欧勒昊阳

中国PVC-O
400/450/500级
给排水管材首创者

湖北欧勒昊阳科技有限公司
HUBEI OLIVE SHINING TECHNOLOGY CO., LTD.

欧勒昊阳 PVC-O 500 管材

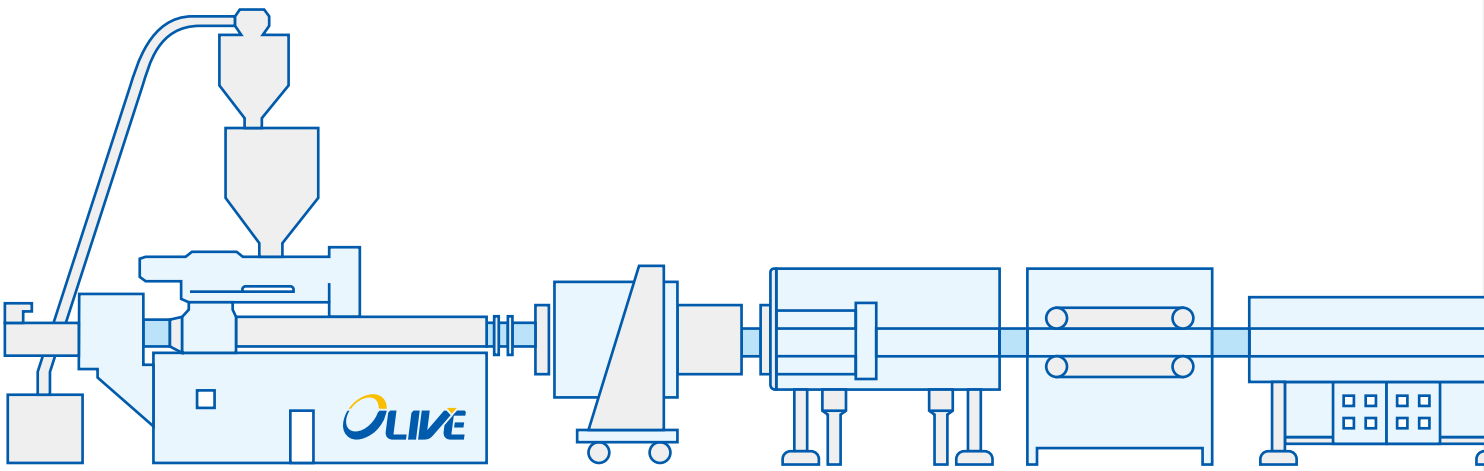
强度更高 输水更安全

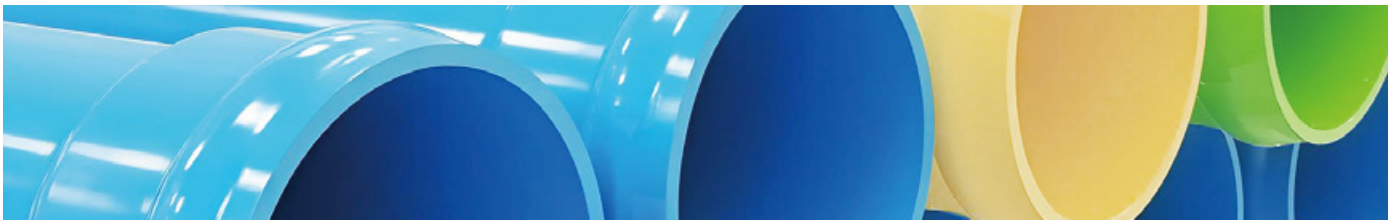
企业目标

致力于成为中国PVC-O管材行业的领头羊

管理理念

做好产品 做好服务 做好平台





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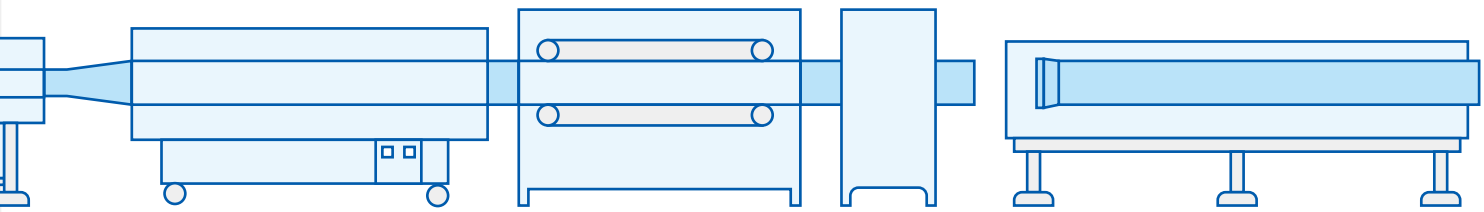


公司简介
COMPANY PROFILE

湖北欧勒昊阳科技有限公司由河北万利泰欧勒管业有限公司与崇山昊阳公司投资设立，致力于研发和生产销售高质量一流品质的双向拉伸PVC-O管道系统。公司位于湖北崇阳经济开发区，毗邻杭瑞高速、武深高速，106国道、107国道，交通便利。公司设立于2025年5月，占地60亩，投产建成现代化厂房1.2万余平米，并建设高质量检测实验室，研发中心。

欧勒®PVC-O管材是国内双向拉伸PVC-O管材的第一个商业化品牌，由河北万利泰欧勒管业有限公司于2013年首家成功生产推向市场。目前PVC-O管材已在西北、西南、华北和东北等市场被广泛应用于城镇供排水、水利工程、高标准农田灌溉等领域。

公司核心团队由具有超过50年塑料管道加工工艺经验传承的专业人员组成，在双向拉伸工艺研发、管材产品开发、生产、销售与服务等领域积累了丰富的经验。公司可为各类客户提供覆盖DN90~DN1200口径范围的PVC-O 400，450，500级别的管材核心产品，PVC-O全套生产工艺与装备，并可为终端用户提供安全高效的输水系统解决方案。

致力于成为中国PVC-O管道行业的领跑者

Dedicated to be the leader of the PVC-O pipes in China

公司秉承做好产品、做好服务、做好平台的管理理念，立足国内华中、华南市场，面向国际，致力于成为PVC-O管道行业的领跑者。

专注PVC-O管道的研发、生产和应用是我们的使命。聚焦国民饮水安全，提供一流品质的管道系统及优质的服务是我们义不容辞的责任。

60	4万+	2000万	国内首家
公司占地面积（亩）	建筑面积（m^2）	注册资金（元）	商业化PVC-O管材

Hubei Olive Shining Technology Co., Ltd. was jointly established by Hebei Wanlitai Olive Pipe Co., Ltd. and Mountain Shining (Hong Kong) Limited. The company is dedicated to the research, production, and sales of high-quality, premium-grade biaxially oriented PVC-O pipe systems. It is located in the Chongyang Economic Development Zone of Hubei Province, adjacent to G56 Hangzhou-Ruili Expressway and Wuhan-Shenzhen expressways, as well as National Highways 106 and 107, enjoying convenient transportation.

Founded in May 2025, the company covers an area of 40,000 square meters and has built a modern factory with over 12,000 square meters of floor space. It also houses a high-quality testing laboratory and a dedicated R&D center.

Olive PVC-O pipe is the first commercialized brand of biaxially oriented PVC-O pipes in China. It was first successfully produced and launched by Hebei Wanlitai Olive Pipe Co., Ltd. in 2013. Today, PVC-O pipes are widely used in water conservancy projects, urban water supply, and high-standard farmland irrigation across Northwest, Southwest, North, and Northeast China.

Our core team consists of professionals with more than 50 years of experience in plastic pipe processing, having deep expertise in the development of biaxial orientation technology, product innovation, manufacturing, sales, and services. We provide a full range of core PVC-O pipe products in material classes 400, 450 and 500 with diameter from dn90 to dn1200, complete production technologies and equipment, and safe, efficient water transmission system solutions for end users.

Upholding the management philosophy of delivering excellent products, services, and platforms, the company is rooted in the Central and Southern China markets, with a vision to expand globally and become a leading force in the PVC-O pipe industry.

Our mission is to focus on the research, production, and application of PVC-O pipe systems. Ensuring national drinking water safety and providing first-class pipeline systems and premium services are our unshakable responsibilities.

