德州耀华
DEZHOUYAOHUA
中国土工合成材料生产基地企业



DEZHOUYAOHUA

TUGONGCAILIAO

土工材料

德州耀华土工材料有限公司

DEZHOU YAOHUA CEOSYNTHETICS CO., LTD.

Company profile 公司简介

德州耀华土工材料有限公司

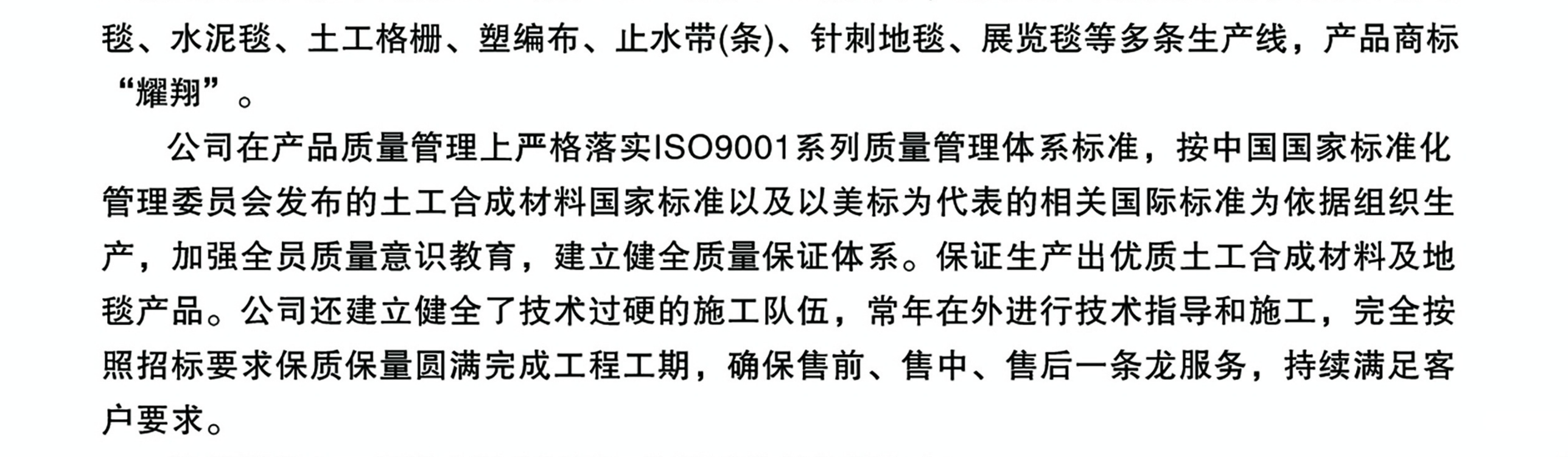
德州耀华土工材料有限公司是一家集研发设计与生产制造为一体的综合性科技型企业。公司始建于1996年，现注册资金为5100万元，省级科技型企业、省级创新型企业、A级纳税人。公司现有员工150余人，其中各类技术人员占员工总人数的38%。

公司位于风景秀丽、交通发达的鲁西北平原，山东省德州市陵城经济开发区，紧依104国道和京福京沪高速公路，毗邻京沪津浦铁路。青岛、烟台、天津三大水运港口日可往返，地域优势明显，交通运输便捷。

我公司主要生产设备由国内外知名厂家引进，拥有一套完整、精密、可靠的检测仪器和设备。检验手段齐全，检测方法符合国家标准委员会制定的国家行业标准，并于2007年1月12日全面通过ISO9001–2000质量体系认证标准。公司现有针刺土工布、宽幅复合土工膜、三辊压光防水板（包括HDPE膜、LDPE膜、EVA膜等），排水网、复合排水网、膨润土防水毯、水泥毯、土工格栅、塑编布、止水带(条)、针刺地毯、展览毯等多条生产线，产品商标“耀翔”。

公司在产品质量管理上严格落实ISO9001系列质量管理体系标准，按中国国家标准化管理委员会发布的土工合成材料国家标准以及以美标为代表的相关国际标准为依据组织生产，加强全员质量意识教育，建立健全质量保证体系。保证生产出优质土工合成材料及地毯产品。公司还建立健全了技术过硬的施工队伍，常年在外进行技术指导和施工，完全按照招标要求保质保量圆满完成工程工期，确保售前、售中、售后一条龙服务，持续满足客户要求。

德州耀华土工材料有限公司愿与您携手共创美好未来!





Company inteoduction

Dezhou Yaohua Geotechnical Material Co.,Ltd. is a comprehensive manufacturer of geotechnical materials, needled carpets and Exhilbition carpets. Founded in 1996,the company has a registered capital of 20.65 million yuan and a total asset of 220 million yuan. The company has more than 150 employees, of which 38% are technicians.

The company is located in Lingxian Economic Development Zone, Dezhou City, Shandong Province, with beautiful scenery and developed transportation, close to national highway 104 and Beijing Fuzhou Beijing Shanghai Expressway, and adjacent to Beijing Shanghai Jinpu railway. Qingdao, Yantai and Tianjin are the three major ports of water transportation, which can go back and forth every day, with obvious regional advantages and convenient transportation.

Our company's main production equipment is imported from Germany, Italy and domestic well–known manufacturers, with a set of complete precise and reliable testing instruments and equipment. The inspection means are complete, and the inspection method conforms to the national industry standard formulated by the National Standards Committee. On January 12, 2007,it fully passed the certificalion standard of ISO9001–2000 quality system. The company has many production lines, such as needled geotextile, wide composite geomembrane, three roller calendered waterproof board (including HDPE film, LDPE film, EVA film, etc.), geogrid, plastic woven cloth, plastic woven tape, waterstop, waterstop, needled carpet, exhibition blanket, etc.,with the product trademark "Yaoxiang"

The company strictly implements the ISO9001 intenational quality system standard in terms of product quality, organizes production according to the management measures for key geosynthetics enterprises issued by the State Economic and Trade Commission and the national standard for geosynthetics issued by the National Standards Commission, strengthens the quality awareness education of all employees, and establishes and improves the quality assurance system. Guarantee to produce high quality geosyntheics and carpet products.

The company has also established and improved a skilled construction team to conduct technical guidance and construction all year round. It has completed the project period with quality and quantity guaranteed in full accordance with the requirements of the bidding, so as to ensure the one–stop service before, during and after sales and continuously meet the requirements of customers.

Dezhou Yaohua Geotechnical Material Co., Ltd. is willing to work with you to create a better future!

诚信天下

诚信

CHENGXIN
YINGTIANXIA

[诚以修身 信以立世]

诚信服务社会
持续科学创新
我们以不懈的进取精神奋勇前行



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环境管理体系认证证书

证书编号：10120624E0033R0S

兹证明

德州耀华土工材料有限公司

注册地址：德州市陵县经济开发区迎宾街南首
经营/生产地址：德州市陵县经济开发区迎宾街南首
统一社会信用代码：91371421793932456 3

环境管理体系符合：
GB/T 24001-2016/ISO 14001:2015 标准

证书覆盖范围：
无纺土工布、 土工膜、复合土工膜的制造所涉及场所的相关环境管理活动

获证组织在证书有效期内每年至少接受一次本认证机构的监督审核，获证 12 个月后，该证书需与证书保持通知书共同使用方可持续有效。
本证书信息可在国家认证认可监督管理委员会官方网站:http://www.cnca.gov.cn 上查询。

发证日期:2024 年 05 月 21 日　有效期至：2027 年 05 月 20 日

Signed by.Wang han li

山东质联认证有限公司

地址：山东省青岛市黄岛区江山南路 212 号 1208
公司网址：www.sdzlrz.cn

职业健康安全管理体系认证证书

证书编号：10120624S0029R0S

兹证明

德州耀华土工材料有限公司

注册地址：德州市陵县经济开发区迎宾街南首
经营/生产地址：德州市陵县经济开发区迎宾街南首
统一社会信用代码：91371421793932456 3

职业健康安全管理体系符合：
GB/T45001-2020/ISO45001:2018 标准

证书覆盖范围：
无纺土工布、 土工膜、复合土工膜的制造所涉及场所的相关职业健康安全管理活动

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山东质联认证有限公司

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质量管理体系认证证书

注册号：18423Q20057R0S

兹证明

德州耀华土工材料有限公司

统一社会信用代码：91371421793932456 3
注册地址：山东省德州市陵县经济开发区迎宾街南首
经营地址：山东省德州市陵县经济开发区迎宾街南首

质量管理体系符合
GB/T 19001-2016/ISO 9001:2015 标准

认证覆盖的范围
土工材料（无纺土工布、土工膜、复合土工膜）的生产及销售

初次发证日期：2023 年 05 月 22 日
本次发证日期：2023 年 05 月 22 日
证书有效期至：2026 年 05 月 21 日

签发人

注:在证书有效期内，获证组织须按规定接受年度监督审核，保持认证资格。通过扫描二维码可获知证书状态。该证书信息还可在国家认证认可监督管理委员会官方网站(www.cnca.gov.cn)和北京中交远航认证有限公司官方网站(www.bjzjyh.com)上查询。

北京中交远航认证有限公司　机构地址：北京市西城区广安门外大街 248 号 1 号楼 12 层 1205 号

Leading the development of the industry serve the country construction

主要生产设备

MAIN EQUIPMENT

德州耀华土工材料有限公司现拥有国内领先的针刺土工布、机织土工布、复合土工膜、HDPE土工膜、EVA隧道防水板、防水毯、土工格栅、土工格室、自粘防水卷材、土工网、三维网垫、塑料编织布复合排水板、地毯等14条生产线，工艺技术先进，设备精良、产品优质。

Dezhou Yaohua Geotechnical Material Co., Ltd now has the main equipment is imported from Germany, Italy, a carpet, woven geotextile, composite geomembrane, nonwoven fabric, PE film, waterproof blanket, geogrid, geotextile lattice room, adhesive waterproofing materials, geonet, 3 d mesh pad, such as plastic woven cloth, composite drainage board 14 production lines, advanced technology, well-equipped, product quality.










