inner diameters and select appropriate high-torque double-shoulder threaded connection types.

Joint specification parameters					Joint mechanical parameters					
Thread type	外径OD		内径ID		tensile strength		torsion strength		Make-up Torque	
	in	mm	in	mm	lb	kN	ft. lb	N.m	ft. lb	N.m
THXT39	5	127.0	2 7/16	61.9	823000	3662.35	42500	57622	25500	34573
THXT39	5	127.0	2 11/16	68.3	729700	3247.17	37000	50165	22200	30099
THXT39	4 7/8	123.8	2 9/16	65.1	729700	3247.17	37000	50165	22200	30099
THXT39	4 7/8	123.8	2 7/16	61.9	788600	3509.27	38500	52199	23100	31319
THXT54	6 3/4	171.5	4 1/4	108.0	960700	4275.12	70400	95450	42240	57270
THXT54	6 3/4	171.5	4	101.6	1155100	5140.20	86600	117414	51960	70448
THXT54	6 5/8	168.3	3 3/4	95.3	1260600	5609.67	98160	133087	58896	79852
THXT54	6 5/8	168.3	4	101.6	1089700	4849.17	83160	112750	49896	67650
THXT57	7 1/4	184.2	3 1/2	88.9	1747700	7777.27	135800	184120	81480	110472
THXT57	7 1/4	184.2	3 1/4	82.6	1906800	8485.26	141500	191848	84900	115109
THXT57	7	177.8	4	101.6	1403100	6243.80	106200	143988	63720	86393
THXT57	7	177.8	4 1/4	108.0	1208700	5378.72	94300	127854	56580	76712

水平定向钻杆
Horizontal directional drill pipe

Product Brief

While window milling sidetracking drilling technology offers numerous advantages for oilfield production enhancement, it presents several technical challenges in practical application. These primarily include: the small wellbore size leading to relatively high pump pressure,and the narrow downhole annular clearance. These factors collectively result in increased annular pressure loss and reduced drilling fluid displacement rates. When using conventional drill pipes such as 2-7/8" (73mm) and 3-1/2" (88.9mm), the sidetracking length is often limited by the tool joint's outer diameter, inner diameter, and thread profile. Our company has developed specialized horizontal directional drill pipes for window milling sidetracking, which effectively address the aforementioned challenges.



Φ79.4×9.35mm Performance Parameters are as follows::

Drill Pipe Specifications（mm）	Joint Outer Diameter（mm）	Joint Inner Diameter（mm）	Pipe Body Tensile Strength（kN）	Pipe Body Torsional Strength（kN.m）	Joint Tensile Strength（kN）	Joint Torsional Strength（kN.m）
Φ73×9.19	111.1	41.3	1717	28.2	2205	17.8
Φ88.9×9.35	127	54	2175	45.3	3151	29.9
Φ79.4×9.35	98	54	1914	34.7	1745	23.1

Attention:ComparedwiththeΦ88.9mmdrillpipe,thetooljointouterdiameterisreducedby22%;comparedwiththeΦ73mmdrillpipe,the tooljointinnerdiameterisincreasedby30%.

Advantages of Casing Window Milling Sidetracking Technology

01 The operation is carried out at the original well site, reducing land occupation.

02 Existing geological data from old wells can be utilized to reduce exploration costs.

03 The upper wellbore section of old wells can be utilized to reduce drilling costs.

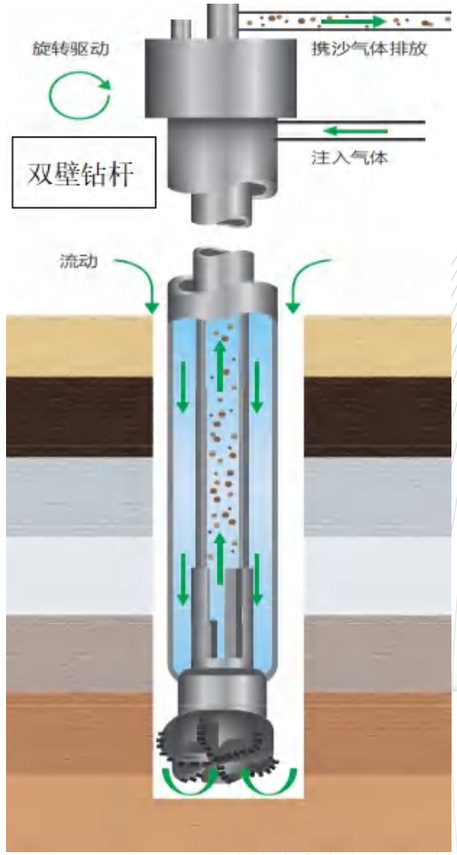
04 Enlarges the oil drainage area and enhances oil and gas production.