发展历程
DEVELOPMENT HISTORY

2014

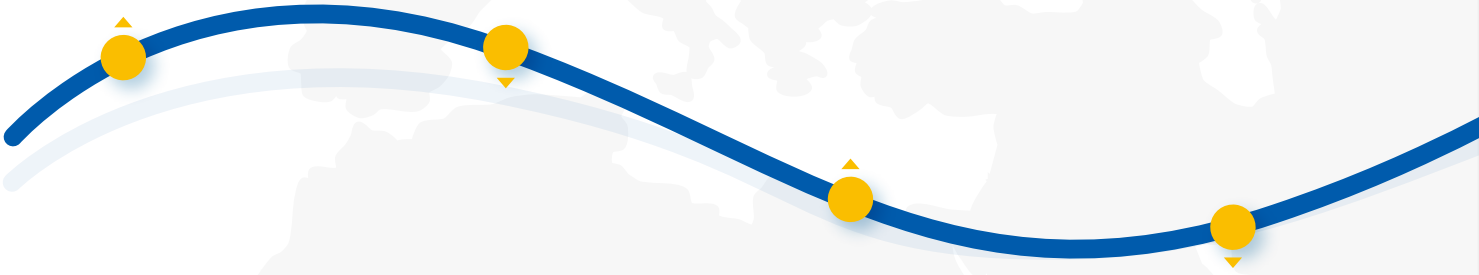
欧勒PVC-O管材成功通过国家化学建筑材料测试中心的400级分级实验。

Olive PVC-O Pipes were certified as PVC-O 400 by National Test Center of Polymer and Chemical Building Materials.

2018

河北万利泰欧勒管业有限公司被认定为高新技术企业。

Hebei Wanlitai Olive Pipe CO,.LTD was honored as a high-tech enterprise.



2016

欧勒PVC-O管材按CJ/T445-2014标准采用完全评定法检测，成功通过了450级材料分级实验。并经水利部专家评审，被评为高强度、环保节能的科技新产品。

According to CJ/T445- 2014 standards, Olive PVC-O Pipes were certified as PVC-O 450. Olive Blue Pipes are high-strength and environmental friendly products which evaluated by the expert group from the Ministry of Water Resources.

2020

欧勒PVC-O管材通过了国家化学建筑材料检测中心的PVC-O 500级管材材料分级实验。

Olive PVC-O Pipes were certified as PVC-O 500 by National Test Center of Polymer and Chemical Building Materials.

2021

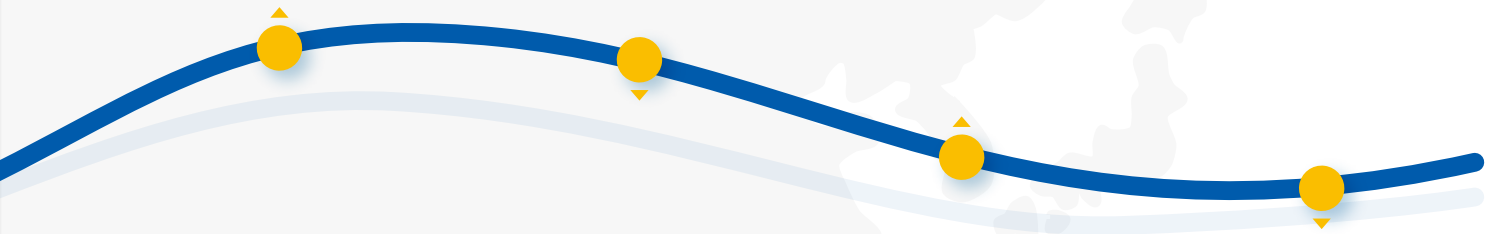
PVC-O 500级，DN800管材研制成功。“河北省高性能双轴取向聚氯乙烯管材技术创新中心”在公司挂牌。

Large diameter DN800 PVC-O pipes were successfully developed. "Hebei High Performance Biaxial Oriented Polyvinyl Chloride Pipe Technology Innovation Center" is listed in the company.

2023

PVC-O 500级，DN1000管材研制成功。

Large diameter DN1000 PVC-O pipes were successfully developed.



2022

欧勒500级PVC-O管材经河北省科学技术厅鉴定，科技成果水平为“国际先进”。

Olive PVC-O pipes class 500 have been identified by the Hebei Porvincial Department of Science and Technology, the level of achievements is" internationally advanced".

2025

湖北欧勒昊阳科技有限公司设立，致力于研发和生产销售高质量一流品质的双向拉伸PVC-O管道系统。

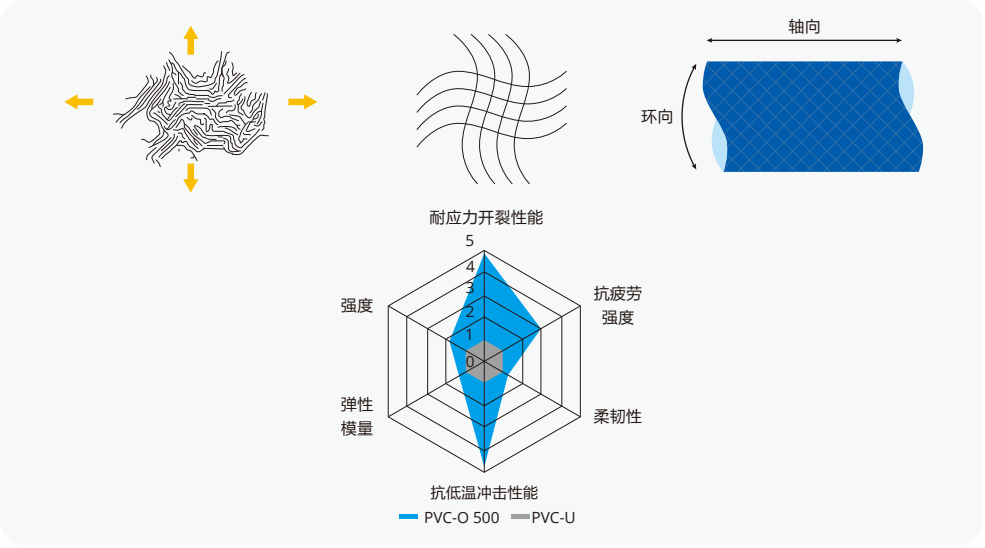
Hubei Olive Shining Technology Co., Ltd. was established, dedicated to the research, development, production and sales of high-quality, top-tier biaxially oriented PVC-O piping systems.

何为PVC-O管材
WHAT IS PVC-O PIPE?

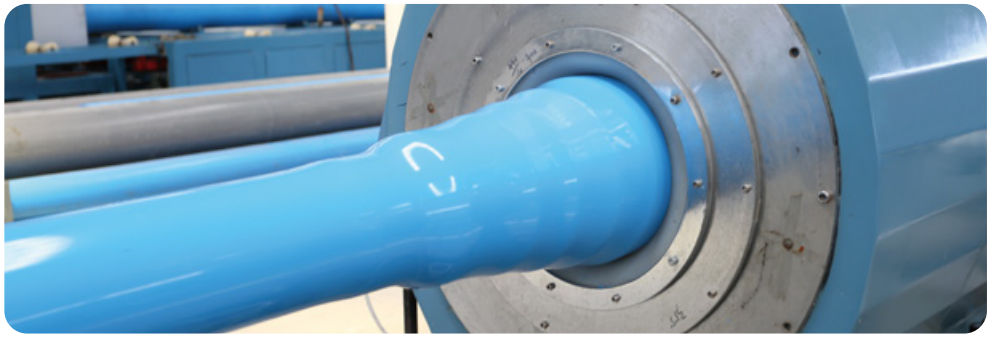
1 何为PVC-O管材
What is PVC-O pipe?

PVC-O管材(BIAXIAL ORIENTED PVC PIPE)也称双向拉伸PVC管材，是将纯净配方的PVC-U管材在高弹态下进行轴向和环向拉伸（双向拉伸）获得的一种新型承压管材。其优势在于通过对材料的双向拉伸，材料的分子链从无规线团变得取向有序，从而提高了材料的强度、韧性、耐应力开裂等诸多性能，是国内外最新发展的新一代耐压给排水管材。

PVC-O pipes also called Biaxial Oriented PVC Pipes, a new type of high-pressure pipes obtained by orienting the PVC-U pipes in circumferential and axial direction. The biaxial orientation greatly enhances PVC's physical and mechanical properties.PVC-O pipes are the most advanced pipes for the conveyance of high-pressure water currently available on the market.