检验、检测设备

Inspection, testing equipment

质量是企业的生命，完善的检验设备是优良品质的重要保证，现在公司各种检验、检测设备齐全，人员配置到位。公司产品从原、辅材料选择到生产制造、仓储、物流配送都建立了科学的管理体系，已通过ISO9001质量管理认证，产品经过物理检测、化学检测均达到绿色环保要求，经工程单位使用证明，产品质量稳定、可靠，施工方便，价格合理，售后服务好，得到广大客户的一致好评。

Quality is the life of the enterprise, perfect test equipment is an important guarantee of quality.Now the company has a variety of inspection, testing equipments, staffing in place.From raw material to manufacturing, warehousing, logistics and distribution ,company sets up scientific management system, has passed ISO9001 quality management certification.Products through the physical testing and chemical testing to meet the green environmental protection requirements.Proved by engineering unit to use, the product is stable, reliable, convenient construction, reasonable price, good after-sale service, customers receive consistent high praise.



土工材料蠕变性能测试仪
Creep performance tester



电热鼓风干燥箱
Electrothermal blast dryer



水冷日晒耐候老化仪
Water-cooled insolation weathering aging



高低温湿热交变试验箱
High low temperature alternating test chamber



气动夹具万能材料试验机
Pneumatic clamping universal material testing machine



不透水仪
Water impermeable instrument



数字式织物厚度仪
Digital Fabric Thickness Meter



冲片机
Punching machine

ENGINEERING CASE
工程案例



蓄水池防渗工程
Impervious Engineering of Water Storage Tank



河道治理工程
River regulation works



沼气池防渗工程
Anti-seepage engineering of biogas digester



污水处理厂工程
Sewage Treatment Plant Project



河道护坡工程
River slope protection works



隧道防水工程
Tunnel waterproofing engineering



工业固废垃圾填埋场工程
Industrial Solid Waste Landfill Project



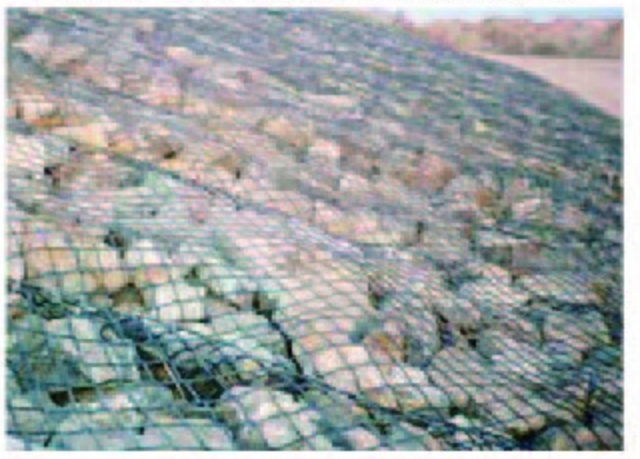
人工湖防渗工程
Seepage control project of artificial lake



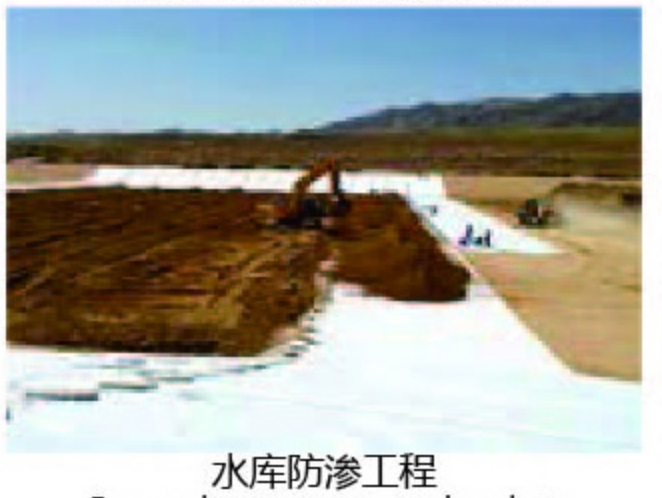
垃圾填埋场工程
Solid Waste Landfill Engineering



生活垃圾填埋场工程
Domestic Waste Landfill Project



河道护坡工程
River slope protection works



水库防渗工程
Reservoir seepage control project

ENGINEERING CASE
工程案例



矿井蓄水池工程
Mine Water Storage Pool Project



高速公路路面养护工程
Highway Pavement Maintenance Project



大型水库防渗工程
Seepage control works for large reservoirs



中石化油罐库区底部防渗工程
Seepage Control Project at the Bottom of Sinopec Oil Tank Reservoir Area



水产养殖防渗工程
Anti-seepage Engineering of Aquaculture



南水北调工程
The South-to-North Water Diversion Project



沼液池防渗工程
Anti-seepage engineering of marsh pond



高速公路护坡工程
Highway slope protection project



垃圾填埋场封场工程
Landfill Closure Project



养殖防渗
Aquaculture seepage control

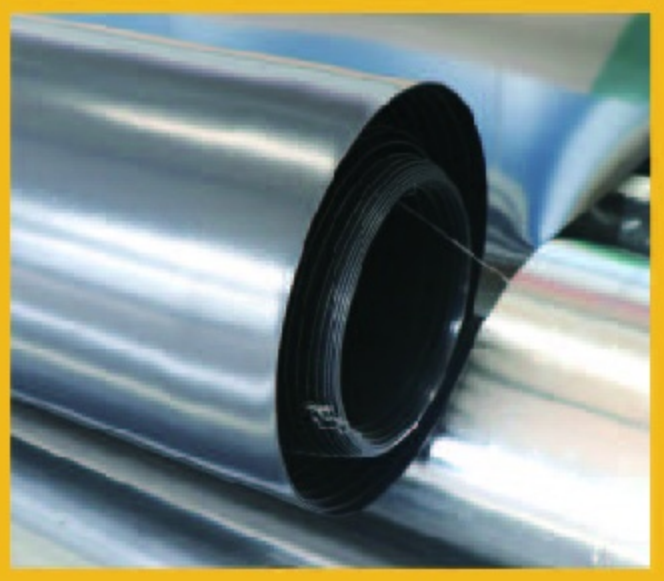


大型国外展会
Large Foreign Exhibitions



大型国内展会
Large domestic exhibitions

PRODUCT SHOW
部分产品展示



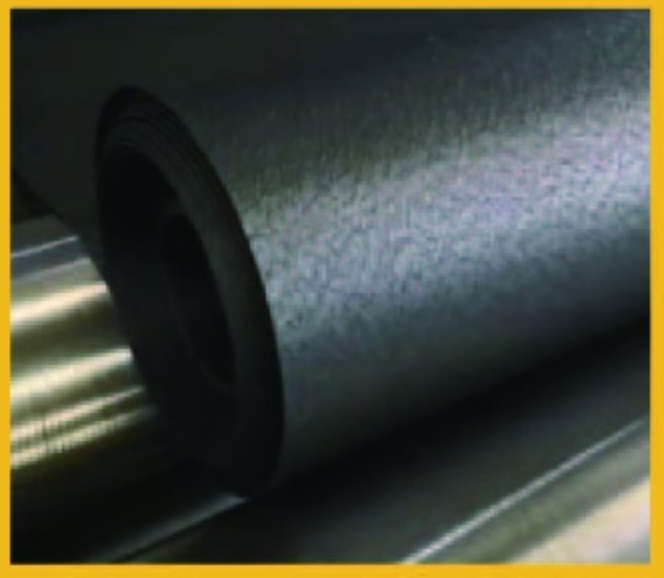
HDPE土工膜
HDPE Geomembrane



隧道防水板
Tunnel waterproof board



长丝复合土工膜
Filament composite geomembrane



糙面HDPE土工膜
Rough-surface HDPE geomembrane



短纤针刺非织造土工布
Short-fibre needle-punched nonwoven geotextiles



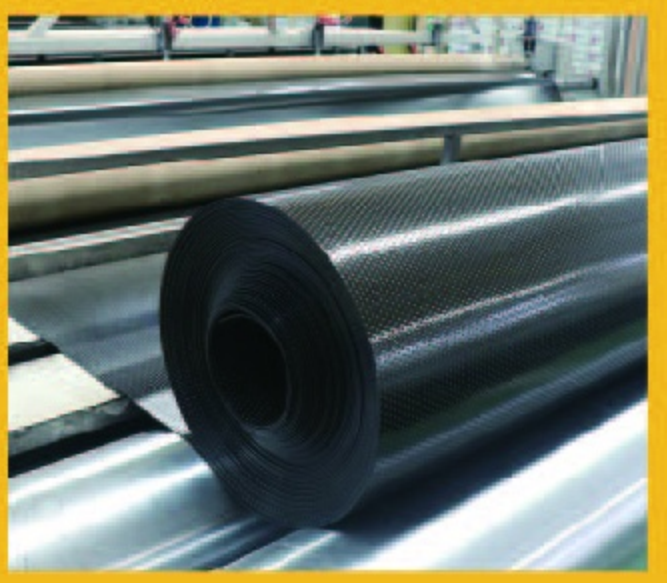
光面土工膜
Smooth geomembrane



长丝纺粘针刺非织造土工布
Filament spunbonded needle punched non-woven geotextile



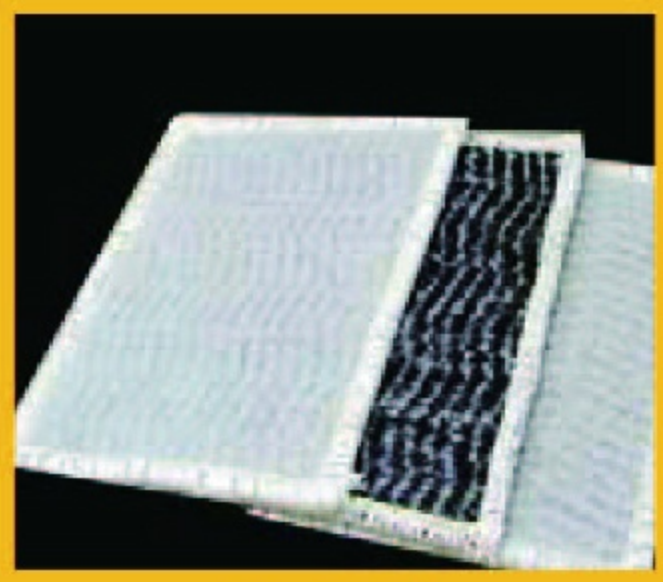
短丝复合土工膜
Short-filament composite geomembrane