双壁钻杆
Double-walled drill pipe

Product Brief

A double-walled drill pipe consists of an outer pipe and an inner pipe. The annulus formed between the outer wall of the inner pipe and the inner wall of the outer pipe serves as a channel for transporting gas or gas-liquid mixtures. The central bore of the inner pipe acts as the path for cuttings. During operation, the outer pipes are connected via threads, while the inner pipes are joined through a stab-in (or insertion) method.

Physical diagram of
double-walled drill pipe



Schematic diagram of double-walled
drill pipe drilling process

Multi-process air drilling technology

- Gas-lift Reverse Circulation Drilling Technology
- Pneumatic DTH Hammer Drilling Technology
- Air Reverse Circulation Continuous Sampling Drilling Technology
- Air-Foam Drilling Technology

Compared with conventional drilling technology, it has the following advantages:

01 The wellbore wall is hardly eroded, protecting the reservoir and enabling drilling in eak-prone and collapse-prone formations without adverse effects.

02 It requires less drilling fluid, features a small displacement but high return velocity, and ensures a clean bottom hole

03 It exhibits unique advantages in directional drilling, horizontal drilling, and coring operations

04 It is suitable for large-diameter mine drilling and features fast drilling speed.

05 The flushing medium provides excellent cooling of the drill bit, resulting in high drilling speed and long bit life.

06 It enables simultaneous drilling and sampling, allowing real-time understanding of the drilled formation conditions. It features a high core recovery rate and strong representativeness, facilitating geological logging and accurate description of the formation.

07 When air is used as the circulating medium, water-saving drilling can be achieved, and the advantages are more prominent when constructing in arid and water-scarce areas

铝合金钻杆
Aluminum alloy drill pipe

Product example

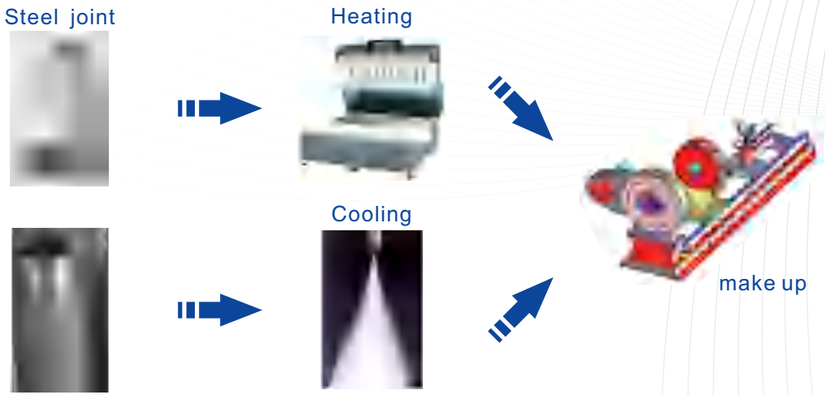
① Aluminum alloy drill pipe

The Kola SG-3 well, drilled in 1992 in the former Soviet Union, set a world record for vertical depth of 12,262 meters.The use of high-performance aluminum alloy drill pipes was a key technology enabling the completion of this well. The drilling rig used had a rated depth of 8,000 meters and a hoisting capacity of 4,000 kN.

② Aluminum alloy drill pipe

ExxonMobil successfully drilled the OP-11 well in the Odoptu oilfield offshore the Russian Far East in 2011.The total measured depth of the OP-11 well reached 40,502 feet (12,345 meters),achieving a record horizontal distance of 37,648 feet (11,475 meters). The use of aluminum alloy drill pipes enabled the completion of this record-breaking oil well in just 60 days.