分子双向拉伸示意图



2 PVC-O管材材料分级
PVC-O pipes material classification

标准对PVC-O管材的材料分级、总体设计系数及管材的公称压力进行了规范。和其他管材不同的是，PVC-O管材的MRS根据取向度的不同，被分成了315、355、400、450、500级5个等级。排水管材推荐选择400级及以下等级，给水管材推荐选择450、500级。


500级


450级


400级

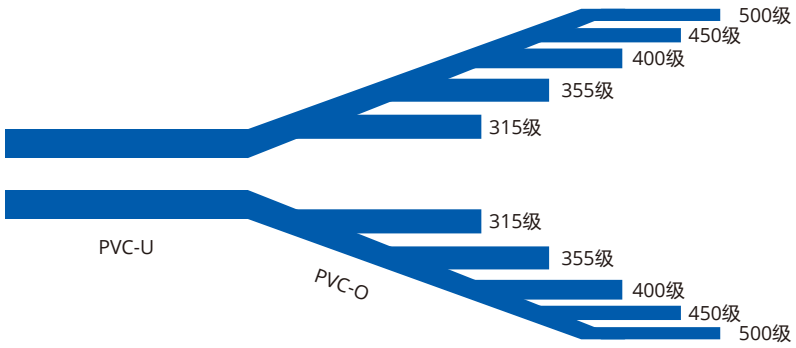

355级


315级

等级越高，材料强度越高，单位壁厚承压能力越强。同等口径及压力条件下，管道等级越高，输水能力越大，水头损失越小，综合成本越低。

The Standard regulates the material classification, overall design coefficient and nominal pressure of PVC-O pipes. The difference compared with other material pipes is that PVC-O pipes are classified to 315, 355, 400, 450, 500 totally 5 classes according to their MRS. The drainage pipe material is recommended to be rated 400 and below, and the water supply pipe material is recommended to be rated 450, 500.

The higher class, the higher material strength, the higher nominal pressure. At the same dn and PN, the higher pipe material class, the higher hydraulic capacity, the lower pipe head loss, the lower cost."



PVC-O材料等级示意图
PVC-O Material Classification Diagram

欧勒PVC-O管材按标准，采用完全评定方法，经检测MRS值达到500级标准规定要求(见检验报告 P36)。

Complete evaluation method is used according to the standard, and Olive PVC-O pipes were certified as PVC-O 500 (refer to test report at page 36).

CJ/T 445−2014

管材原材料等级代码 Pipe Material Classification		315		355		400		450			500		
MRS	MPa	31.5		35.5		40		45			50		
C		1.6	2	1.6	2	1.6	2	1.4	1.6	2	1.4	1.6	2
σ_s	MPa	20	16	22	18	25	20	32	28	23	36	32	25

不同等级PVC-O管材静液压试验要求参见下表

GB/T 41422−2022 ISO 16422−2:2024

序号 NO.	试验温度℃ Test Temperature	试验时间H Test Time	环向应力MPa Hoop Stress				
			PVC-O 315	PVC-O 355	PVC-O 400	PVC-O 450	PVC-O 500
1	20	10	41	46	52	60	65
2	20	1000	36	42	46	53	58
3	60	1000	20	22	25	28	31

3 不同材质管道的力学性能 Material mechanical properties

下表总结了PVC-O管材和传统塑料管道的力学性能。

The below table summarizes the technical characterostics of PVC-O pipes in comparison with other plastic pipes.

		PVC-O 500	PVC-U	HDPE 100
产品标准 Product Standard	单位Units	CJ/T445-2014 GB/T41422-2022 ISO 16422:2024	GB/T10002.1-2023	GB/T13663.2-2018
最小要求强度MRS Minimum Required Strength	MPa	50	25	10
总体使用系数C Overal Service Coefficient	MPa	1.4/1.6	2.0	1.25
设计应力σ_s Design Stress	MPa	36/32	12.5	8
短期弹性模量E Short Term Elasticity Modulus	MPa	≥4000	≥3000	≥1000
轴向拉伸强度 Axial Tensile Strength	MPa	≥48	≥48	19
环向拉伸强度 Circumferential Tensile Strength	MPa	≥85	≥48	19

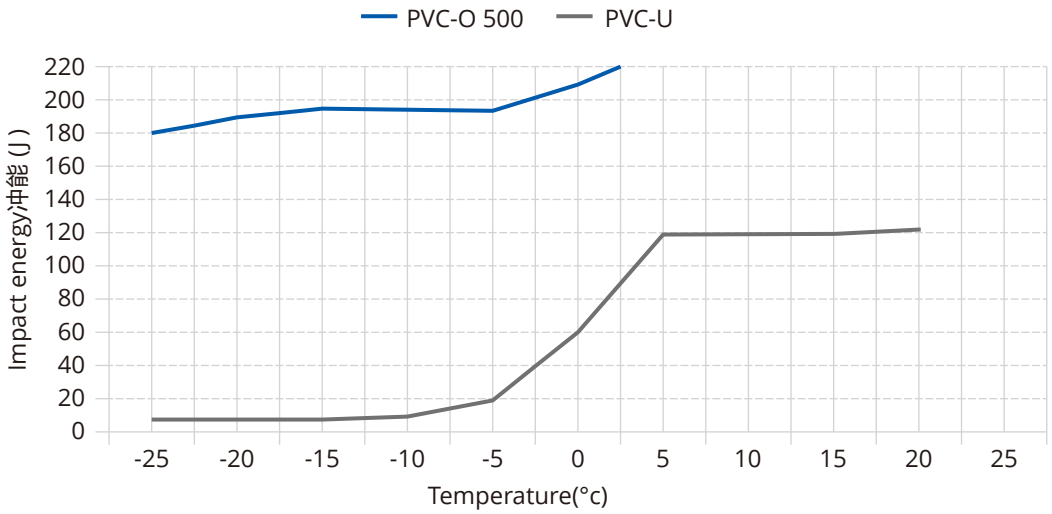
产品优势
THE ADVANTAGE

1 无与伦比的抗低温冲击性能
Unbeatable impact resistance

扫码观看
欧勒PVC-O管材
低温脆性测试

欧勒PVC-O管材有着无与伦比的抗低温冲击性能，在低温下表现更为突出。即使在-25℃，抗冲击能力也不会发生显著降低，从而扩大了欧勒PVC-O管材的使用地区，管线施工的窗口期也得到延长。

Olive PVC-O Pipes have unbeatable impact resistance, especially in the cold environment. Its impact resistance does not decrease significantly even in -25 °c, thereby expanding the service area and prolonging the installation period.



PVC-O与PVC-U管材落锤冲击试验条件对比表
Comparison of impact conditions for PVC-O and PVC-U pipes

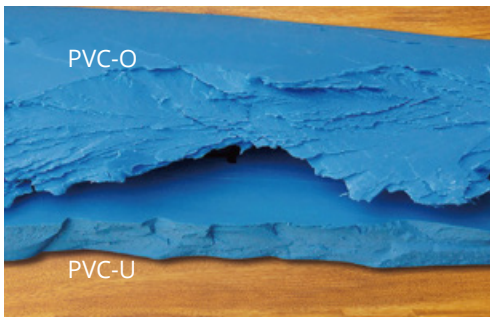
公称外径(dn),mm Nominal Diameter	PVC-O		PVC-U	
	落锤质量 (kg) Total Mass(kg)	高度 (m) Height(m)	落锤质量 (kg) Total Mass(kg)	高度 (m) Height(m)
90	5	2	0.8	1.2
110	6.3	2	1.0	1.6
125	6.3	2	1.25	2
140	8	2	1.6	1.8
160	8	2	1.6	2
180	10	2	2.0	1.8
200	10	2	2.0	2
225	12.5	2	2.5	1.8

备注：在0 ℃的条件下进行试验 Remarks: Pipes shall be tested at 0℃

2 耐应力开裂性能
Crack Propagation Resistance

PVC−O管材的层状结构，阻碍了裂纹在各层的通过，有效的阻止了裂纹的蔓延，从而排除了管壁快速开裂的风险。

Because of the layered structure, PVC-O pipes prevent the growth of cracks and scratches, and eliminate the risk of rapid crack propagation.