柱点土工膜
Post geomembrane



防水板
Waterproof board



膨润土防水毯
Bentonite waterproof blanket



三维复合排水网
Three dimensional composite drainage net

排水板
Water drain board

编织土工布
Woven Geotextile

钢塑土工格栅
Steel-plastic geogrid



单向拉伸土工格栅
Uniaxial geogrid



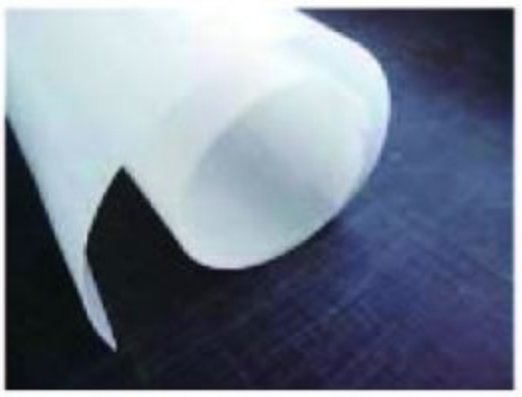
展览地毯
Exhibition carpet



汽车地毯
Automobile carpet

德州耀华土工材料有限公司

一、隧道专用EVA防水板



吊挂式隧道专用防水板是我公司开发创新的新型隧道专用防水材料,实现无穿通钉施工悬吊式排挂一次性完成,可大大简化传统防水材料在隧道中的施工难度,提高铺设质量和铺设效率,缩短工期,大幅降低工程综合造价,具有极强的市场竞争优势。

产品系列

分离式防水板：土工布与吊带土工膜板分层铺设

复合式防水板：土工布与土工膜整体复合,点式,条式复合,产品边缘留有拼接焊缝,并且土工布上备有吊带,可在现场整体铺设,一次性完成。

产品规格：涤纶针刺土工布：300-400g/m² PE/EVA/ECB/ECD合成树脂
卷材厚度：0.8,1.0,1.2,1.5,2.0mm

产品幅宽：2-4m

产品长度：按用户要求

技术性能：达到GB18173.1-2012标准中规定的技术指标

适用范围：铁路隧道,公路隧道,地铁,工矿及各类市政地下工程

Tunnel dedicated EVA waterproof material

Hanging type tunnel waterproof board is a new type of tunnel special waterproof material developed by our company, to achieve non penetrating nail construction suspension hanging once completed, can greatly simplify the construction difficulty of traditional waterproof material in the tunnel, improve the quality and efficiency of laying, shorten the construction period, reduce the total cost of the project, has the very strong market competitive advantage.

Product series

Separated waterproof boards: geotextile and geomembrane laying plate layered sling

Composite waterproof board: geotextile and geomembrane composite type, overall, a compound, the edge of the product have the stitching seam, and soil Geotextiles are available on tape, can be in the field of whole laying, complete.

Product specifications: Polyester needle punched geotextile synthetic resin sheet thickness: 300-400g/m2 PE/EVA/ECB/ECD

Size: 0.8,1.0,1.2,1.5,2.0mm

Product width: 2-4m

Length: according to user requirements.

Performance: the requirements of technical indicators reached the standard of GB18173.1-2012.

Scope of application: railway tunnel, highway tunnel, subway, mine and all kinds of municipal underground engineering

隧道专用EVA防水板GB18173.1-2012 EVA Waterproof Plate for Tunnel GB18173.1-2012

序号 NO.	项目 Item		单位 Unit	技术指标 technical data	备注 remark
1	拉伸强度 tensile strength	常温（23℃）≥ normal temperature（23℃）≥	Mpa	16	
		高温（60℃）≥ high temperature（60℃）≥	Mpa	6	
2	拉断伸长率 tensile elongation	常温（23℃）≥ normal temperature（23℃）≥	%	550	
		低温（-20℃）≥ low temperature（-20℃）≥	%	350	
3	撕裂强度≥	tear strength	KN/m	60	
4	不透水性	antipermeability	30min	0.3MPa无渗漏 0.3MPa no leaking	
5	低温弯折	low temperature bend	/	-35℃无裂纹 -35℃ no crack	
6	加热伸缩量 heat stroke	延伸≤ elongation	mm	2.0	
		收缩≤contraction	mm	6.0	
7	热空气老化（80℃×168h） anti-aging in heat air	拉伸强度保持率≥ rate of tensile strength	%	80	
		拉断伸长率保持率≥ rate of break tensile strengh	%	70	
8	耐碱性[饱和$Ca(OH)_2$溶液23℃×168h] anti-alkali	拉伸强度保持率≥ reat of tensile strength	%	80	
		拉断伸长率保持率≥ rate of break tensile strengh	%	90	
9	人工气候老化 artificial climate aging	拉伸强度保持率≥ rate of tensile strength	%	80	
		拉断伸长率保持率≥ rate of break tensile strengh	%	70	
10	粘结剥离强度（片材与片材） peel strength	标准试验条件≥ standar test	N/mm	1.5	
		浸水保持率（23℃×168h）≥soaking rate	%	70	

二、土工膜

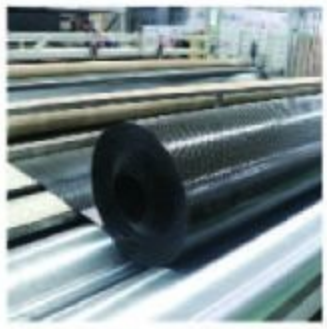
功能：防渗、隔离

用途：垃圾填埋场,污水或废渣处理场防渗；
江堤,湖坝,尾矿坝,污水坝及库区,渠道,蓄液池（坑、矿）；
地铁,地下室和隧道,隧洞防渗衬砌；
路基及其它地基盐渍防渗；
堤、坝前水平防渗铺盖,地基垂直防渗层,施工围堰,废料场；
海水、淡水养殖场。
公路,高速公路,铁路的地基；膨胀土和湿陷性黄土的防水层。
屋面防渗。

产品：包括LDPE土工膜、LLDPE土工膜、HDPE土工膜、EVA土工膜、ECB土工膜、PVC土工膜、糙面土工膜等。

Geomembrane

Features: waterproof, isolation
Application: landfill, sewage or waste disposal field seepage;
Along the river, the lake dam, tailings dam, dam and reservoir area sewage channel, and a liquid storage tank (pit mine);
Subway, underground chambers and tunnels, the tunnel lining;
Subgrade and foundation of saline seepage;
Embankment, dam foundation impervious blanket and vertical impervious layer, construction of cofferdam, scrap yard;
Sea water, fresh water breeding farm.
Highway, highway, railway subgrade; expansive soil and collapsible loess waterproof layer.
Roofing seepage proofing.
Products include: LDPE geomembrane, LLDPE geotechnical membrane, HDPE geomembrane, EVA geotechnical Film, ECB geomembrane, PVC geotechnical membrane, textured geomembrane etc.



（光面）聚乙烯土工膜指标GB/T 17643-1998
(smooth) polyethylene geomembrane index GB/T 17643-1998

序号 NO.	项 目 Item	指 标 Value			
		GL		GH	
		CL-1	GL-2	GH-1	GH-2
1	拉伸强度 tensile strength MPa	≥14		≥17	≥25
2	断裂伸长率 elongation at break %	≥400		≥450	≥550
3	直角撕裂强度 Right-angle tear strength N/min	≥50		≥80	≥110
4	炭黑含量[1] Carbon black content[1] %	≥2			
5	耐环境应力开裂F_{20} Resistance to environmental stress crackingF_{20} h	—	—	—	≥1 500
6	200°C时氧化诱导时间 Induction time of oxidation at200°C min	—	—	—	≥20
7	水蒸气渗透系数 Water vapor permeability coefficient g·cm/(cm²·s·Pa)	≤1.0X10^{-13}			
8	-70°C低温冲击脆化性能 Low Temperature Impact Embrittlement Behavior of -70°C	通过 pass			
9	尺寸稳定性 Dimensional stability %	±3			
1)黑色土工膜要求 Black geomembrane requirements					

（光面）普通高密度聚乙烯HDPE土工膜指标（GH-1型）GB/T 17643-2011
(smooth) ordinary high density polyethylene geomembrane HDPE index (type GH-1) GB/T 17643-2011

序号 NO.	项 目Item	单位Unit	指 标 Value									备注 Remark
1	厚度 Thickness	mm	0.30	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00	
2	密度≥ density	g/cm³	0.940									
3	拉伸屈服强度≥ Tensile strength At yield≥	N/mm	4	7	10	13	16	20	26	33	40	(纵横向) (TD/MD)
4	拉伸断裂强度≥ breaking strength≥	N/mm	6	10	15	20	25	30	40	50	60	(纵横向) (TD/MD)
5	屈服伸长率≥ yield elongation≥	%	——	——	——	11						(纵横向) (TD/MD)
6	断裂伸长率(纵横)≥ Elongation at Break(TD/MD)≥	%	600									
7	直角撕裂负荷 (纵横)≥ Strength at Tear(Right-angle Tear) (TD/MD)≥	N	34	56	84	115	140	170	225	280	340	(纵横向) (TD/MD)
8	抗穿刺强度≥ antipunture strength ≥	N	72	120	180	240	300	360	480	600	720	
9	炭黑含量 Carbon black content	%	2.0-3.0									
10	碳黑分散性 Carbon black distribute	F	10个数据中3级不多于1个，4级、5级不允许 In 10 data,3degree no more than 1,4 and 5 degree not allowed									
11	常压氧化诱导时间（OIT）≥ antioxidation time	min	60									
12	低温冲击脆化性能 anti low temperature crispy ability	/	通过 pass									
13	水蒸汽渗透系数 ≤ Permeability Coefficient of Vappour ≤	g.cm/ (cm².s.Pa)	1.0×10^{-13}									
14	尺寸稳定性%The dimensional stability of%		±2.0									

