SIFFO PLASTIC TECHNOLOGY

STEEL MESH REINFORCED THERMOPLASTIC HDPE COMPOSITE PIPE SYSTEM FOR MINE AND WATER

HDPE钢丝网骨架聚乙烯复合管道系统

HDPE钢丝网骨架塑料（聚乙烯）复合管道系统是我国具有自主知识产权的最新一代钢塑复合管道系统，我公司SIFFO对于钢丝网骨架塑料（聚乙烯）复合管道系统的研究应用已积累十多年的经验，有效解决了传统管道使用寿命短、耐腐蚀性能差、产品重量高、柔韧性差、摩擦损失大的缺陷。

管路系统管材、管件及高中低压连接方式配套齐全，广泛应用于煤矿井下用供排水、注氮、瓦斯抽放、压风及非煤矿山、化工等领域。

Steel mesh reinforced (polyethylene) composite pipe (SRPT) system is the latest generation of steel-plastic composite pipe system with independent intellectual property rights in China. SIFFO has accumulated ten years of research and application on steel mesh reinforced (polyethylene) composite pipe (SRPT) and have effectively solved the defects of traditional pipelines such as short service life, poor corrosion resistance, high product weight, poor flexibility, and large friction loss.

The SRPT Pipe system pipes, pipe fittings and high, medium and low pressure connection methods are complete, and are widely used in coal mine water supply and drainage, nitrogen injection, gas drainage, compressed air and mining, chemical industry and other fields.

钢丝网骨架塑料（聚乙烯）复合管材

Steel mesh reinforced (polyethylene) composite pipe

Introduction

PE Raw materials: Adopt flame-retardant and antistatic special modified resin materials **(**carbon nanotube CNT modified materials, permanent colorable special materials), and improve Material mechanical properties.

Reinforced steel wire: Copper-plated steel wire that meets the requirements of GB**/**T 14450, with a strength 2050MPa, far exceeding the standard 1850MPa.

Adhesive resin: The patented product with independent intellectual property rights of the company is adopted, which has the advantages of strong adhesion to steel wire and strong process adaptability.

Standard

MT 181-1988	《Code for Safety Performance Inspection of Plastic Pipes Used in Underground Coal Mine》
MT 558.1-2005	《Plastic Pipes for Underground Coal Mine Part 1: Polyethylene Pipes》
AQ 1071-2009	《Safety Technical Requirements for Non-metallic Gas Conveying Pipes for Coal Mine》
CJ/T 189-2007	《Steel mesh skeleton plastic (polyethylene) composite pipes and fittings》
Q/0881 DHB017-2020	《Steel mesh skeleton plastic (polyethylene) composite pipe》

Specification

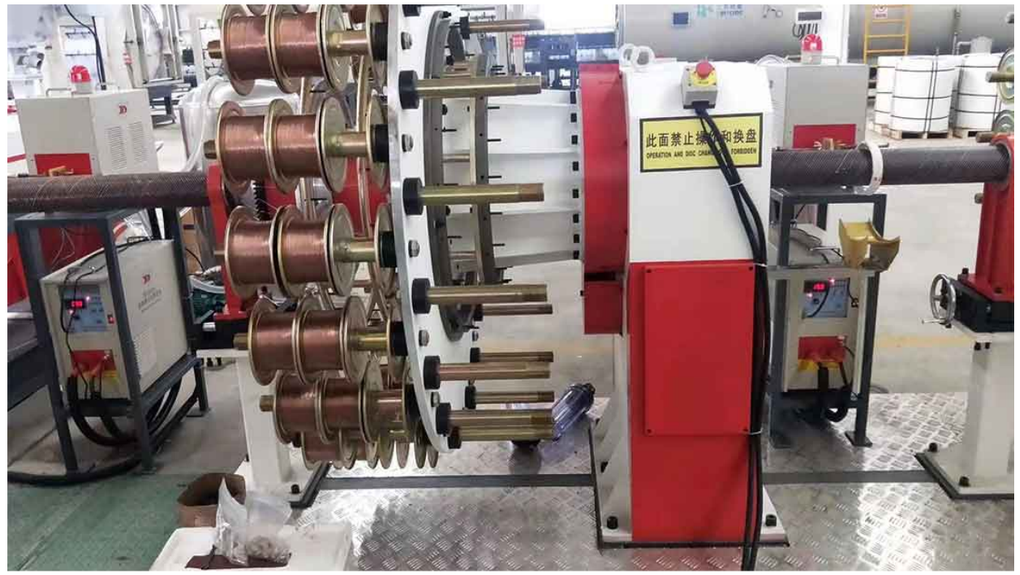
Steel mesh reinforced (polyethylene) composite pipe for mining