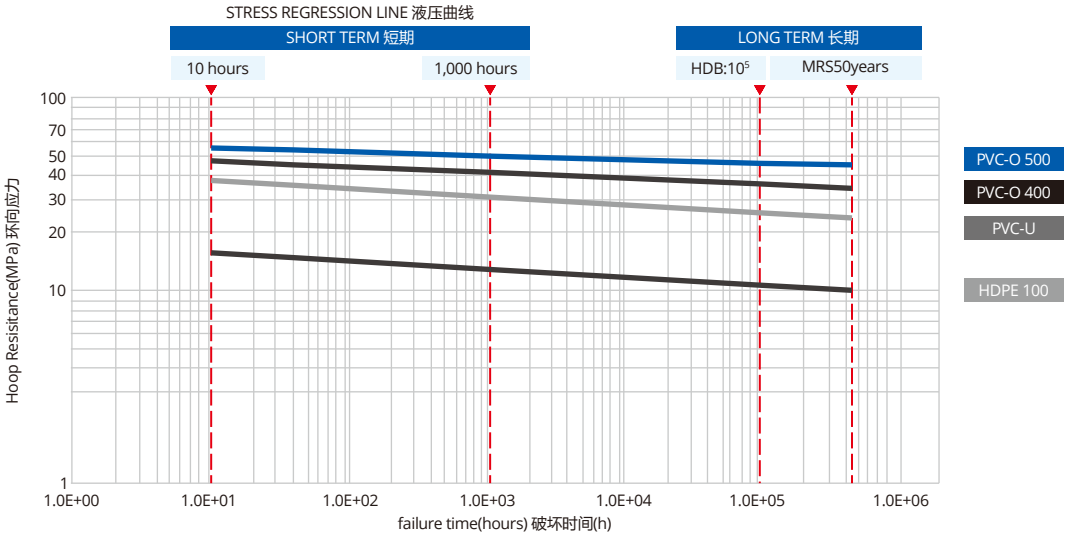
PVC-O与PVC-U破坏断面对比图
Fracture surface comparison between PVC-O pipe and PVC-U pipe

划痕PVC-O的开裂基本没有影响
Scratches have negligible effect on cracking of PVC-O pipe

3 抗疲劳特性
Fatigue resistance

当材料长期承受内压时，材料的机械性能会衰减，这种特性即蠕变行为，PVC-O材料的蠕变很小。这意味着与传统塑料相比，PVC-O管材有着非凡的抗疲劳特性，使得PVC-O的寿命长达百年。

Materials lose their mechanical properties when they are subjected to strain over a long period of time. This characteristics is known as creep. The PVC-O creep behavior is very low. Compared with the conventional plastics, PVC-O Pipes are exceptionally resistant to fatigue,ensuring the durability of the pipe working at nominal pressure for over a hundred years.



4 极佳的柔韧性能
Maximum flexibility

扫码观看
欧勒PVC-O管材
带压压管实验

由于欧勒PVC-O管材出色的弹性，其可以承受的变形可达到管材内径的100%。当管材受到挤压或者发生机械事故时，能够立即恢复原形。从而使得施工过程中因土壤沉降、锐利砂石或者机械挤压等而造成的破裂风险降至最低。

Thanks to their excellent elasticity, Olive PVC-O Pipes can bear big deformations of their internal diameter. When crushed,or in the event of a mechanical accident, Olive Blue Pipes immediately go back to their shapes, thus minimizing the risk of potential breakage by soli subsidence or sharp edges no rocks or machinery.

5 优良的抗水锤能力
Excellent response to water hammers

欧勒PVC-O管材管壁更薄，内径更大，所以和其他管道系统相比，欧勒PVC-O管材的波速更低(比球墨铸铁低四倍)。当输送水的体积和压力突然发生变化时，产生的水锤较低。因此在阀门和泵的打开、关闭时，降低了水锤对管道安全运行的不良影响，管网运行更加安全。

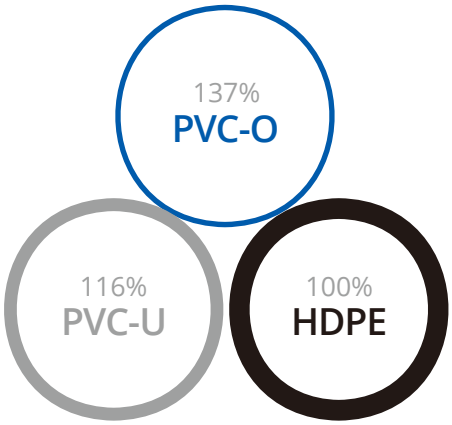
Olive PVC-O Pipes have thinner wall thickness,bigger internal diameter, so they have lower celerity than other piping systems (four times less than ductile iron pipes),which means less water hammers caused by sudden variations in water volume and pressure. This reduces the possibility of breakage during opening and closing in the water network and when pumping gets under way, protecting every component of the network.

6 大幅提高管道过水面积 Significantly increase the water-carrying cross-sectional area of the pipe

材料强度越高，单位壁厚承压能力越强，同等口径及压力条件下，PVC-0500管材过水面积最大，输水能力最强。

The higher material strength, the higher nominal pressure. At the same dn and PN, the PVC-O 500 pipe has the largest inner diameter. Higher hydraulic capacity is better.

公称外径d_n Nominal outside diameter	公称壁厚e_n(mm) Nominal wall thickness			过水面积(mm^2) Water-carrying cross-sectional area		
mm	HDPE	PVC-U	PVC-O 500	HDPE	PVC-U	PVC-O 500
110	10.0	6.6	2.4	6358.5	7355.6	8687.6
160	14.6	9.5	3.5	13430.3	15606.6	18376.1
200	18.2	11.9	4.4	21010.5	24371.5	28697.6
250	22.7	14.8	5.5	32861.0	38132.3	44840.0
315	28.6	18.7	6.9	52171.8	60493.5	71216.3
400	36.3	23.7	8.8	84144.7	97596.5	114790.4
500	45.4	29.7	11.0	131444.0	152390.8	179359.9
630	57.2		13.8	208687.0		284865.3
710	64.5		15.4	264985.4		362130.4
800	72.6		17.4	336579.0		459641.9
1000	90.2		21.7	527319.2		718340.6



以PVC-O 500 PN16给水管材为例
PVC-O 500 PN16 water supply pipe as an example

7 同等壁厚环刚度提高30%
Ring stiffness increased by 30%

材料弹性模量越高，环刚度越高。PVC-UH管材的弹性模量为3000MPa，PVC-O管材的弹性模量达4000MPa，同等外径和壁厚的情况下，PVC-O管材的环刚度较PVC-UH管材提高30%。也就意味着，相同环刚度PVC-O管材的壁厚更薄。

The elastic modulus of PVC-UH pipes is 3,000 MPa, and the elastic modulus of PVC-O pipes reaches 4,000 MPa. Under the condition of the same outer diameter and wall thickness, the ring stiffness of PVC-O pipes is about 30% higher than that of PVC-UH pipes.

公称壁厚 Nominal wall thickness(mm)								
环刚度等级 Ring stiffness	SN4		SN8		SN12.5		SN16	
公称外径d_n Nominal outside diameter	PVC-UH	PVC-O	PVC-UH	PVC-O	PVC-UH	PVC-O	PVC-UH	PVC-O
200	4.9	4.4	5.9	5.5	7.2	6.2	7.7	6.9
250	6.2	5.5	7.3	6.9	9.0	7.7	9.6	8.6
315	7.7	6.9	9.2	8.7	11.3	9.7	12.1	10.8
400	9.8	8.8	11.7	11.0	14.3	12.3	15.3	13.7
500	12.3	11.0	14.6	13.7	17.9	15.3	19.1	17.1
630	15.4	13.8	18.4	17.3	22.5	19.3	24.1	21.6
710	17.4	15.4	20.9	19.2	25.4	21.8	27.2	24.4
800	19.6	17.4	23.5	21.6	28.6	24.5	30.6	27.4
900	22.0	19.6	26.5	24.3	32.2	27.6	34.4	30.9
1000	24.5	21.7	29.5	27.0	35.8	30.6	38.2	34.3
1200	29.4	26.2	35.3	32.4	42.9	36.4	45.9	41.4

同等环刚度等级，PVC-O管材承内压能力是PVC-UH管材的两倍,壁厚更薄
At the same ring stiffness, PVC-O pipes have double the internal pressure resistance of PVC-UH pipes with thinner wall thickness.

8 抗腐蚀性能
Completely corrosion-resistant

欧勒PVC-O管材耐腐蚀，能够输送大多数腐蚀性流体和在腐蚀性环境中长期应用，不需要特殊的防腐保护或者涂层，节约了成本。

Olive PVC-O pipes are corrosion-resistant, capable of transporting most corrosive fluids and for long-term use in corrosive environments. They do not require special anti-corrosion protection or coatings, thereby reducing costs.

9 密封性能
Completely water-tight

欧勒PVC-O管材采用弹性密封胶圈连接，正确安装后不会移位，管线水密性好，滴水不漏。

The rubber ring is elastic, and it is integrated with the pipe, avoiding displacement while intalling.Olive PVC-O Pipes adopt elastomeric seals which 100% watertight and guarantee not to displace once the pipes have been installed.

10 安装成本低，操作简单
Low installation cost and simple operation

欧勒PVC-O管材的重量是传统塑料管材的一半，是铸铁管的1/6~1/12，易于搬运、安装。大多数情况下，搬运、安装不需要机械车辆。和其它材料管道相比，安装速度大大提高，安装成本大大降低。

The weight of Olive PVC-O Pipes is half of the conventional plastic pipes, 1/6~1/12 of the ductile iron. It is easy to transport and install. In most cases, no mechanical vehicles are required for transportation and installation. Compared to other material pipes, installation speed is significantly improved, and installation costs are greatly reduced.