注：表中没有列出厚度规格的技术性能指标要求按照内插法执行。

（光面）环保II用高密度聚乙烯HDPE土工膜指标（GH-2S型）GB/T 17643-2011

(smooth) environmental protection II with high density polyethylene geomembrane HDPE index (type GH-2S) GB/T 17643-2011

序号 NO.	项 目Item	单位 unit	指 标value							备注 remark
1	膜材厚度 thickness	mm	0.75	1.00	1.25	1.50	2.00	2.50	3.00	
2	密度≥ density	g/cm³	0.940							
3	拉伸屈服强度≥ tensile strength	N/mm	11	15	18	22	29	37	44	(纵横向) (TD/MD)
4	拉伸断裂强度≥ tensile break strength	N/mm	20	27	33	40	53	67	80	(纵横向) (TD/MD)
5	屈服伸长率≥ yield elongation	%	12							(纵横向) (TD/MD)
6	断裂伸长率≥ break elongation	%	700							(纵横向) (TD/MD)
7	直角撕裂负荷≥ vertical tear strength	N	93	125	160	190	250	315	375	(纵横向) (TD/MD)
8	抗穿刺强度≥ anti-puncture strength	N	240	320	400	480	640	800	960	
9	炭黑含量 carbon black content	%	2.0-3.0							
10	拉伸负荷应力开裂（切口恒载拉伸法）≥ tensile strength at break	h	300							
11	碳黑分散性 carbon black distribute		10个数据中3级不多于1个，4级、5级不允许 In 10 data,3degree no more than 1,4 and 5 degree not allowed							
12	氧化诱导时间（OIT）≥ anti-oxidation time	min	常压氧化诱导时间≥100 high pressure oxidation time							
			高压氧化诱导时间≥400 high pressure oxidation time							
13	85℃热老化（90dg后常压OIT保留率）≥ 85℃heat anti-aging	%	55							
14	抗紫外线（紫外线照射1600h后OIT保留率）≥	%	50							
15	厚度极限偏差 Thickness limit deviation	%	-10							

（光面）低密度聚乙烯HDPE土工膜指标【GL-1型】GB/T 17643-2011

(smooth) low density polyethylene geomembrane HDPE index [GL-1] GB/T 17643-2011 type

序号 NO.	项 目 Item	单位 unit	指 标 value									备注 remark
1	膜材厚度 thickness	mm	0.30	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00	
2	密度≤ density	g/cm^3	0.939									
3	拉伸断裂强度≥ tensile break strength	N/mm	6	9	14	19	23	28	37	47	56	(纵横向) (TD/MD)
4	断裂伸长率≥ break elongation	%	560									(纵横向) (TD/MD)
5	直角撕裂负荷≥ vertical tear strength	N	27	45	63	90	108	135	180	225	270	(纵横向) (TD/MD)
6	抗穿刺强度≥ anti-puncture strength	N	52	84	135	175	220	260	350	435	525	
7	炭黑含量 carbon black content	%	2.0-3.0									
8	碳黑分散性 carbon black distribute	h	10个数据中3级不多于1个，4级、5级不允许 In 10 data,3degree no more than 1,4 and 5 degree not allowed									
9	常压氧化诱导时间（OIT）≥ normal pressure oxidation time	min	60									
10	低温冲击脆化性能 low temperature anti-crispy	/	通过 pass									
11	水蒸汽渗透系数≤ vapour permeability	g.cm/ (cm2.s.Pa)	1.0×10^{-13}									
12	尺寸稳定性 size stability	%	±2.0									
13	厚度极限偏差 Thickness limit deviation	%	-10									

（光面）环保低密度聚乙烯HDPE土工膜指标【GL-2型】（国标II）GB/T 17643-2011

(smooth) environmental protection and low density polyethylene geomembrane HDPE index [GL-2] type (GB II) GB/T 17643-2011

序号 NO.	项 目Item	单位 unit	指 标value								备注 remark
1	膜材厚度 thickness	mm	0.50	0.75	1.00	1.25	1.50	2.00	2.50	3.00	
2	密度≤ density	g/cm^3	0.939								
3	拉伸断裂强度≥ tensile break strength	N/mm	13	20	27	33	40	53	66	80	(纵横向) (TD/MD)
4	断裂伸长率≥ break elongation	%	800								(纵横向) (TD/MD)
5	2%正割模量≤ 2%scant modulus	N/mm	210	370	420	520	630	840	1050	1260	
6	直角撕裂负荷≥ vertical tear strength	N	50	70	100	120	150	200	250	300	(纵横向) (TD/MD)
7	抗穿刺强度≥ anti-puncture strength	N	120	190	250	310	370	500	620	750	
8	炭黑含量 carbon black content	%	2.0-3.0								
9	碳黑分散性 carbon black distribute	h	10个数据中3级不多于1个，4级、5级不允许 In 10 data,3degree no more than 1,4 and 5 degree not allowed								
10	氧化诱导时间 oxidation time（OIT）	min	常压氧化诱导时间≥100 normal press oxidation time								
			高压氧化诱导时间≥400 igh press oxidation time								
11	85℃热老化（90d后常压OIT保留率）≥ 85℃ heat aging(after 90days the rate of OIT)	%	35								
12	抗紫外线（紫外线照射1600h后OIT保留率）≥ anti-UV(after 1600h the rate of OIT)	%	35								
13	厚度极限偏差 Thickness limit deviation	%	-10								

（光面）垃圾填埋场用高密度聚乙烯土工膜指标 CJ/T 234-2006

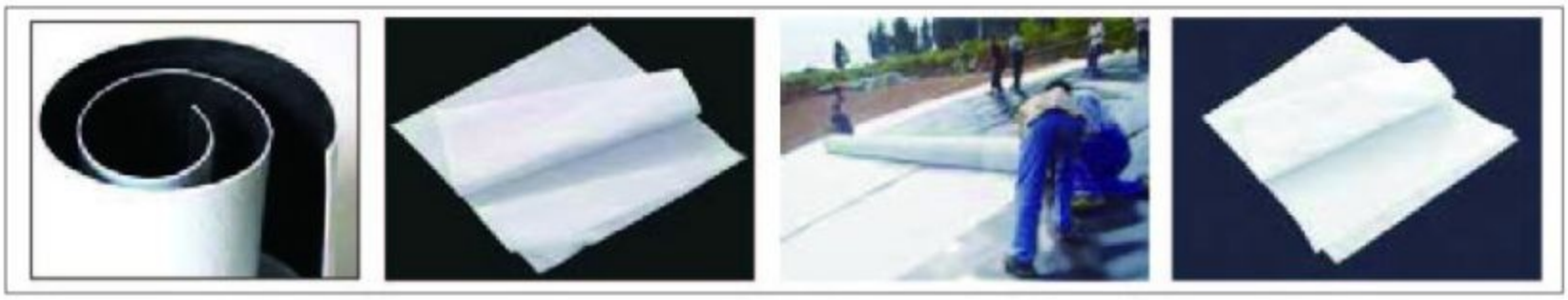
(smooth) Index of High Density Polyethylene Geomembrane for Landfill Site CJ/T 234-2006

序号	指 标 Index	测试值 Test value						
		0.75mm	1.00mm	1.25mm	1.50mm	2.00mm	2.50mm	3.00mm
1	最小密度 Minimum density g/cm^3	0.939						
2	拉伸性能 tensile property							
	屈服强度(应力)，Yield Strength (Stress)N/mm	11	15	18	22	29	37	44
	断裂强度(应力)，Fracture Strength (Stress)N/mm	20	27	33	40	53	67	80
	屈服伸长率 elongation at yield %	12						
	断裂伸长率 elongation at break %	700						
3	直角撕裂强度 Right-angle tear strength N	93	125	156	187	249	311	374
4	穿刺强度 Puncture strength N	240	320	400	480	640	800	960
5	耐环境应力开裂（单点切口恒载拉伸法），h Environmental Stress Cracking Resistance (Single-point Incision Constant Load Tensile Method)	300						
6	碳黑 carbon black							
	碳黑含量(范围) Carbon black content (range) %	2.0-3.0						
	碳黑分散度 Carbon Black Dispersion	10个观察区域中的9次应属于第1级或第2级，属于第3级的不应多于1次 Nine of the 10 observation areas should belong to level 1 or 2, and no more than one should belong to level 3						
7	氧化诱导时间（OIT） Induction time of oxidation							
	标准OIT，min；或 Standard OIT, min; or	100						
	高压OIT，min HIGH PRESSURE OIT, min	400						
8	85°C烘箱老化(最小平均值) Aging of 85°C oven (minimum average)							
	烘烤90d后，标准OIT的保留%；或 After 90 days of baking, the retention rate of standard OIT is 0%; or	55						
	烘烤90d后，高压OIT的保留% Retention of high pressure OIT after 90 days of baking	80						
9	抗紫外线强度 Ultraviolet Resistance							
	紫外线照射1600h后,标准OIT的保留%; Retention of standard OIT after 1600 hours of ultraviolet irradiation	50						
	紫外线照射1600h后,高压OIT的保留% After 1600 hours of ultraviolet irradiation, the retention of high-pressure OIT was less than 0%.	50						
10	-70°C低温冲击脆化性能 -70°CLow Temperature Impact Embrittlement Property	通过 pass						
11	水蒸气渗透系数 Water vapor permeability coefficient g·cm/(cm^2·s·Pa)	≤1.0x10^{-13}						
12	尺寸稳定性 dimensional stability %	±2						