公称外径 dn/mm	公称压力/MPa			
	2.0	2.5	3.5	4.0
	最小壁厚mm			
63				6.0
75				9.5
90				10.0
110				12.0
125				12.0
160				13.0
200				15.0
225			15.5	16.0
250			16.0	16.5
315		17.0	17.0	17.5
355	14.5	17.5	17.5	18.0
400	15.0	18.5	18.5	19.0

Steel mesh reinforced (polyethylene) composite pipes for water supply

公称外径 dn/mm	公称压力 Pressure MPa														
	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
	最小壁厚 mm														
50				4.5	5.0	5.5	5.5	5.5	6.0	8.5	9.0	9.5	10.0	10.0	10.0
63				4.5	5.0	5.5	5.5	5.5	6.5	8.5	9.0	10.0	10.0	10.0	10.0
75				5.0	5.0	5.5	6.0	6.0	9.5	9.5	9.5	10.5	10.5	10.5	11.5
90				5.5	5.5	5.5	6.0	6.0	10.0	10.5	10.5	11.5	11.5	11.5	12.0
110		5.5	5.5	7.0	7.0	7.5	8.5	8.5	11.0	12.0	12.0	12.0	12.0	13.0	13.0
125		5.5	5.5	7.5	8.0	8.5	9.5	9.5	11.0	12.0	12.0	12.0	13.0	13.0	15.0
140		5.5	5.5	8.0	8.5	9.0	9.5	9.5	11.0	12.0	13.0	13.0	15.0	15.0	15.0
160		6.0	6.0	9.0	9.5	10.0	10.5	10.5	11.0	12.0	14.0	14.0	15.0	15.0	15.0
180		6.0	6.0	9.5	10.5	11.0	12.0	12.5	13.0	13.0	14.0	15.0	15.0	15.0	15.0
200		6.0	6.0	9.5	10.5	11.0	12.0	12.5	13.0	13.0	15.0	15.0	15.0	15.0	
225		8.0	8.0	10.0	10.5	11.0	12.0	13.0	13.0	13.0	15.0	15.0			
250	8.0	10.5	10.5	12.0	12.0	12.5	14.0	14.0	14.0	15.0					
280	9.5	11.0	11.0	13.0	13.0	15.0	15.0	17.0	17.0	18.0					
315	9.5	11.5	11.5	13.0	13.0	15.0	15.0	18.0	18.0	19.0					
355	10.0	12.0	12.0	14.0	14.0	17.0	17.0	19.0	19.0						
400	10.5	12.5	12.5	15.0	16.0	17.0	17.0	19.0							
450	11.5	13.5	13.5	16.0	18.0	18.0	19.0								
500	12.5	15.5	15.5	18.0	19.0	22.0									
560	17.0	20.0	20.0	22.0	22.0										
630	20.0	23.0	23.0	26.0	26.0										
710	23.0	26.0	28.0	30.0											
800	27.0	30.0	32.0	34.0											
900	29.0	33.5	35.0	38.0											
1000	34.5	37.0	40.0	45.0											
1200	38.0	40.0	43.0												

Note: The model and pressure can be customized according to customer needs.

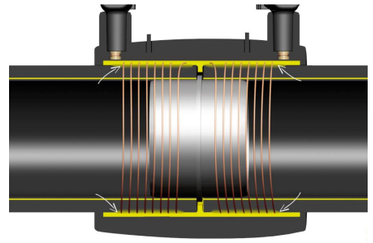


Wear Resistance

结论：铁精矿浆质量浓度65%，平均密度：4772kg/m3；内径50mm，流速1.8-2.0米/秒，单次物料磨蚀时间为60h，共运行600h。 0.1922毫米/年

Connection

Electrofusion Connection



公称外径 dn/mm	公称压力 MPa			
	0.8	1.0	1.25	1.6
50		√	√	√
63		√	√	√
75		√	√	√
90		√	√	√
110		√	√	√
125		√	√	√
140		√	√	√
160		√	√	√
200		√	√	√
225		√	√	√
250	√	√	√	√
315	√	√	√	√
355	√	√	√	√
400	√	√	√	√
450	√	√	√	√
500	√	√	√	√
560	√	√	√	√
630	√	√	√	√
Note: This connection method is suitable for steel mesh PE composite pipe connection.				