Schematic diagram of process



Advantages of Aluminum Alloy Drill Pipe:

01 Effectively increases drilling depth and improves drilling efficiency.

02 Effectively prevents corrosion from hydrogen sulfide and carbon dioxide.

03 It possesses excellent low-temperature toughness and high fatigue life.

04 Suitable for directional wells, horizontal wells, and extended-reach wells with high curvature.

05 It has low requirements for wellsite conditions and offers convenient and fast transportation.

06 Aluminum alloy has non-magnetic properties, facilitating workover operations.

International Standards for Aluminum Alloy Drill Pipe

1.Material Requirements

1.1Material Group

After heat treatment, the materials of aluminum alloy drill pipes are divided into the following four groups, and the material performance of each group
shall comply with the requirements specified in Table 1:
Group I: Aluminum alloy drill pipe bodies with basic strength;
Group II: Aluminum alloy drill pipe bodies with high strength;
Group III: Aluminum alloy drill pipe bodies with high temperature resistance;
Group IV: Aluminum alloy drill pipe bodies with enhanced corrosion resistance.

Table 1 Material Requirements for Aluminum Alloy Drill Pipe Body

Characteristic	Unit	Material Group			
		Ⅰ	Ⅱ	Ⅲ	Ⅳ
Alloy Series	—	Al-Cu-Mg	Al-Zn-Mg	Al-Cu-Mg-Si-Fe	Al-Zn-Mg
Minimum Yield Strength (0.2% residual deformation method)	Mpa	325	480	340	350
Minimum Tensile Strength	Mpa	460	530	410	400
Minimum Elongation	%	12	7	8	9
Maximum Operating Temperature	℃	160	120	220	160
Maximum Corrosion Rate in 3.5% Sodium Chloride Solution	g/(m²・h)	—	—	—	0.08

Other aluminum alloy systems are allowed, provided that the purchaser agrees and the alloy meets the requirements of any one of the four material groups above.
Mechanical property tests shall be conducted in accordance with ISO 6892.
Exposure to the maximum operating temperature for 500 hours shall result in a yield strength reduction

a The test temperature for the mechanical properties of the alloys given in the table is 21℃

钛合金钻杆
Titanium alloy drill pipe

Compared with conventional drill pipes, it has the following advantages:

01 Strong Corrosion Resistance: When the ambient temperature is below 330 °C, titanium alloy drill pipes can completely resist corrosion from H_2S, $CO_2$and Cl-;

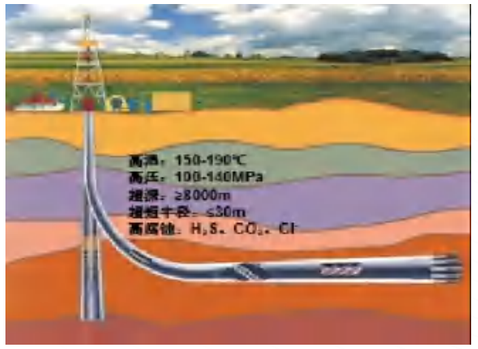
02 Low Material Density: Titanium alloy drill pipes have a density of 4.5 g/cm³. Compared with steel drill pipes of the same specification, their weight is reduced by 43%, resulting in lower hanging weight.

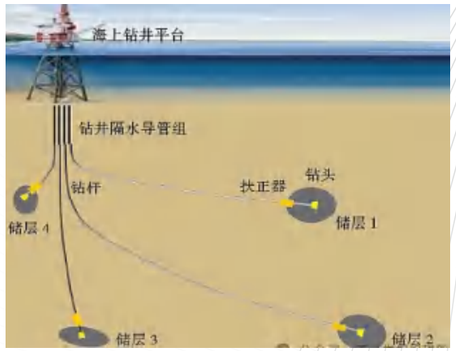
03 Long Fatigue Life: In air environment, the fatigue life is 10 times that of steel drill pipes; in corrosive environment, the fatigue life is 100 times that of steel drill pipes.

04 Excellent Flexibility: With a modulus of elasticity of 108 GPa, which is 46% lower than that of steel, it is suitable for ultra-short radius horizontal wells.