三、非织造布复合土工膜

产品规格：1.一布一膜 基布：100 - 1000g/㎡，膜厚：0. - 1.5mm；
2.两布一膜 基布：80 - 600g/㎡， 膜厚：0.2 - 1.5mm；
3.一布两膜 基布：100 - 1000g/㎡，膜厚：0.1 - 0.8mm；
4.多布多膜 基布：100 - 1000g/㎡，膜厚：0.1 - 0.8mm；
基布可选择：SN短纤刺非织造土工布、FN长丝纺粘针刺非织造土工布、编织布、长丝机织布。
性能特点：柔韧性好，除具有土工布隔离、排水、加筋、防护等作用外，还具有封闭（防渗）功能。
用途作用：广泛应用于水利堤坝，交通隧洞，筑路、机场、排水、房屋、环保等许多领域，在工程中主要起防渗、防护、加固等作用。
包装规格：宽1-6m，长50-100m(或按用户要求)

Product specifications: 1 a cloth of a film substrate: 100 1000g/ square meters, the film thickness: 0 1.5mm;
2 two cloth of a film substrate: 80 600g/ square meters, the film thickness: 0.2 1.5mm;
3 a cloth two membrane fabric: 100 1000g/ square meters, the film thickness: 0.1 0.8mm;
More than 4 cloth membrane fabric: 100 1000g/ square meters, the film thickness: 0.1 0.8mm;
Features: good flexibility, in addition to a geotextile, drainage, reinforcement, isolation protection
Effect, but also has closed (seepage) function.
Usage: widely used in Dam Tunnel, traffic, road, airport, row
In many areas of water, housing, environmental protection, the main seepage prevention in engineering,
Protection, reinforcement and so on.
Packaging specifications: width 1-6m, length 50-100m (or according to user requirements)



非织造布复合土工膜技术指标（GB/T 17642-2008）
Technical Indicators of Nonwovens Composite Geomembrane (GB/T 17642-2008)

项目 Project		单位面积质量 Unit weight g/m²							
		400	500	600	700	800	900	1000	1100
标称断裂强度/（KN/m） The fracture strength of nominal / (KN/m)		5	7.5	10	12	14	16	18	20
1	纵横向断裂强度/（KN/m）≥ Longitudinal and transverse rupture strength / (KN/m)	5	7.5	10	12	14	16	18	20
2	纵横向标准强度对应伸长率/% Vertical and horizontal standard strength corresponding elongation	30~100							
3	CBR顶破强力/KN ≥ The bursting strength of /KN = CBR	1.1	1.5	1.9	2.2	2.5	2.8	3.0	3.2
4	纵横向撕破强力/KN ≥ Vertical and horizont al tear strength of /KN is more than or equal to	0.15	0.25	0.32	0.40	0.48	0.56	0.62	0.70
5	耐静水压/MPa Hydrostatic pressure /MPa	按表2							
6	剥离强度 Peel Strength N/cm	6							
7	垂直渗透系数/（cm/s） Coefficient of vertical permeability / (cm/s)	按设计或合同要求							
8	幅宽偏差/% Width deviation	-1.0							

项目 Item		膜厚度/mm (Thickness of geomembrane)							
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0
耐静水压/MPa ≥ Hydrostatic pressure	一布一膜 (Geotextile+Geomembrene)	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.6
	二布一膜 (Geotexile+Geomembrene+Geotextile)	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8

注1：实际规格（标称断裂强度）介于表中相邻规格之间，按线性内插法计算相应考核指标；超出表中范围，考核指标由供需双方协商确定。
注2：第6项如测定时试样难以以剥离或未到规定剥离强度基材或膜材断裂，视为符合要求。
注3：第8项标准值按设计或协议。
注4：实际断裂强度低于标准强度时，标准强度对应伸长率不作符合性判定。

Note 1: the actual specifications (nominal breaking strength) between the table adjacent specification, according to the linear interpolation method to calculate the corresponding evaluation index; beyond this range, the assessment index is negotiated by the parties.
Note 2: Sixth as measured by the specimen when difficult to peel or not to the specified peel strength base material or membrane rupture, deemed to be in compliance with the requirements.
Note 3: eighth standard value according to the design or agreement.
Note 4: the actual fracture strength less than the standard strength, standard strength corresponding elongation is not as consistent with the judgment.

四、糙面HDPE土工膜

HDPE土工膜具有优异的温度适应性，可焊接性，耐候性和良好的抗老化性、耐化学腐蚀性、耐环境应力开裂性能及抗戳穿性能。因此，特别适合地下工程、采矿工程、垃圾填埋场、污水或废渣处理场作为防渗漏材料用。

糙面HDPE土工膜是新型防渗材料，单糙面、双糙面等HDPE土工膜增加摩擦系数，防滑功能，更加适用于陡坡及垂直防渗，提高工程稳定性。

产品系列：单糙面、双糙面、柱点防滑、支脚钳固。

产品规格：厚度：1.0-3.0mm

幅宽：4-6m

卷长：按用户要求



HDPE geotechnical membrane has excellent temperature adaptability, weldability and weather resistance and good aging resistance, chemical resistance, environmental stress cracking resistance and anti puncture performance. Therefore, especially suitable for underground engineering, mining engineering, landfill, sewage or waste treatment field as anti leakage material.

Rough surface HDPE geotechnical membrane is a new type of impervious materials, single and double rough surface roughness surface HDPE geotechnical membrane increase friction coefficient, anti-skid function, is more suitable for the slope and vertical seepage control, improve the stability of engineering.

Product series

Single rough surface, rough surface, the double column points slip, foot clamping.

Product specifications

Thickness: 1.0-3.0mm

Fu width: 4-6M

Long: according to user requirements.

环保用糙面高密度聚乙烯土工膜（GH-2T1、GH-2T2）GB/T 17643-2011

Environmental protection with the rough surface of high density polyethylene geomembrane (GH-2T1, GH-2T2) GB/T 17643-2011

序号 NO.	项 目 Item	单位 Unit	指 标 technical data							备注 remark
1	厚度Thickness	mm	0.75	1.00	1.25	1.50	2.00	2.50	3.00	
2	毛糙高度≥	mm	0.25							
3	拉伸屈服强度≥ Tensile strength At yield≥	N/mm	11	15	18	22	29	37	44	(纵横向)
4	拉伸断裂强度≥ breaking strength≥	N/mm	8	10	13	16	21	26	32	(纵横向)
5	屈服伸长率≥ yield elongation≥	%	12							(纵横向)
6	断裂伸长率(纵横)≥ Elongation at Break(TD/MD)≥	%	100							
7	直角撕裂强度 (纵横)≥ Strength at Tear(Right-angle Tear) (TD/MD)≥	N	93	125	160	190	250	315	375	
8	抗穿刺强度≥ antipunture strength ≥	N	200	270	335	400	535	670	800	
9	拉伸负荷应力开裂（切口恒载拉伸法）≥	h	300							
10	碳黑含量 Carbon black content	%	2.0-3.0							
11	碳黑分散性 Carbon black distribute	/	10个数据中3级不多于1个，4级、5级不允许							
12	氧化诱导时间（OIT）≥ anti-oxidation time	min	常压氧化诱导时间≥100							
			高压氧化诱导时间≥400							
13	85℃热老化（90dg后常压OIT保留率）≥ 85℃heat anti-aging	%	55							
14	抗紫外线（紫外线照射1600h后OIT保留率）≥	%	50							
15	厚度极限偏差 Thickness limit deviation	%	-10							

注：序号12、13两项指标的常压OIT（保留率）和高压OIT（保留率）可任选其一测试。

Note: the atmospheric OIT serial number 12, 13 of two indicators (retention) and high voltage OIT (retention) can choose one test.

五、短纤针刺非织造土工布

产品介绍：短纤针刺非织造土工布是以PP或PET短纤维为主要原料，采用非织造工艺生产而成，具有隔离，过滤、排水、加筋、防护、养护等功能。

产品规格：80g/m²～1500g/m²；幅宽1～6米，长度根据客户需求。

产品特点：柔韧性好，耐腐蚀、耐酸碱、抗氧化；并具有良好的透水、过滤和隔离性能，施工方便；

应用范围：广泛应用于水利、水电、公路、铁路、港口、机场、运动场馆、隧道、沿海滩涂、围垦、环保等工程领域。

产品执行标准：GB/T17638-1998《土工合成材料短纤针刺非织造土工布》
GB/T17638-2017《土工合成材料短纤针刺非织造土工布》
JT/T 520-2004《公路工程土工合成材料短纤针刺非织造土工布》

Short fiber needle punched nonwoven geotextile

Description:
Made from PP (polypropylene) or PET (polyester) short fiber by nonwoven needle punched manufacturing process, it has isolation, filtration, drainage, reinforcement, protection and maintenance etc. function.
Specification:
1.80g/m2 – 1500g/m2
2.1m-6m in roll width, the length as clients' request
Property:
1.Good flexibility, resistant to corrosion, resistant to acids and alkalis, anti-oxidation
2.Separation, filtration, drainage, reinforcement, protection, and maintenance function
Application:
1.Water conservancy project and hydropower project
2.Road paving, railway
3.Airport and port
4.River bank protection and tunnel
5.Environmental protection, etc
Production standard:
GB/T17638-1998
GB/T17638-2017
JT/T 520-2004



短纤针刺非织造土工布技术指标（GB/T 17638-1998）

Technicalspecification of short fiber needle punched non woven geotextile (GB/T 17638-1998)