11 低碳环保
Low carbon and environmental protection

欧勒PVC-O管材双向拉伸工艺，对原材料的纯净度及配方均有着苛刻的要求，从根本上杜绝了不合格原材料的使用。同时，欧勒PVC-O管材的耐腐蚀性能，保证了所输送的水质保持不变，不会被二次污染。

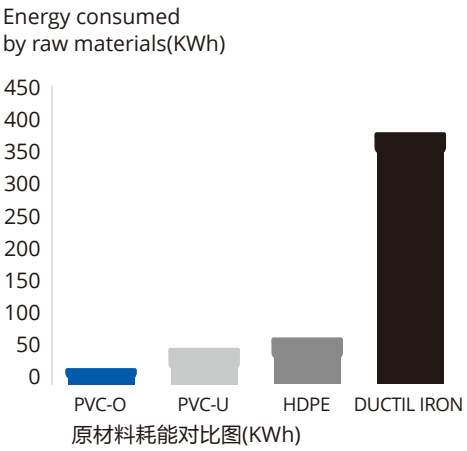
欧勒PVC-O管材经中国疾病预防控制中心和环境与健康相关产品安全所和河北省卫生检测机构权威检测，其各项卫生性能指标均符合《生活饮用水输配水设备及防护材料的安全性评价标准》(GB/T17219)的要求。

欧勒PVC-O管材的优点还在于节省原材料，耗能低，减少了二氧化碳的排放，且可回收利用。

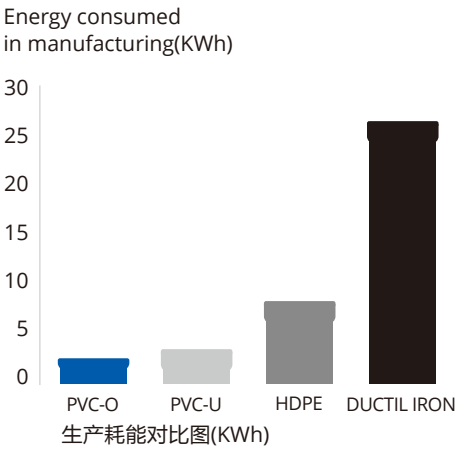
The biaxial orientation process of Olive PVC-O pipes imposes stringent requirements on raw material purity and formulation, fundamentally eliminating the use of substandard materials. Additionally, the corrosion resistance of Olive PVC-O pipes ensures that the water quality remains unchanged during transportation, preventing secondary contamination.

Olive PVC-O pipes have undergone authoritative testing by the Chinese Center for Disease Control and Prevention, the Institute for Safety of Environment and Health-Related Products, and Hebei Provincial Health Inspection Agencies. All sanitary performance indicators comply with the Safety Evaluation Standards for Water Supply and Distribution Equipment and Protective Materials (GB/T 17219) for drinking water.

The advantages of Olive PVC-O pipes also include material savings, low energy consumption, reduced CO_2 emissions, and recyclability.



原材料耗能对比图(KWh)



生产耗能对比图(KWh)

应用范围
APPLICATION SCOPE

1 执行标准 Standards

欧勒PVC-O管材可根据以下标准生产：

《压力输水用取向硬聚氯乙烯(PVC-O)管材和连接件》GB/T41422-2022;《给水用抗冲抗压双轴取向硬聚氯乙烯(PVC-O)管材和连接件》CJ/T445-2014;《压力输水用取向硬聚氯乙烯(PVC-O)管材和连接件》ISO 16422:2024;《埋地给水、排水、灌溉用取向聚氯乙烯(PVC-O)管材》EN17176-2;《埋地排水及排污用取向聚氯乙烯(PVC-O)管材》Q/WLT 03-2022。

Olive PVC-O Pipes shall be manufactured in accordance with the following standard: GB/T41422-2022; CJ/T 445-2014; ISO 16422:2024; EN17176-2; Q/WLT03-2022。

2 给排水配件 Water supply fittings

3 欧勒PVC-O排水管规格表
Olive PVC-O drain pipe specifications

公称外径d_n和公称壁厚e_n

Nominal outside diameter (dn) and nominal wall thickness (en)

单位/Unit: mm

环刚度等级 Ring Stiffness	SN4(PN8)	SN6(PN10)	SN8(PN10)	SN12.5(PN12.5)	SN16(PN16)
dn	en				
200	4.4	4.9	5.5	6.2	6.9
250	5.5	6.2	6.9	7.7	8.6
315	6.9	7.7	8.7	9.7	10.8
400	8.8	9.8	11.0	12.3	13.7
500	11.0	12.3	13.7	15.3	17.1
630	13.8	15.4	17.3	19.3	21.6
710	15.4	17.5	19.2	21.8	24.4
800	17.4	19.8	21.6	24.5	27.4
900	19.6	22.2	24.3	27.6	30.9
1000	21.7	24.7	27.0	30.6	34.3
1200	26.2	29.3	32.4	36.4	41.4

注：其他规格尺寸可由供需双方商定。

Other specifications and dimensions can be mutually agreed upon by the supplier and the buyer.

4 欧勒PVC-O 500给水管规格表
Dimensions of Olive PVC-O 500 water supply

GB/T 41442-2022

设计系数 Design Factor	C=1.6					C=1.4			
SDR	65.0	51.0	41.0	33.0	26.0	57.0	45.8	37.0	29.0
压力等级 Nominal Pressure	1.0MPa	1.25MPa	1.6MPa	2.0MPa	2.5MPa	1.25MPa	1.6MPa	2.0MPa	2.5MPa
dn(mm)	en(mm)					en(mm)			
90	2.0	2.0	2.2	2.8	3.5	2.0	2.0	2.5	3.1
110	2.0	2.2	2.7	3.4	4.2	2.0	2.4	3.1	3.8
125	2.0	2.5	3.1	3.9	4.8	2.2	2.8	3.5	4.3
140	2.2	2.8	3.5	4.3	5.4	2.5	3.1	3.9	4.8
160	2.5	3.2	4.0	4.9	6.2	2.8	3.5	4.4	5.5
180	2.8	3.6	4.4	5.5	6.9	3.2	4.0	5.0	6.2
200	3.2	3.9	4.9	6.2	7.7	3.5	4.4	5.5	6.9
225	3.5	4.4	5.5	6.9	8.6	4.0	5.0	6.2	7.7
250	3.9	4.9	6.2	7.7	9.6	4.4	5.5	6.9	8.6
280	4.4	5.5	6.9	8.6	10.7	4.9	6.2	7.7	9.6
315	4.9	6.2	7.7	9.7	12.1	5.5	6.9	8.7	10.8
355	5.6	7.0	8.7	10.9	13.6	6.2	7.8	9.8	12.2
400	6.3	7.9	9.8	12.3	15.3	7.0	8.8	11.0	13.7
450	7.0	8.8	11.0	13.8	17.2	7.9	9.9	12.4	15.4
500	7.8	9.8	12.3	15.3	19.1	8.8	11.0	13.7	17.1
560	8.8	11.0	13.7	17.2	21.4	9.8	12.3	15.4	19.2
630	9.9	12.3	15.4	19.3	24.1	11.0	13.8	17.3	21.6
710	11.2	14.1	17.5	21.8	27.6	12.4	15.4	19.2	24.4
800	12.6	15.9	19.8	24.5	31.1	14.0	17.4	21.6	27.4
900	14.1	17.9	22.2	27.6	35.0	15.7	19.6	24.3	30.9
1000	15.7	19.9	24.7	30.6	38.9	17.5	21.7	27.0	34.3
1200	18.4	23.5	29.3	36.4	46.2	21.1	26.2	32.4	41.4

5 应用领域 Applications

PVC-O给水管道应用于：
1、城镇供水；
2、农田灌溉；
3、水利工程；
4、园林绿化；
5、农村人饮；
6、消防管网；
7、工矿企业；
8、化工防腐；
9、污水处理；
10、中水回用；
11、电力通讯等领域。

PVC-O water supply pipes are used in:
1. Potable water transportation;
2. Farmland irrigation;
3. Water conservancy project;
4. Landscaping;
5. Drinking water in countryside;
6. Fire water system;
7. Factories and mines;
8. Chemical anticorrosion;
9. Wastewater treatment;
10. Reclaimed water;
11. Power communication and related fields.