Socket PE Flange connection

公称外径 dn/mm	公称压力 MPa		
	1.0	1.25	1.6
50			√
63			√
75			√
90			√
110			√
125			√
140			√
160			√
200			√
225			√
250	√	√	√
315	√	√	√

Note: This connection method is suitable for steel mesh PE composite pipe connection.

Flange Connection

公称外径 dn/mm	公称压力 MPa				
	1.6	2.0	2.5	3.0	3.5
50	√	√	√	√	√
63	√	√	√	√	√
75	√	√	√	√	√
90	√	√	√	√	√
110	√	√	√	√	√
125	√	√	√	√	√
140	√	√	√	√	√
160	√	√	√	√	√
200	√	√	√		
225	√	√	√		
250	√	√			
315	√	√			

Note: This connection method is suitable for steel mesh PE composite pipe connection.

Clamp Connection

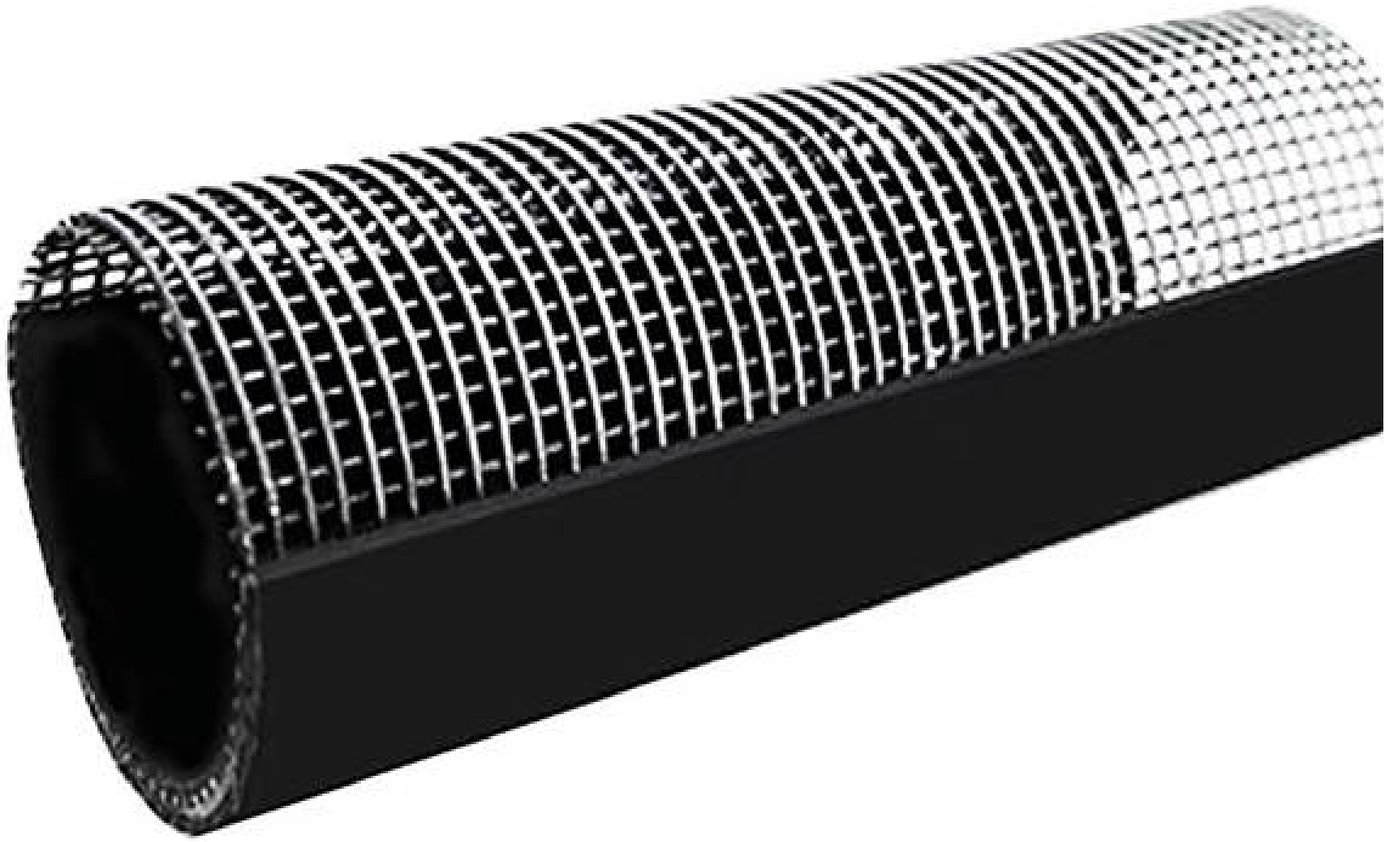
公称外径 dn/mm	公称压力 MPa			
	1.6	2.0	2.5	3.5
50	√	√	√	√
63	√	√	√	√
75	√	√	√	√
90	√	√	√	√
110	√	√	√	√
125	√	√	√	√
140	√	√	√	√
160	√	√	√	√
200	√	√	√	
225	√	√	√	
250	√	√	√	