项目Item	规格 Specification											
	100	150	200	250	300	350	400	450	500	600	800	备注 Note
单位面积质量偏差 Weight Variation %	-8	-8	-8	-8	-7	-7	-7	-7	-6	-6	-6	
厚度 Thickness mm≥	0.9	1.3	1.7	2.1	2.4	2.7	3.0	3.3	3.6	4.1	5.0	
幅宽偏差 Width Variation %	-0.5											
断裂强力 Breaking Strength KN/m≥	2.5	4.5	6.5	8.0	9.5	11.0	12.5	14.0	16.0	19.0	25.0	纵横向 MD and TD
断裂伸长率 Elongation at Break %	25~100											
CBR顶破强力 CBR Mullen Burst Strength KN≥	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.2	4.0	
等效孔径 Sieve Size O_{90} mm	0.07~0.2											
垂直渗透系数 Vertical Permeability Coefficient,cm/s	K×（10^{-1}~10^{-3}）											K=1.0~9.9
撕破强力Tear Strengh KN≥	0.08	0.12	0.16	0.20	0.24	0.28	0.33	0.38	0.42	0.46	0.60	纵横向 MD and TD

短纤针刺非织造土工布技术指标 （GB/T 17638-2017）

Technical Indicators of Short Fiber Needle-punched Nonwoven Geotextile (GB/T 17638-2017)

项目 Item	标称断裂强度/（kN/m）								
	3	5	8	10	15	20	25	30	40
纵横向断裂强度Longitudinal and TransversFracture Strength(kN/m) ≥	3.0	5.0	8.0	10.0	15.0	20.0	25.0	30.0	40.0
标称断裂强度对应伸长率Corresponding elongation of nominal fracture strength%	20~100								
顶破强力Bursting strength(kN) ≥	0.6	1.0	1.4	1.8	2.5	3.2	4.0	5.5	7.0
单位面积质量偏差率Deviation rate of mass per unit area(%)	±5								
幅宽偏差率Width deviation rate(%)	-0.5								
厚度偏差率Thickness deviation rate(%)	±10								
等效孔径Sieve Size O_{90} mm	0.07~0.20								
垂直渗透系数Vertical Permeability Coefficient（cm/s）	Kx(10^{-1}~10^{-3}) 其中：K=1.0~9.9								
纵横向撕破强力Longitudinal and transverse tearing strength(kN) ≥	0.10	0.15	0.20	0.25	0.40	0.50	0.65	0.80	1.00
抗酸碱性能(强力保持率)Acid and alkali resistance (strength retention rate)(%)≥	80								
抗氧化性能(强力保持率)Antioxidant activity (strength retention rate)% ≥	80								

六、长丝纺粘针刺非织造土工布



产品介绍：以PET或PP为原料，采用熔融纺丝、气流成网、针刺固结工艺生产而成的具有三维孔隙的土工织物。

产品规格：克重100g/㎡～800g/㎡，幅宽2～6m。

产品特点：力学指标高，蠕变性能好；抗腐蚀能力强，耐老化、耐热性能优异，水力学性能优良。

应用范围：主要用于水利水电、环保、公路、铁路、堤坝、沿海滩涂、冶金矿山等工程的加筋、反滤、隔离及排水。

产品执行标准：GB/T17639-2008《土工合成材料 长丝纺粘针刺非织造土工布》
JT/T 519-2004《公路工程土工合成材料 长丝纺粘针刺非织造土工布》

Continuous Filament spunbonded nonwoven geotextile （HXTex® LFPET）

Description:
Made from virgin PET (polyester) chips, the continuous filament was extruded from PET chip by machine directly by spunbond process, and then punch together to get the stable 3D with higher strength fabric. So it has high strength, good creep property excellent and erosion resistance, aging-resistance and heat resistance.

Specification:
1.100g/m2 – 800g/m2
2.4m-6m in roll width, the length as clients' request

Property:
Good creep property and hydraulics property, resistance to corrosion, excellent anti-aging and heat-resistance quality.

Application:
1.Filtration of soils in drainage applications by retaining soil particles while allowing for the free flow of water
2.Separation and reinforcement in road and railway construction
3.Prevention of soil movement in erosion control measures
4.Cushioning and protection in many containment projects

Production standard:
GB/T17639-1998
JT/T 519-2004

长丝纺粘针刺非织造土工布技术指标（GB/T 17639-2008）

Technical specification of filament spunbonded needle punched geotextile (GB/T 17639-2008)

项目 Project		指 标value								
1	标称断裂强度/（KN/m） The fracture strength of nominal / (KN/m)	4.5	7.5	10	15	20	25	30	40	50
2	纵横向断裂强度/（KN/m）≥ Longitudinal and transverse rupture strength / (KN/m)	4.5	7.5	10	15	20	25	30	40	50
3	纵横向标准强度对应伸长率/% Vertical and horizontal standard strength corresponding elongation	40~80								
4	CBR顶破强力/KN ≥ The bursting strength of /KN = CBR	0.8	1.6	1.9	2.9	3.9	5.3	6.4	7.9	8.5
5	纵横向撕破强力/KN ≥ Vertical and horizontal tear strength of /KN is more than or equal to	0.14	0.21	0.28	0.42	0.56	0.70	0.82	1.10	1.25
6	等效孔径 $O_{90}(O_{95})$/mm	0.05~0.20								
7	垂直渗透系数/（cm/s） Coefficient of vertical permeability / (cm/s)	Kx(10^{-1}~10^{-3}) 其中：K=1.0~9.9								
8	厚度/mm ≥ Thickness mm≥	0.8	1.2	1.6	2.2	2.8	3.4	4.2	5.5	6.8
8	幅宽偏差/% Width deviation	-0.5								
9	单位面积质量偏差/% Weight Variation %	-5								

注1：规格按断裂强度，实际规格介于表中相邻规格之间，按线性内插法计算相应考核指标；超出表中范围时，考核指标由供需双方协商确定。

注2:实际断裂强度低于标准强度时，标准强度对应伸长率不作符合性判定。

注3:第8项~第9项标准值按设计或协议。

Note 1: specifications according to the fracture strength, the actual specification is in the table between adjacent specifications, according to the linear interpolation method to calculate the assessment index; beyond this range, evaluation index is determined by the supply and demand sides negotiation.
Note 2: the actual fracture strength is lower than the standard strength, strength of the corresponding elongation does not meet the standard of judgment.
Note: 3: eighth ~ ninth standard value according to the design or agreement.

七、长丝机织土工布



产品介绍：以高强度工业用合成纤维为原料，经机织工艺生产而成。

产品规格：经向标称断裂强度（KN/m）:35、50、65、80、100、120、140、160、180、200、250, 宽度6米以内。

产品特点：1、强度高;变形小，综合承载能力高；

2、耐久性:不易变性、分解、风化。能长久保持其原有特性；

3、耐腐蚀:耐酸、耐碱、耐虫蛀、耐霉菌；

4、透水性：孔隙结构均匀，透水性优良。

应用范围：广泛应用于河流、海岸、港湾、公路、铁路、码头、隧道、桥梁等岩土工程中。能满足各种岩土工程的反滤、隔离、加筋、防护等用途要求,是岩土工程中一类价值比较高的产品。

产品执行标准：GB/T17640-2008《土工合成材料 长丝机织土工布》

JT/T 514-2004《公路工程土工合成材料 有纺土工织物》

Filament woven geotextile

Description:

High strength industrial synthetic fiber as the raw material, made through weaving technology.

Specification:

Nominal breaking strength in MD (kN/m): 35, 50, 65, 80, 100, 120, 140, 160, 180, 200, 250, width within 6m.

Property:

1.High strength, low deformation

2.Durability: steady property, not easy to resolved, air slaked and can keep the original property long term

3.Anti-erosion: anti-acid, anti-alkali, resists insects and mould

4.Permeability: could control the sieve size to retain certain permeability

Application:

It is widely used in river, coast, harbor, highway, railway, wharf, tunnel, bridge and other geotechnical engineering. It could meet all kinds of geotechnical projects needs such as filtration, separation, reinforcement, protection and so on.

Production standard:

GB/T17640-2008 JT/T514-2004

长丝机织土工布技术指标（执行标准GB/T 17640-2008）

Filament woven geotextile specifiation（standard GB/T 17640-2008)

序号NO.	项目 Item	指标 Value										
	标称断裂强度 nominal strength KN/m	35	50	65	80	100	120	140	160	180	200	250
1	经向断裂强度 breaking strength in MD KN/m ≥	35	50	65	80	100	120	140	160	180	200	250
2	纬向断裂强度 breaking strength in CD KN/m ≥	按协议规定，无特殊要求，则按经向断裂强度×0.7 0.7 times of breaking strength in MD										
3	标准强度对应伸长率 nominal elontation % ≤	经向35，纬向30 35 in MD,30 in MD										
4	经纬向撕破强力 tear strength in MD and CD KN≥	0.4	0.7	1.0	1.2	1.4	1.6	1.8	1.9	2.1	2.3	2.7
5	CBR顶破强力 CBR mullen burst strength KN≥	2.0	4.0	6.0	8.0	10.5	13.0	15.5	18.0	20.5	23.0	28.0
6	垂直渗透系数 Vertical permeability cm/s	$K\times(10^{-2}\sim10^{-5})$ 其中：K=1.0~9.9										
7	等效孔径 sieve size $O_{90}(O_{95})$ mm	0.05~0.50										
8	幅宽偏差 width variation %	-1.0										
9	模袋冲灌厚度偏差 woven bag thickness variation under irrigate %	±8										
10	模袋长、宽偏差 woven bag variation in length and width %	±2										
11	缝制强度 sewing strength KN/m	标称断裂强度×0.5 half of nominal strength										
12	单位面积质量偏差 unit weight variation %	-5										

八、膨润土防水毯（GCL）

产品规格：单位面积质量≥4000g/m²，幅宽3-6m

性能特点：与压实粘土衬垫相比，具有体积小，重量轻，柔性好，密封性良好抗剪强度高，施工简便适应不均匀沉降等优点。

用途作用：主要应用于环境工程中的废气物填埋场、地下水库、地下基础设施建设等工程中解决密封、隔离、防渗漏问题，效果好，抗破坏性强。



Geosynthetic clay layer

Product specifications
Quality is more than 4000g/m2 per unit area, Fu wide 4-6m
Performance characteristics
Compared with the compacted clay liner, has the advantages of small volume, light weight, good flexibility, good sealing performance of high shear strength, convenient construction suitable settlement etc..
Use
Mainly used in the environmental engineering in waste landfill, groundwater reservoir, underground infrastructure project to solve the sealing, isolation, anti leakage problems, the effect is good, strong damage resistance.