PVC-O排水管道应用于：
1、市政工程：可用于排污、排水、中水、泄洪管；
2、建筑工程：可用于建筑排污管、雨水管、地下排水管、通风管；
3、化工、医药、环保：可广泛用于化工、医药、环保等行业的排污水管；
4、农业、园林：用于农田、园林、茶园以及林带排灌；
5、道路工程：可用于铁路、高速公路的渗、排水管；
6、矿场：可用于矿井通风、排水管。

PVC-O drainage pipes are used in:
1. Municipal engineering: used for sewage discharge, drainage, reclaimed water, and flood discharge;
2. Construction engineering: used as building sewage pipes, rainwater pipes, underground drainage pipes, and ventilation pipes;
3. Chemical, pharmaceutical, and environmental protection: sewage pipes that can be widely used in industries such as chemical, pharmaceutical, and environmental protection;
4. Agriculture and landscaping: used for farmlands, gardens, tea gardens, and forest drainage and irrigation;
5. Road engineering: used as infiltration and drainage pipes of railways and highways;
6. Mine: used as ventilation and drainage pipes in mines.



设计与计算
DESIGN AND CALCULATION

1 主要依据
Design standards

《室外给水设计标准》
GB 50013-2018

《室外排水设计标准》
GB 50014-2021

《给水排水管道工程施工及验收规范》
GB 50268-2008

《埋地塑料给水管道工程技术规程》
CJ 101-2016

《埋地双轴取向聚氯乙烯(PVC-O)给水管道工程技术规程》
T/CECS 815-2021

《埋地硬聚氯乙烯排水管道工程技术规程》
T/CECS 122-2020

《柔性接口给水管道支墩》图集10S505

《市政给水管道工程及附属设备》图集07MS101

国家现行标准及规范

行业现行标准及规范

地方现行标准及规范

2 技术参数 Technical features

技术参数	Technical Features	单位 Unit	值 Value
输送介质温度	Temperature of conveyance of water	℃	≤45
密度	Density	kg/dm^3	1.35-1.46
线性膨胀系数α	Lineal expansion coefficient	$℃^{-1}$	$7x10^{-5}$
泊松比μ	Poisson coefficient		0.45
杨氏弹性模量E	Youngs' modulus	KN/m^2	4000
轴向拉伸强度	Axail tensile strength	MPa	≥48
环向拉伸强度	Circumferential tensile strength	MPa	≥85
海曾维廉系数C	Hazen Williams coefficient		150
曼宁系数n	Manning roughness coefficient		0.009
压扁试验	Compression test		外径变形≤ 50% Outside diameter deformation ≤ 50%
静液压实验	Hydrostatic test		无破裂、无渗漏 No failure, no leakage
环刚度	Ring stiffness	KN/m^2	≥标称 ≥nominal
落锤冲击试验	Impact test		试样无破裂 Sample without failure

3 千米水头损失 Calculation of pipe head loss

管网的水头损失，即由于摩擦而产生所输送水的机械能的损失。管道的水头损失hf应按照下式计算。

Pipe head loss is the energy of a hydraulic fluid that is lost along itself due to friction. It can be calculated according to the following formula:

$$h_f = \lambda \cdot \frac{L}{d_i} \cdot \frac{u^2}{2g} \qquad \lambda = \frac{0.304}{R_e^{0.239}} \qquad R_e = \frac{u\, d_i}{\gamma} \qquad 1000\, i = 0.933 \cdot \frac{Q^{1.761}}{d_i^{4.761}}$$

由于管道内径的扩大，PVC-O管材的沿程水头损失比PVC-U管材降低30%以上，比PE管材降低50%以上。因此，使用PVC-O管材的管网运行费用降低很多。

Due to large internal diameter, the pressure loss of PVC-O pipes reduces more than 30% compared with PVC-U pipes, reducing more than 50% as compared with HDPE pipes, so the energy required for transport is much lower.

4 水锤计算 Calculation of water hammer

PVC-O管材的 $\frac{D}{e}$ 最大，所以水锤最低。

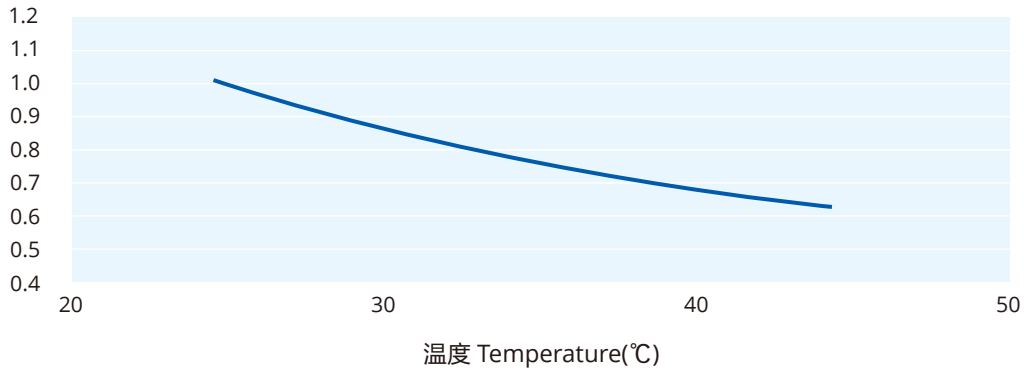
Because of PVC-O pies' $\frac{D}{e}$ is the bigest, the waetr hammer is the smallest.

$$\Delta P = \rho \cdot \alpha \cdot \Delta v$$

$$\alpha = \frac{1425}{\sqrt{1+\frac{\varepsilon}{E}\frac{D}{e}}}$$

5 温度折减系数 Temperature derating factor

温度折减系数图 Temperature derating factor graph



运输与储存
TRANSPORT AND STORAGE

欧勒PVC-O管材及管件在运输、装卸及存放过程中，严禁抛扔和激烈碰撞，不能在地面上拖拉，应避免高温和阳光曝晒。

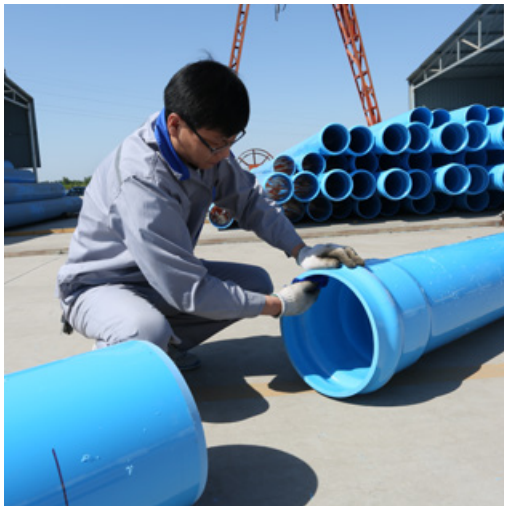
欧勒PVC-O管材应堆放在平整的地面上，堆放高度不宜超过1.5米。对于承插口管材，相邻层管材承口应相互倒置并让出承口部分，防止承口变形 。

During the loading, transport and storage of Olive PVC-O Pipes and joints, it is forbidden to throw,hard collision and drag on the ground. High temperature and direct sunlight should also be avoided.

Olive PVC-O pipes should be stacked on level ground, with stacking height not exceeding 1.5 meters. For socket-type pipes, the sockets of adjacent layers should be inverted and the socket sections should be left clear to prevent socket deformation.

安装步骤
INSTALLATION PROCESS

扫码观看
欧勒PVC-O管材
安装步骤



一、擦净承口内壁，插口外壁

First, Checks must be made to ensure that joints are clean both inside and outside of the pipe.

二、安装胶圈后涂抹润滑剂

Second, to facilitate assembly, it is advisable to lubricate the sockets and free ends using lubricating soap after placed the rubber ring.

三、保持两管同轴，插至安装标线

Third,align the pipe-ends and slot the sockets into place.

四、安装检查，确保胶圈不移位

Forth, check and make sure that the rubber ring is not displaced.