Note: This connection method is suitable for steel mesh PE composite pipe connection.

Double Seal Flange Connection

公称外径 dn/mm	公称压力/MPa				
	1.6	2.0	2.5	3.5	4.0
50			√	√	√
63			√	√	√
75			√	√	√
90			√	√	√
110			√	√	√
125			√	√	√
140			√	√	√
160			√	√	√
200		√	√	√	√
225		√	√	√	√
250	√	√	√	√	√
315	√	√	√	▲	▲
355	▲	▲	▲	▲	▲
400	▲	▲	▲	▲	▲
450	▲	▲	▲		
500	▲	▲	▲		

Note: This connection method is suitable for steel mesh PE composite pipe connection.



STEEL WIRE SKELETON REINFORCED HDPE COMPOSITE PIPE

钢骨架聚乙烯增强复合管道系统

钢骨架塑料（聚乙烯）复合管道系统是我国具有自主知识产权的最新一代钢塑复合管道系统，我公司对于钢骨架塑料（聚乙烯）复合管道系统的研究应用已积累十多年的经验，有效解决了传统管道使用寿命短、耐腐蚀性能差、产品重量高、柔韧性差、摩擦损失大的缺陷。

钢骨架聚乙烯复合管具有耐腐蚀，耐高压，耐高温的特性，广泛应用于煤矿井下用供排水、注氮、瓦斯抽放、压风及煤矿山、化工、发电等领域。

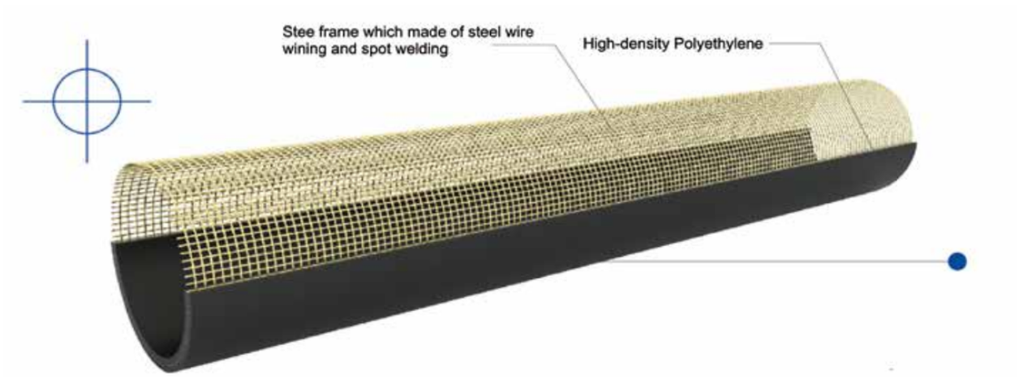
The steel wire skeleton polyethylene composite pipe (SRPE Pipe) is a kind of new pipe with high technical. This pipe consist of the steel wire skeleton reinforced layer and high-density polyethylene inner and outer layers,the reinforced layer made of the steel wire which winding and spot welding into a steel skeleton,then extrusion to a intergrated pipe by extruder and module.It has the characteristics of reasonable structure, stability, high pressure resistance level, good corrosion resistance, higher temperature resistance, small flow resistance, light weight, hygienic and non-toxic, reliable connection and long service life.

The pipe can be use for water supply and industrial application, oil, gas,mining, electric power etc.