膨润土防水毯技术指标(JG/T193-2006)

GCL （geosynthetic clay liner） Specification (JG/T193-2006)

项目 Item		技术指标 Technical specification		
		GCL-NP	GCL-OF	GCL-AH
膨润土防水毯单位面积质量 （g/m²） The quality of bentonite waterproof blanket unit area		≥4000且不小于规定值 ≥4000 and not less than the specified value	≥4000且不小于规定值 ≥4000 and not less than the specified value	≥4000且不小于规定值 ≥4000 and not less than the specified value
膨润土膨胀指数（mL/2g） Inflation index		≥24	≥24	≥24
吸蓝量 （g/100g） Blue uptake		≥30	≥30	≥30
拉伸强度 （N/100mm） Blue uptake		≥600	≥700	≥600
最大负荷下伸长率 % Max elongation		≥10	≥10	≥8
剥离强度 （N/100mm） Peel strength	非织造布与编织布 non-woven and woven fabric	≥40	≥40	-
	PE膜与非织造布 PE film and non-woven fabric	—	≥30	-
渗透系数 /（m/s) permeability coefficient		≤5.0×10^{-11}	≤5.0×10^{-12}	≤1.0×10^{-12}
耐静水压 durability		0.4MPa，1h,无渗漏	0.6MPa，1h,无渗漏	0.6MPa，1h,无渗漏
滤失量/ mL		≤18	≤18	≤18
膨润土耐久性 （mL/2g）		≥20	≥20	≥20

注： GCL-NP 针刺法钠基膨润土防水毯
GCL-OF针刺法钠基膨润土防水毯
GCL-AH 胶粘法钠基膨润土防水毯

Note: GCL-NP the acupuncture method of sodium bentonite waterproof carpet
GCL-OF the acupuncture method of sodium bentonite waterproof carpet
GCL-AH adhesive method of sodium bentonite waterproof blanket

九、EVA高分子复合自粘防水卷材

EVA高分子复合自粘防水卷材，采用合成高分子EVA复合片材、高聚物、改性优质沥青为基料，复合而成的新型具有优良防水性能的合成高分子防水卷材。兼有高分子防水卷材和自粘防水卷材的防水性能，一层卷材，两道设防，大大提高了防水层的防水效果。低温及潮湿环境条件下可施工，粘接密封性好、具有抗穿刺自愈性，延伸率高、产品无毒无味，符合环保要求。



EVA polymer composite self-adhesive waterproofing membrane

EVA polymer composite self-adhesive waterproofing membrane, using synthetic polymer EVA composite sheet, polymer modified asphalt, high quality as base material, compound and into model has good waterproof properties of the synthetic polymer waterproofing membrane. The waterproof performance of both polymer waterproofing membrane and self-adhesive waterproofing membrane, a layer of membrane, two fortifications, greatly improving waterproof effect of waterproof layer. Construction under low temperature and humid conditions, good sealing, bonding with puncture resistant self-healing, high elongation, the product non-toxic tasteless, Fu Hehuan protection requirements.

技术性能

Technical indicators

项目Item		指标Value	
		EVA300	EVA500
不透水性 Impermeability	压力pressure Mpa≥	0.2	0.3
	保持时间Keep Time min≥	30min 不透水 impermeable	30min 不透水 impermeable
耐温度* temperature-durability		70℃，加热2h，无气泡无滑动 Heating 2h,no bubbles,no sliding	
拉力Pulling force N/5cm		350	550
断裂伸长率Elongation at berak%		80	90
柔度Flexibility		-20℃，Φ20mm,3s,180° 无裂纹 Crack-free	
剪切性能 Shear Properties	卷材与铝板 Auminium&membrane≥	4.0或粘合面外断裂 4.0 or adhesive surface of fracture	
剥离性能 Stripping performance N/mm≥		2.0或粘合面外断裂 2.0 or adhesive surface of fracture	
与水泥砂浆粘结强度 N/mm≥ And the bonding strength of cement mortar		剪切性能 Shear Properties	6.0或粘合面外断裂
		剥离性能 Stripping performance	2.0或粘合面外断裂
抗穿孔性 Anti-Penetrating		不渗水No Leaking	
粘结面耐水性 Bonding surface of the water		与水泥砂浆剪切性能保持率 Shear propertiles of cement mortar&retention,≥95	
人工候化 Designate of the artificial	外观，无裂纹，无气泡 Apperaance, no crack, no bubble		
	拉力保持率% Force retention rate≥	80	
	柔度 Flexibility	-10℃，Φ20mm,3s,180° 无裂纹 Crack-free	

注：1.用于非外露工程时卷材耐温度不做检测。

2.粘结面耐水性项目，有用于长期浸泡水工程时检验。

Note: 1 for non exposed engineering material temperature does not detect.

2 the bonding surface water project, a long-term project to test the soaking water.

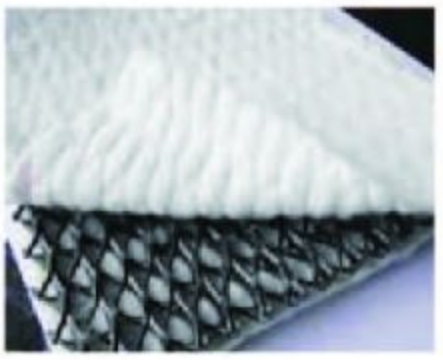
十、复合排水网

150/2-1600/2三维复合排水网

三维复合排水网由特有的三维土工网双面粘结土工布制成。组合了土工布（反滤作用）和土工网（排水和保护作用），提供完整的“反滤----排水-----保护”功效。

三维复合排水网网芯独特的三维结构，在整个使用过程中能够承受较高的压缩荷载，并能保持相当的厚度，提供很好的导水率。

典型应用：垃圾填埋场排水；公路路基和路面排水；铁路排水；隧道排水；地下结构排水，挡墙墙背排水；花园和运动场排水。



三维复合排水网的特点：

- 排水能力强，能承受长期高压荷载
- 极高的坑拉强度和抗剪强度
- 减少土工织物嵌入网芯的几率，能保护长期稳定的导水率
- 三维复合排水网能承受大于2000kpa的压缩荷载
- 远大于普通排水网的抗压能力

Tr-dimension composite geonet for drainage

Three dimensional 150/2-1600/2 composite drainage net

Three dimensional composite drainage net by the unique three-dimensional geonet double bonded geotextiles. A combination of geotextile (filtrate) and geonet (drainage and protection), providing a complete "filter, drainage, protection" effect.

Three dimensional composite drainage net core unique three-dimensional structure, able to bear high compressive load used in the whole process, and can keep the equivalent thickness, provide good rate of water.

Typical application: the landfill of highway subgrade and pavement drainage; drainage; railway tunnel drainage; drainage; drainage of underground structure, block

Wall back garden and field drainage drainage.

The characteristics of 3D composite drainage net:

The drainage ability is strong, can withstand the long-term high load

The high tensile strength and shear strength of the pit

To reduce the probability of the geotextile is embedded in the network core, can protect the long-term stability of the rate of water

The three-dimensional composite drainage net can withstand more than 2000kpa compression load

- far greater than the ordinary drainage network resilience

复合排水网技术指标（Q/78543358-5.1-2007）

Technical Indicators of Composite Drainage Network（Q/78543358-5.1-2007）

项目名称 Project name			复合排水网		复合防排水板	
			TRA252	TRA250	TRB254	TRB256
复合体	单位面积质量 Quality per unit area/(g/m²)		≥1400	≥1200	≥1600	≥1800
	厚度 thickness/(mm)		≥7.0	≥6.0	≥8.0	≥8.0
	抗拉强度 tensile strength/(kN/m)	纵向 portrait	≥18.0	≥16.0	≥18.0	≥18.0
		横向 transverse	≥10.0			
	导水率 Water conductivity/(m²/s)		≥1.2x10⁻³			
	剥离强度 peel strength/(kN/m)	网芯与无纺布	≥0.25			
		网芯与复合膜	—		≥0.3	
网芯	厚度 thickness/(mm)		≥5.0			
	纵向抗拉强度Longitudinal Tensile Strength/(kN/m)		≥15.0			
无纺布	单位面积质量 Quality per unit area/(g/m²)		≥200			
	横向抗拉强度Transverse Tensile Strength/(kN/m)		≥6.0			
	法向渗透系数Normal permeability coefficient(cm/s)		≥0.3			
复合膜	单位面积质量 Quality per unit area/(g/m²)		—		≥400	≥600
	横向抗拉强度Transverse Tensile Strength/(kN/m)		≥4.0			
	耐静水压力Hydrostatic pressure resistance/(MPa)		—		≥0.10	≥0.20

十一、防排水板





复合防排水板采用特殊工艺将塑料板材压出封闭突起的柱体壳形成凹凸状膜，壳连续、具有立体空间和一定支撑高度能抵抗长期高压，不会产生变形。壳体顶部覆盖土工布过滤层，确保排水通道不会因外来物而阻塞，如回填土颗粒或混凝土。

典型应用：

绿化工程：车库顶板绿化、屋顶花园、足球场、高尔夫球场、浴场工程。

市政工程：道路路基、地铁隧道、垃圾填埋场。

建筑工程：建筑物基层或下层、地下室外墙体、层面防渗和隔热层等。

交通工程：公路、铁路路基、堤坝和护坡层。

Composite dimple geomembrane

Composite waterproof and drainage plate adopts a special craft plastic plate extrusion enclosed barrel shell protrusions formed concave convex shell membrane, continuous, with three dimensional space and certain supporting height can withstand a long high, can not generate deformation. The top of the shell covering geotextile filtering layer, to ensure that the drainage channel does not block due to external objects, such as particles or concrete backfill. Typical applications:

The garage roof greening, greening projects: Roof garden, football, golf, beach engineering.