工程案例
PROJECT CASES

敦化城区路网改造项目
Dunhua Urban Area Road Network Renovation Project




贵州项目
Guizhou Water Supply System Project





吉铁中水回用项目
Jilin Ferroalloy Wastewater Recycling Project





河南农村安全饮水项目
Henan Rural Safe Water Supply Project





山西运城项目
Yuncheng Water Supply Project in Shanxi





新疆中石化顺北油田项目
Sinopec Shunbei Oilfield Project in Xinjiang




甘肃农村安全饮水项目
Gansu Rural Safe Water Supply Project





保定农村生活水源江水置换项目
Baoding Rural Domestic Water Source Replacement Project with Yangtze River Water




重庆水厂供水工程
Chongqing Water Plant Water Supply Project





吉林省污水管网项目
Jilin Province Sewerage Network Project





呼伦贝尔高标准农田建设项目
Hulunbuir High-Standard Farmland Construction Project





西安秦汉大道项目
Xian Qin-Han Avenue Project




新疆供水项目
Xinjiang Water Supply System Project




浙江嘉兴项目
Jiaxing Water Supply System Project in Zhejiang



部分项目概况
Selected Projects Summary

项目类别	项目名称	公称外径mm	压力等级Mpa	用量m
供水输水	承德双深区供水改造项目	200	1.25	2600
	山东精制盐产输水项目	110	1.25	3800
	内蒙古糖业公司给排水项目	200-315	1.6	7600
	山东省鄄城县城镇供水建设项目	200	1.0	4080
	河南省洛宁城镇供水建设项目	315-400	1.0	4000
	山西大同煤矿集团输水项目	315	1.0	4000
	贵州水投水务供水工程	110-315	1.0-1.6	120000
	黄驿市政供水工程	200-315	1.0	2000
	北京蚨龙泉水厂项目	110-280	1.0	500
	山东菏泽给水项目	90-500	1.0	7000
	西安市临潼区秦汉大道输水项目		1.6	10000
	哈萨克斯坦给水项目	125-315	1.6	15000
	菲律宾输水项目	110-315	1.25-1.6	6200
	土耳其供水管网项目	110-315	1.6	3500
农村人饮	甘肃岷县农村安全饮水项目	110-355	0.8-2.0	50000
	浙江嘉兴市桂花村安全饮水项目	110-400	1.0	6800
	宁夏六盘山农村安全饮水项目	160	2.0	2000
	太原山区安全饮水项目	110-200	1.0-1.6	9000
	河南省鹿邑县农村安全饮水工程		1.0	66000
	青海共和县安全饮水项目	200-450	1.0	68445
农田灌溉	江西省会昌县节水灌溉项目	450	1.0	8000
	内蒙古乌兰察布市节水灌溉项目	110-160	0.8-1.0	700
	甘肃省临夏市节水灌溉项目	110-315	0.8-2.0	6000
	嘉兴市小农水项目	400/500	1.0	66000
	法国农灌项目	110-400	1.25-2.5	30000
中水回用	吉铁铁合金中水回用管网项目		1.25	39000
消防管网及工程	河北唐县国防路改造项目	110-400	1.0	4000
	洛阳市栾川县庙子镇节水工程		1.0	8000
	德令哈市新能源有轨电车示范线工程	100/150		179330
	马来西亚消防管网	110-315	1.6	8000

荣誉资质
CERTIFICATES

PVC-O管材尺寸表
PVC-O PIPE DIMENSIONS TABLE

PVC-O管材公称外径d_n和公称壁厚e_n
PVC-O pipe nominal outside diameter (dn) and nominal wall thickness (en)

CJ/T445；ISO16422；EN17176

材料等级 Material class	设计系数C=1.6的公称压力 Pressure class PN for design coefficient C=1.6												
315	6.3		8		10		12.5		16		20		25
355		8		10		12.5		16		20		25	
400	8		10		12.5		16		20		25		
450		10		12.5		16		20		25			
500	10		12.5		16		20		25				
	设计系数C=1.4的公称压力 Pressure class PN for design coefficient C=1.4												
450	10		12.5		16		20		25				
500		12.5		16		20		25					
	设计系数C=2.0的公称压力 Pressure class PN for design coefficient C=2.0												
315	5		6.3		8		10		12.5		16		20
355		6.3		8		10		12.5		16		20	
400	6.3		8		10		12.5		16		20		25
450		8		10		12.5		16		20		25	
500	8		10		12.5		16		20		25		
管系列S计算值和标准尺寸比SDR Pipe series S numbers preferred and computed values(ISO 3)and standard dimension ratios(SDR)													
S	32.0	28.0	25.0	22.4	20.0	18.0	16.0	14.0	12.5	11.2	10.9	9.0	8.0
Scalc	31.62	28.18	25.12	22.39	19.95	17.78	15.85	14.13	12.59	11.22	10.00	8.91	7.94
SDR	65.0	57.0	51.0	45.8	41.0	37.0	33.0	29.0	26.0	23.4	21.0	19.0	17.0
dn/mm	en/mm												
63					1.6	1.8	2.0	2.2	2.5	2.7	3.0	3.4	3.8
75			1.5	1.7	1.9	2.1	2.3	2.6	2.9	3.2	3.6	4.0	4.5
90		1.6	1.8	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.3	4.8	5.4
110	1.8	2.0	2.2	2.4	2.7	3.1	3.4	3.8	4.2	4.7	5.3	5.9	6.6
125	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.3	4.8	5.4	6.0	6.7	7.4
140	2.2	2.5	2.8	3.1	3.5	3.9	4.3	4.8	5.4	6.0	6.7	7.5	8.3
160	2.5	2.8	3.2	3.5	4.0	4.4	4.9	5.5	6.2	6.9	7.7	8.5	9.5
180	2.8	3.2	3.6	4.0	4.4	5.0	5.5	6.2	6.9	7.7	8.6	9.6	10.7
200	3.2	3.5	3.9	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.6	10.7	11.9
225	3.5	4.0	4.4	5.0	5.5	6.2	6.9	7.7	8.6	9.6	10.8	12.0	13.4
250	3.9	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.6	10.7	11.9	13.3	14.8
280	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.6	10.7	12.0	13.4	14.9	16.6
315	4.9	5.5	6.2	6.9	7.7	8.7	9.7	10.8	12.1	13.5	15.0	16.8	18.7
355	5.6	6.2	7.0	7.8	8.7	9.8	10.9	12.2	13.6	15.2	16.9	18.9	21.1
400	6.7	7.0	7.9	8.8	9.8	11.0	12.3	13.7	15.3	17.1	19.1	21.3	23.7
450	7.0	7.9	8.8	9.9	11.0	12.4	13.8	15.4	17.2	19.2	21.5	23.9	26.7
500	7.8	8.8	9.8	11.0	12.3	13.7	15.3	17.1	19.1	21.4	23.9	26.6	29.7
560	8.8	9.8	11.0	12.3	13.7	15.4	17.2	19.2	21.4	23.9	26.7	29.8	33.2
630	9.9	11.0	12.3	13.8	15.4	17.3	19.3	21.6	24.1	26.9	30.0	33.5	37.4
710	11.2	12.4	14.1	15.4	17.5	19.2	21.8	24.4	27.6	30.2	34.2	37.3	42.2
800	12.6	14.0	15.9	17.4	19.8	21.6	24.5	27.4	31.1	34.0	38.5	42.0	47.6
900	14.1	15.7	17.9	19.6	22.2	24.3	27.6	30.9	35.0	38.2	43.3	47.3	53.5
1000	15.7	17.5	19.9	21.7	24.7	27.0	30.6	34.3	38.9	42.5	48.1	52.5	59.4
1200	18.4	21.1	23.5	26.2	29.3	32.4	36.4	41.4	46.2	51.3			

PVC-O管材公称外径d_n和公称壁厚e_n

PVC-O pipe nominal outside diameter (dn) and nominal wall thickness (en)