05 Non–magnetic: No impact on logging operations.

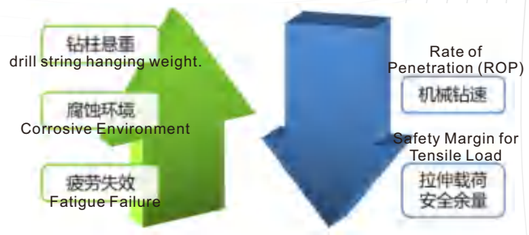
Schematic diagram of drilling process





Challenges of Deep Wells, Ultra-Deep Wells, and Extended-Reach Wells to Drill Pipes

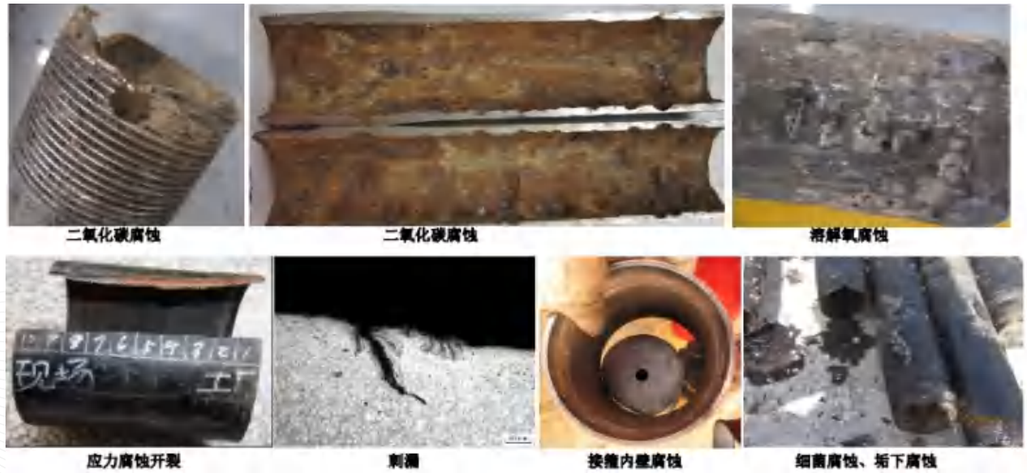
With the increase in drilling depth,conventional drilling tools can no longer meet the drilling requirements.



Case Analysis

Case Analysis of Steel Drill Pipe Failure

Case Analysis of Steel Tubing Failure



Titanium alloy products can meet the operational requirements in the above-mentioned highly corrosive environments.

耐磨带
Hard banding

Taihe100 TH100

1.Excellent anti-friction performance, with low casing wear rate.

2.Superior wear resistance, being 3 times that of drill pipe tool joints.

3.Good crack resistance, with 100% no visible cracks.

4.High bonding strength, without spalling or chipping.

5.Good weldability, allowing for repeated welding.

It is suitable for the intermediate upsetting parts of heavy weight drill pipes, drill pipe tool joints requiring repeated welding, occasions with high requirements for casing protection, as well as sites with simple on-site conditions and inadequate preheating and heat preservation conditions.

Taihe150 TH150

1.Exceptional wear resistance, effectively protecting the drill pipe and extending the wear life of the drill pipe tool joint by more than 7 times.

2.Superior friction-reducing performance, effectively protecting the casing.

3.High crack resistance, with no visible cracks in the overlay weld deposit.

4.High bonding strength, ensuring no spalling or chipping.

5.Excellent weldability, producing minimal spatter and aesthetically pleasing weld bead formation.

Suitable for overlay welding of wear-resistant bands on drill pipes, heavy weight drill pipe tool joints, and drill collars.

Taihe350 TH350

1.Superior wear resistance, effectively protecting the drill pipe and extending the wear life of the drill pipe tool joint by more than 10 times.

2.Excellent friction-reducing performance, effectively protecting the casing and reducing casing wear.

3.High crack resistance, with no visible cracks in the overlay weld deposit.

4.High bonding strength, without spalling or chipping.