钢骨架塑料（聚乙烯）复合管材

Steel Wire Skeleton reinforced HDPE composite pipe

Introduction



Inner and outer polyethylene layers: special pipe-grade high-density polyethylene is used as the main material. All polyethylene has passed the strict inspection of GB/T 18252, and the hygienic performance meets the requirements of international standards such as GB/T17219. The polyethylene layer has the characteristics of hygiene, strong conveying capacity, excellent resistance to slow crack growth, excellent impact resistance and high temperature resistance.

Steel skeleton layer: The steel wire is treated by special process, then wound and spot welded into a steel skeleton as the reinforcement layer.

Standard

Production Standard: CJ/T 123-2016,HG/T3690-2012,T/CECS 10209-2022 or specified EN/ISO standards

Diameter range: DN50-DN600

Specification

Nominal Diameter	Allowable Deviation of Mean Inner Diameter	Norminal Pressure (PN)					Length form Steel Wire Skeleton to Inner and Outer Surface
		PN10	PN16	PN20	PN25	PN40	
		Pipe Main Body Thickness (a) and Allowable Deviation (mm)					
50	±1	-	-	-	9.0 +1.4	10.6 +1.6	≥1.8
63		-	-	-	9.0 +1.4	10.6 +1.6	
80		-	-	-	9.0 +1.4	11.7 +1.8	
100		-	9.0 +1.4	9.0 +1.4	11.7 +1.8	11.7 +1.8	
125		-	10.0 +1.5	10.0 +1.5	11.8 +1.8	12.3 +1.8	
150		12.0 +1.8	12.0 +1.8	12.0 +1.8	12.0 +2.4	15.5 +2.6	
200		12.0 +1.8	12.0 +1.8	12.5 +1.9	12.5 +1.9	-	
250	±0.8	12.0 +1.8	12.5 +1.9	12.5 +1.9	13.0 +2.0	-	≥2.5
300		12.5 +1.9	12.5 +1.9	12.5 +2.2	-	-	
350		15.0 +2.4	15.0 +2.4	15.5 +2.5	-	-	
400	±0.5	15.0 +2.4	15.0 +2.4	15.5 +2.6	-	-	≥3.0
450		15.5 +2.6	16.0 +2.6	16.5 +2.6	-	-	
500		15.5 +2.6	16.0 +2.6	16.5 +2.6	-	-	
600		19.0 +3.0	20.0 +3.0	-	-	-	

钢骨架塑料（聚乙烯）复合管材
Steel Wire Skeleton reinforced HDPE composite pipe

Advantages

Adopt PE100 dedicated pipe grade material	Varity typs electric fusion fittings
Good oxidation resistance performance	Inner wall more smooth,low frictional resistance,un scale formation
Good resistance to stress cracking performance	Pipe body more flexibility,suitable for buried application
Stable Electric Fusion performance	Ageing resistant performance,long service-life
Light weight,easy installation	High resistant to corrosion performance
Good low temperature impact resistance performance	Rational construction,bear high pressure more than PN40
Good wear-resisting performance	Good high temperature resistance the working temperature is -20°C to 70°C

Nominal Pressure Correction Factor Parameters

Temperature(℃)	0<t≤20 ℃	20<t≤30 ℃	40<t≤50 ℃	50<t≤60 ℃	60<t≤70 ℃	70<t≤80 ℃
Nominal Pressure Correction Factor	1	0.95	0.86	0.81	0.7	0.6
Temperature-wise Nominal Pressure Correction Factor for Water						

Fittings

The reinforced steel plate skeleton is made by Q355 low-carbon steel plate, high-strength polyethylene layer is applied inside and outside of the steel plate skeleton layer.Each steel plate skeleton HDPE composite fittings have a electrofusion socket,which have strong rigidity performance, the maximum bearing pressure reach to 4.0Mpa.

Except each fittings has an electrofusion socket, we also design the single-socket and double-socket types fitting, which realizes the socket-spigot installation between pipe to fitting and pipe fittings

to pipe fittings. Compared with ordinary PE pipe fittings, using quantity of welding ports is reduced at least 50%, and the use of electrofusion straight coupling is reduced by 40%-60%. Compared with ordinary electric fusion PE fittings, it has stronger rigidity and higher bearing pressure by adopt the steel frame inside.

Production Standard: CJ/T 124-2016,GB/T 13661.3-2018,T/CECS 10209-2022 or specified EN/ISO standards