GB/T 41422-2022

管材等级 Material Class	PN/MPa										
PVC-O 315	0.8	-	1.0	-	1.25	-	1.6	-	2.0	-	2.5
PVC-O 355	-	1.0	-	1.25	-	1.6	-	2.0	-	2.5	-
PVC-O 400	1.0	-	1.25	-	1.6	-	2.0	-	2.5	-	-
PVC-O 450	-	1.25	-	1.6	-	2.0	-	2.5	-	-	-
PVC-O 500	1.25	-	1.6	-	2.0	-	2.5	-	-	-	-
管系列S及标准尺寸比SDR Pipe series S numbers and standard dimension ratios(SDR)											
S	25	22.4	20	18	16	14	12.5	11.2	10	9	8
SDR	51	45.8	41	37	33	29	26	23.4	21	19	17
dn/mm	en/mm										
63	-	-	2.0	2.0	2.0	2.2	2.5	2.7	3.2	3.4	3.8
75	2.0	2.0	2.0	2.1	2.3	2.6	2.9	3.2	3.6	4.0	4.5
90	2.0	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.3	4.8	5.4
110	2.2	2.4	2.7	3.1	3.4	3.8	4.2	4.7	5.3	5.9	6.6
125	2.5	2.8	3.1	3.5	3.9	4.3	4.8	5.4	6.0	6.7	7.4
140	2.8	3.1	3.5	3.9	4.3	4.8	5.4	6.0	6.7	7.5	8.3
160	3.2	3.5	4.0	4.4	4.9	5.5	6.2	6.9	7.7	8.5	9.5
180	3.6	4.0	4.4	5.0	5.5	6.2	6.9	7.7	8.6	9.6	10.7
200	3.9	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.6	10.7	11.9
225	4.4	5.0	5.5	6.2	6.9	7.7	8.6	9.6	10.8	12.0	13.4
250	4.9	5.5	6.2	6.9	7.7	8.6	9.6	10.7	11.9	13.3	14.8
280	5.5	6.2	6.9	7.7	8.6	9.6	10.7	12.0	13.4	14.9	16.6
315	6.2	6.9	7.7	8.7	9.7	10.8	12.1	13.5	15.0	16.8	18.7
355	7.0	7.8	8.7	9.8	10.9	12.2	13.6	15.2	16.9	18.9	21.1
400	7.9	8.8	9.8	11.0	12.3	13.7	15.3	17.1	19.1	21.3	23.7
450	8.8	9.9	11.0	12.4	13.8	15.4	17.2	19.2	21.5	23.9	26.7
500	9.8	11.0	12.3	13.7	15.3	17.1	19.1	21.4	23.9	26.6	29.7
560	11.0	12.3	13.7	15.4	17.2	19.2	21.4	23.9	26.7	29.8	33.2
630	12.3	13.8	15.4	17.3	19.3	21.6	24.1	26.9	30.0	33.5	37.4
710	14.1	15.4	17.5	19.2	21.8	24.4	27.6	30.2	34.2	37.3	42.2
800	15.9	17.4	19.8	21.6	24.5	27.4	31.1	34.0	38.5	42.0	47.6
900	17.9	19.6	22.2	24.3	27.6	30.9	35.0	38.2	43.3	47.3	53.5
1000	19.9	21.7	24.7	27.0	30.6	34.3	38.9	42.5	48.1	52.5	59.4

检验报告
TEST REPORTS

国家化学建筑材料测试中心
（材料测试部）

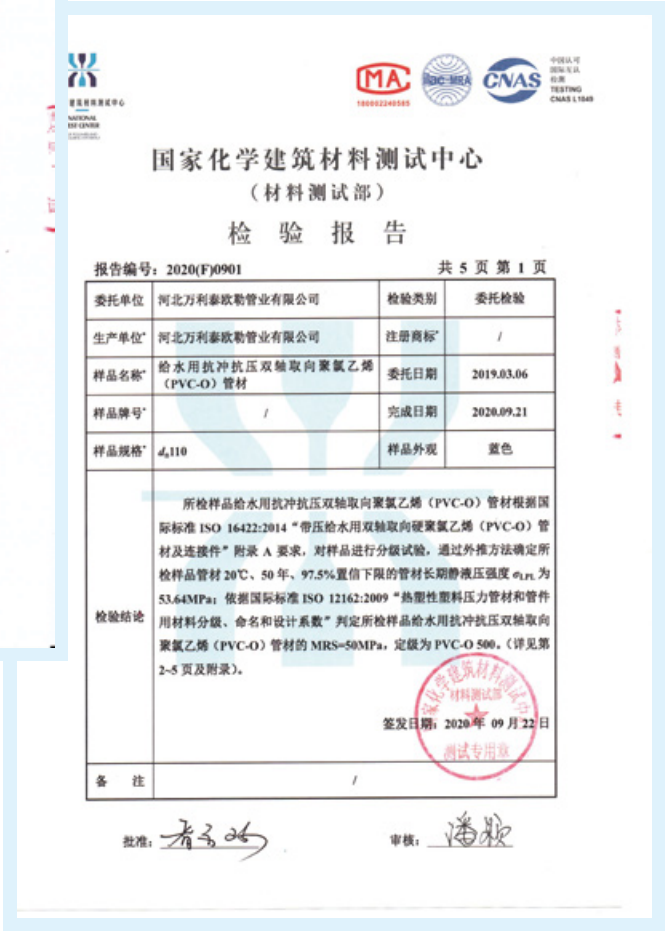
检 验 报 告

报告编号：2016(F) 0402　　共 4 页 第 1 页

委托单位	河北万利泰欧勒管业有限公司	检验类别	委托检验
生产单位	河北万利泰欧勒管业有限公司	委托日期	2015.03.10
样品名称	给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材	完成日期	2016.04.25
样品规格	d_n110	样品外观	蓝色
检验结论	所检样品给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材根据行业标准 CJ/T 445-2014 "给水用抗冲抗压双轴取向聚氯乙烯(PVC-O)管材及连接件"附录 A 要求，对样品进行分级试验，通过外推方法确定所检样品管材 20℃、50 年、97.5%置信下限的管材长期静液压强度 σ_{LPL} 为 47.24MPa；依据国家标准 GB/T 18475-2001"热塑性塑料压力管材和管件用材料分级和命名 总体使用（设计）系数"判定所检样品给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材的 MRS=45.0MPa；根据行业标准 CJ/T 445-2014 对所检样品 PVC-O 管材定级为 PVC-O 450。 签发日期：2016 年 04 月 25 日		
备　注	/		

批准：　　审核：

PVC-O450, 分级实验检验报告
PVC-O 450 pipe MRS classification test report



国家化学建筑材料测试中心
（材料测试部）

检 验 报 告

报告编号：2020(F)0901　　共 5 页 第 1 页

委托单位	河北万利泰欧勒管业有限公司	检验类别	委托检验
生产单位*	河北万利泰欧勒管业有限公司	注册商标*	/
样品名称*	给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材	委托日期	2019.03.06
样品牌号*	/	完成日期	2020.09.21
样品规格*	d_n110	样品外观	蓝色
检验结论	所检样品给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材根据国际标准 ISO 16422:2014 "带压给水用双轴取向硬聚氯乙烯（PVC-O）管材及连接件" 附录 A 要求，对样品进行分级试验，通过外推方法确定所检样品管材 20℃、50 年、97.5%置信下限的管材长期静液压强度 σ_{LPL} 为 53.64MPa；依据国际标准 ISO 12162:2009 "热塑性塑料压力管材和管件用材料分级、命名和设计系数" 判定所检样品给水用抗冲抗压双轴取向聚氯乙烯（PVC-O）管材的 MRS=50MPa，定级为 PVC-O 500。（详见第 2-5 页及附录）。 签发日期：2020 年 09 月 22 日		
备　注	/		

批准：　　审核：

PVC-O 500, 分级实验检验报告
PVC-O 500 pipe MRS classification test report

国家化学建筑材料测试中心

（材料测试部）

检 验 报 告

报告编号：2023(G)09099　　共 2 页 第 1 页

委托单位	河北万利泰欧勒管业有限公司	检验类别	委托检验
生产单位*	河北万利泰欧勒管业有限公司	生产日期*	/
样品名称*	压力输水用取向硬聚氯乙烯（PVC-O）管材	注册商标*	/
样品规格*	d_n1000×21.7，PVC-O 500 级	样品外观	蓝色
抽样基数	/	样品标识	G-202308114
抽样数量	/	产品批号*/产品编号*	/
封样地点	/	委托日期	2023.08.18
封样单位	/	封样日期	/
检验结论	所检管材根据委托单位要求的检验项目及相应国家标准进行检验，并按照 GB/T 41422-2022“压力输水用取向硬聚氯乙烯（PVC-O）管材和连接件”进行判定，所检结果详见第 2 页。 签发日期：2023 年 09 月 18 日		
备　注	/		

批准：　　审核：

国家化学建筑材料测试中心

（材料测试部）

检 验 报 告

报告编号：2023(G)09099　　共 2 页 第 2 页

序号	检验项目	技术要求	检验结果	单项判定	检验方法
1	外观	管材内外表面应光滑、平整，无明显划痕、裂口、凹陷、可见杂质和其他影响管材性能的表面缺陷。管材端面应切割平整并与轴线垂直。	通过	符合	目测
2	颜色	管材颜色一般为蓝色，其他颜色由供需双方协商确定。色泽应均匀一致。	蓝色	符合	
3	规格尺寸，mm	1000.0≤外径≤1002.0 21.7≤壁厚≤24.1 不圆度≤24.0	1001.6 22.6 9.2	符合	GB/T 41422-2022 7.4
4	静液压强度	20℃，环应力65MPa，10h 无破裂，无渗漏	通过	符合	GB/T 41422-2022 7.5
5	落锤冲击（0℃，12.5kg）	TIR≤10%	通过	符合	GB/T 41422-2022 7.8
6	拉伸屈服应力，MPa	≥48	55.2	符合	GB/T 41422-2022 7.14

注：以上检验项目的试验地点为通州分场所。

（以 下 空 白）

主检：郑迎雷　丁树岩　张瑞卿

DN1000 PVC-O 500, 级产品检验报告

Large diameter DN1000 PVC-O 500 pipe test report

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