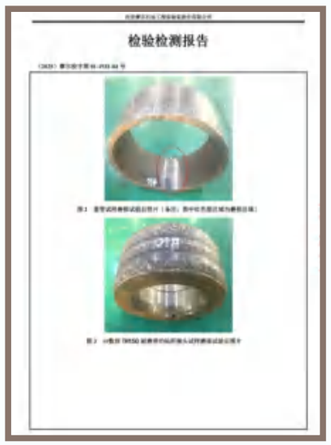
5.Good weldability, producing minimal spatter and achieving an aesthetically pleasing wear-resistant band formation.

It is suitable for overlay welding of high wear resistance on downhole tools such as drill pipe tool joints,heavy weight drill pipe tool joints, drill collars, and stabilizers in operating environments with severe wear conditions.

Wear-Resistant Band Performance Parameters

	TH100	TH150	TH350
Surface Hardness	52–55 HRC	56–58 HRC	58–62 HRC
SY/T6948–2013 Cross–Section Hardness	53–56 HRC	58–60 HRC	59–62 HRC
Wear Loss of Wear–Resistant Band (G65 Test)	0.5263	0.3082	0.2466
Multiple of Wear Life of Plain Drill Pipe Tool Joint	2–3	7–8	9–10

Test Report



Microstructure Diagram of Overlay Weld Layer

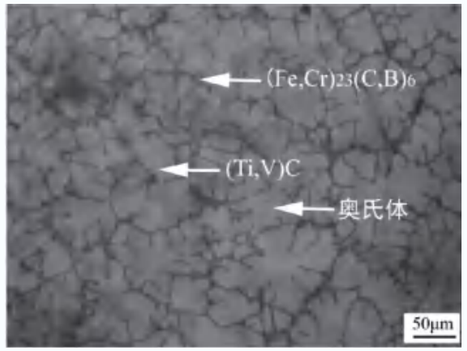


图1 TH100

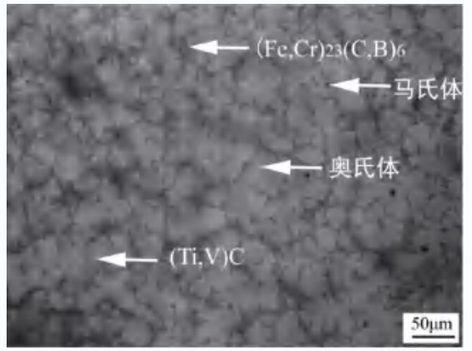


图2 TH150

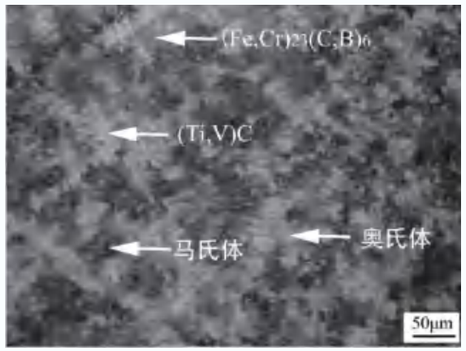


图3 TH350

Recommended Welding Process Parameters

Welding Current (A)	Welding Voltage (V)	Gas Type	Gas Flow Rate (L/min)	Welding Speed (min/r)	Preheating Temperature (℃)	Heat Preservation Time (h)
240–320	28–32	100%Ar или 100%CO_2	15–20	3–4	200–260	6–12

内涂层
Internal Coating

Product Introduction

Coating Model: THC180

Coating Type: Modified Epoxy-Phenolic (Base Fluid + Powder)
Coating Color: Green
Film Thickness: 150-350 (μm)
Service Temperature: ＜180°C
Pressure Resistance: Meets the yield limit of the pipe
pH Resistance Range: 3-13
Adhesion (Cross-Cut Method): Grade A
Adhesion (Pull-Off Method): ≥30MPa
Impact Resistance Test (Rebound): 9A
Pencil Hardness: ≥3H
Roughness: ≤0.5μm
Abrasion Resistance (Taber, 1000g, 1000rpm, CS-17) (mg): ≤30

Acid Resistance:
1.Soaked in 15% HCl + 3% HF at 66°C for 18h, no change in the coating.
2.Soaked in 12% HCl + 3% HF at 93°C for 8h, no change in the coating.
3.Soaked in 28% HCl at 66°C for 8h, no change in the coating.

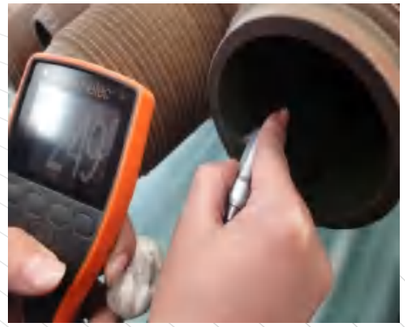
High-Pressure High-Temperature (HPHT) Autoclave Test:
(1)When the test conditions were a liquid phase of 5% NaCl solution with a pH of 12.5 (adjusted using NaOH), a temperature of 148°C, a pressure of 70MPa applied via N_2, and a duration of 24h, the coating exhibited no blistering or softening, and the adhesion remained unchanged.
(2)When the liquid phase composition was water, xylene, and kerosene (volume ratio 1:1:1), the gas phase composition was 100% CO_2, and the test was conducted at 107°C under 35MPa for 16h, the coating showed no blistering or softening, and the adhesion remained unchanged.

Coating Model:THC180S

Coating Type:Modified Epoxy-Phenolic (Base Coat + Top Coat)
Coating Color:Green
Product Introduction
Film Thickness:125-225 (μm)
Service Temperature:＜190°C
Pressure Resistance:Meets the yield strength of the pipe
pH Resistance Range:2-14
Adhesion (Cross-Cut Method):Grade A
Adhesion (Pull-Off Method):≥30MPa
Impact Resistance Test (Rebound): 9A
Pencil Hardness: ≥6H
Surface Roughness:≤2.0μm
Abrasion Resistance (Taber, 1000g, 1000rpm, CS-17) (mg):≤40

Acid Resistance:
1.Soaked in 15% HCl + 3% HF at 66°C for 18h, no change in the coating.
2.Soaked in 12% HCl + 3% HF at 93°C for 8h, no change in the coating.
3.Soaked in 28% HCl at 66°C for 8h, no change in the coating.

High-Pressure High-Temperature (HPHT) Autoclave Test:
(1)When tested in a liquid phase of 5% NaCl solution with a pH of 12.5 (adjusted using NaOH) at 148°C under 70MPa pressure applied via N_2 for 24h, the coating showed no blistering or softening, and its adhesion remained unchanged.
(2)When the liquid phase composition was water, xylene, and kerosene (volume ratio 1:1:1) and the gas phase was 100% CO_2, with the test conducted at 107°C under 35MPa for 16h, the coating exhibited no blistering or softening, and the adhesion did not degrade.
(3)The coating sample was subjected to high-temperature and high-pressure resistance testing in an environment where the gas phase was 12% H_2S (the remainder being N_2) at 110°C, 10MPa for 16h, and the liquid phase was a small amount of tap water (liquid level height: 10mm). No swelling or blistering of the coating was observed, the
(4)The coating sample underwent high-temperature and high-pressure resistance testing in an environment with a gas phase of 16% CO_2, a total pressure of 10MPa, a temperature of 100°C, and a duration of 18h, with tap water as the liquid phase (liquid level height: 10mm). No swelling or blistering was found on the coating, the color remained unchanged, and the adhesion did not degrade after corrosion evaluation.
(5)For the corrosion resistance test of the coating sample at the maximum temperature, the liquid phase was 5% NaCl solution, the gas phase was 10.0MPa (3.0MPa CO_2 + 7.0MPa N_2), the test duration was 24h, the test temperature was (130 ± 3)°C, and the pressure relief time did not exceed 5s. No swelling or blistering of the coating was detected, the color remained unchanged, and the adhesion did not degrade after corrosion evaluation



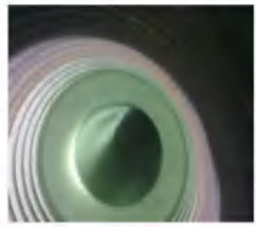
Coating Model: THC210

Coating Type: Modified Epoxy-Phenolic (Base Fluid + Powder) Product Usage Comparison
Coating Color: Gray
Film Thickness: 150-350 (μm)
Service Temperature: ＜210°C
Pressure Resistance: Meets the yield strength of the pipe
pH Resistance Range: 2-14
Adhesion (Cross-Cut Method): Grade A
Adhesion (Pull-Off Method): ≥30MPa
Impact Resistance Test (Rebound): 9A
Pencil Hardness: ≥6H
Roughness: ≤0.5μm
Abrasion Resistance (Taber, 1000g, 1000rpm, CS-17) (mg): ≤40

Acid Resistance:
1.After soaked in 15% HCl + 3% HF at 66°C for 18h, no change in the coating.
2.After soaked in 12% HCl + 3% HF at 93°C for 8h, no change in the coating.
3.After soaked in 28% HCl at 66°C for 8h, no change in the coating.

High-Pressure High-Temperature (HPHT) Autoclave Test:
(1)When tested in a liquid phase of 5% NaCl solution with a pH of 12.5 (adjusted using NaOH) at 148°C under 70MPa (2)When the liquid phase composition was water, xylene, and kerosene (volume ratio 1:1:1) and the gas phase was 100% CO_2, with the test conducted at 107°C under 35MPa for 16h, the coating exhibited no blistering or softening,and the adhesion did not degrade.
(3)The coating sample was subjected to high-temperature and high-pressure resistance testing in an environment where the gas phase was 12% H_2S (the remainder being N_2) at 110°C, 10MPa for 16h, and the liquid phase was a small amount of tap water (liquid level height: 10mm). No swelling or blistering of the coating was observed, the coating color remained unchanged, and the adhesion did not degrade after corrosion evaluation
(4)The coating sample underwent high-temperature and high-pressure resistance testing in an environment with a gas phase of 16% CO_2, a total pressure of 10MPa, a temperature of 100°C, and a duration of 18h, with tap water as the liquid phase (liquid level height: 10mm). No swelling or blistering was found on the coating, the color remained unchanged, and the adhesion did not degrade after corrosion evaluation.
(5) For the corrosion resistance test of the coating sample at the maximum temperature, the liquid phase was 5% NaCl solution, the gas phase was 10.0MPa (3.0MPa CO_2 + 7.0MPa N_2), the test duration was 24h, the test temperature was (130 ± 3)°C, and the pressure relief time did not exceed 5s. No swelling or blistering of the coating was detected, the color remained unchanged, and the adhesion did not degrade after corrosion evaluation.
(6)For the corrosion resistance test of the coating sample, when immersed in a liquid phase of 5% NaCl solution with a pH of 12.5 (adjusted using NaOH) at 210°C under 70MPa pressure applied via N_2 for 24h, the coating showed no blistering, and its adhesion remained unchanged.
(7)For the corrosion resistance test of the coating sample, when exposed to a liquid phase with a pH of 12.5 at 210°C under 100MPa pressure applied via N_2 for 24h, the coating showed no blistering, and its adhesion remained unchanged.

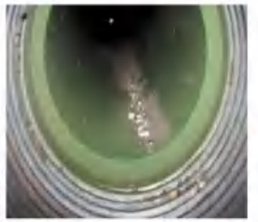
Product Usage Comparison



New Product

Before the coated drill pipe is put into use for the first time,the surface of the drill pipe coating is flat, uniform and smooth, with no defects such as bubbles, orange peel and pinholes.

Other Companies' Products After Use

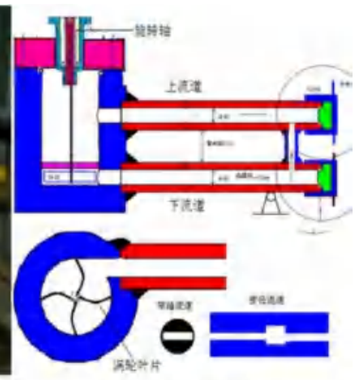


Our Company's Products After Use

After the drill pipe was run into the well for the first time and used for 976 hours, it was pulled out. The coating surface was flat and smooth,with no defects such as pinholes (leakage points),bubbles, or peeling.

Product Test

高温高压下循环流动腐蚀试验仪



试验仪原理及流程

After exposure to 210℃ under 100MPa pressure applied via N_2 for 24h, the coating showed no blistering, and its adhesion remained unchanged.