Municipal Engineering: road subgrade, subway tunnel, landfill.

Construction: building a base or lower, underground outdoor wall, seepage prevention and insulation level.

Traffic engineering: highway, railway subgrade, dam and slope protection layer.

防排水板技术指标（Q/78543358-5.1-2007）

Technical Index of Composite Waterproof and Drainage Plate（Q/78543358-5.1-2007）

项目名称 Project name			复合排水网		复合防排水板	
			TRA252	TRA250	TRB254	TRB256
复合体	单位面积质量 Quality per unit area/(g/m²)		≥1400	≥1200	≥1600	≥1800
	厚度 thickness/(mm)		≥7.0	≥6.0	≥8.0	≥8.0
	抗拉强度 tensile strength/(kN/m)	纵向 portrait	≥18.0	≥16.0	≥18.0	≥18.0
		横向 transverse	≥10.0			
	导水率 Water conductivity/(m²/s)		$\geq 1.2\times10^{-3}$			
	剥离强度 peel strength/(kN/m)	网芯与无纺布	≥0.25			
		网芯与复合膜	—		≥0.3	
网芯	厚度 thickness/(mm)		≥5.0			
	纵向抗拉强度Longitudinal Tensile Strength/(kN/m)		≥15.0			
无纺布	单位面积质量 Quality per unit area/(g/m²)		≥200			
	横向抗拉强度Transverse Tensile Strength/(kN/m)		≥6.0			
	法向渗透系数Normal permeability coefficient(cm/s)		≥0.3			
复合膜	单位面积质量 Quality per unit area/(g/m²)		—		≥400	≥600
	横向抗拉强度Transverse Tensile Strength/(kN/m)		≥4.0			
	耐静水压力Hydrostatic pressure resistance/(MPa)		—		≥0.10	≥0.20

十二、单向拉伸土工格栅







产品介绍：以聚合物和纳米级碳黑为主要原料，经挤出牵引工艺生产而成单向网孔均匀的格栅产品。

产品规格：TGDG35、TGDG50、TGDG80、TGDG120、TGDG160、TGDG260、TGDG300等。幅宽1m～3m

产品特点：1、增强路基，提高稳定性和承载力，可承受更大的交变载荷；
2、防止路基材料流失造成的路基变形、开裂；
3、可使挡土墙后的填土承载能力提高，节省工程费用。

应用范围：适用于高速公路、市政道路、铁路、飞机跑道等路基增强；江河海坝的堤坝增强；果园、菜地、牲畜、土地等的围栏，适用于高速公路、市政道路、铁路、飞机跑道、江河海岸边的加筋土挡墙的加筋工程。

产品技术指标：GB/T17689-2008 《土工合成材料　塑料土工格栅》
JT/T 480-2002《交通工程土工合成材料 土工格栅》

Uniaxial geogrid

Description:
Made from polymer and nano scale carbon black by extrusion technology.
Specification:
1.TGDG35, TGDG50, TGDG80, TGDG120, TGDG160, TGDG260, TGDG300 etc
2.1m to 3m in roll width
Property:
1.Roadbed reinforcement, improve stability and bearing capacity
2.Prevent roadbed from deformation and crack due to roadbed material wash off
3.Retaining wall bearing capacity improvement
Application:
1.Roadbed reinforcement in highway
2.Municipal road, railway, airport runway
3.Dam reinforcement
4.Garden fence and river bank
5.Retaining wall reinforcement in highway
Production standard:
GB/T17689-2008
JT/T 480-2002

聚丙烯单拉塑料格栅（GB/T17689-2008）

Uniaxial plastic geogrid polypropylene (GB/T17689-2008)

产品规格 Specification	抗拉强度 KN/m Tensile strength	纵/横向拉 2%伸长率时的伸强度 KN/m Tensile strength at 2% elongation	纵/横向拉 5%伸长率时的伸强度 KN/m Tensile strength at 5% elongation	标称伸长率% Nominal longation	煤矿领域产品 Products in the range of coal mine	
					离焰熄灭时间(s) Fire out time from outer flam	表面电阻值（Ω） Surfacs resistivity
TGDG35	≥35.0	≥10.0	≥22.0	≤10.0	≤3	$<1x10^9$
TGDG50	≥50.0	≥12.0	≥28.0			
TGDG80	≥80.0	≥26.0	≥48.0			
TGDG120	≥120.0	≥36.0	≥72.0			
TGDG160	≥160.0	≥45.0	≥90.0			
TGDG200	≥200.0	≥56.0	≥112.0			

高密度聚乙烯单拉塑料格栅（GB/T17689-2008）

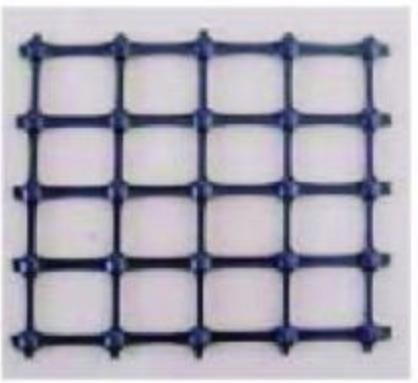
High density polyethylene (GB/T17689-2008) plastic geogrid tension

产品规格 Specification	抗拉强度 KN/m Tensile strength	纵/横向拉 2%伸长率时的伸强度 KN/m Tensile strength at 2% elongation	纵/横向拉 5%伸长率时的伸强度 KN/m Tensile strength at 5% elongation	标称伸长率% Nominal longation	煤矿领域产品 Products in the range of coal mine	
					离焰熄灭时间(s) Fire out time from outer flam	表面电阻值（Ω） Surfacs resistivity
TGDG35	≥35.0	≥7.5	≥21.5	≤11.5	≤3	$<1x10^9$
TGDG50	≥50.0	≥12.0	≥23.0			
TGDG80	≥80.0	≥21.0	≥40.0			
TGDG120	≥120.0	≥33.0	≥65.0			
TGDG160	≥160.0	≥47.0	≥93.0			

注：上表参照GB/T17689-2008 标准，特殊规格可按用户要求生产。

Note: The table reference GB / T17689-2008 standard, special specifications according to user requirements.

十三、双向拉伸土工格栅



产品介绍：以聚合物和纳米级碳黑为主要原料，经挤出牵引工艺生产而成的纵、横向网孔尺寸均匀的格栅产品。

产品规格：TGSG1515、TGSG2020、TGSG2525、TGSG3030、TGSG3535、TGSG4040、TGSG4545、TGSG5050、TGSG6060等。幅宽2m～6m

产品特点：1、增大路（地）基的承载力，延长路（地）基的使用寿命；
2、防止路（地）面塌陷或产生裂纹，保持地面美观整齐；
3、增强土坡，防止水土流失;支撑边坡植网垫的稳定性绿化环境；
4、可取代金属网，用于煤矿井下假顶网。

应用范围：适用于各种堤坝和路基补强、边坡防护、洞壁补强，大型机场、停车场、码头货场等永久性承载的地基补强。

产品执行标准：GB/T17689-2008《土工合成材料　塑料土工格栅》
JT/T 480-2002《交通工程土工合成材料 土工格栅》

Biaxial Geogrid

Description:
Made from polymer and nanometer carbon black by extrusion method.
Specification:
1.TGSG1515, TGSG2020, TGSG2525, TGSG3030, TGSG3535, TGSG4040, TGSG4545, TGSG5050, TGSG6060 and so on
2.Width from 2m to 6m
Property:
1.Improve roadbed bearing capacity, enlarge road lifetime
2.Prevent road collapse and crack
3.Prevent soil and water loss in slope
4.Could replace steel-plastic geogrid in coal mine
Application:
1.Reinforcement in dam and roadbed
2.Slope protection
3.Wall reinforcement
4.Roadbed bearing capacity improvement in airfield, parking lot and wharf
Production standard:
GB/T17689-2008
JT/T 480-2002

聚丙烯双向拉伸塑料格栅（GB/T17689-2008）Polypropylene Bidirectional Tensile Plastic Grid

产品规格 Specification	纵/横向拉伸强度KN/m Tensile strength	纵/横向拉2%伸长率时的伸强度KN/m Tensile strength at 2% elongation	纵/横向拉 5%伸长率时的伸强度 KN/m Tensile strength at 5% elongation	纵/横向标称伸长率% Nominal longation	煤矿领域产品 Products in the range of coal mine	
					离焰熄灭时间(s) Fire out time from outer flam	表面电阻值 (Ω) Surfacs resistivity
TGSG15-15	≥15.0	≥5.0	≥7.0	≤15.0/13.0	≤3	$<1x10^9$
TGSG20-20	≥20.0	≥7.0	≥14.0			
TGSG25-25	≥25.0	≥9.0	≥17.0			
TGSG30-30	≥30.0	≥10.5	≥21.0			
TGSG35-35	≥35.0	≥12.0	≥24.0			
TGSG40-40	≥40.0	≥14.0	≥28.0			
TGSG45-45	≥45.0	≥16.0	≥32.0			
TGSG50-50	≥50.0	≥17.5	≥35.0			

注：1.上表参照GB/T17689-2008 标准。2.上表中伸长率的内控指标为≤10%。
Note: 1 table according to GB/T17689-2008 standards. Internal control index of 2 on the table in the elongation is less than or equal to 10%.

十四、双向粘焊土工格栅GSZ

双向钢塑加筋复合粘焊土工格栅的用途，除广泛应用与建筑基础工程，道路，海防，江河，堤岸，护坡等工程的地基加筋处理，以增强土体搞剪切强度外，还是一种专用与煤矿的新型防护网，明显适合煤矿巷道防护改造之用，克服井下使用的不安全因素。



产品规格：GSZ30-30 GSZ150-150 HBGS+400MS HBGS+RE6000MS
HBGS-RE7000MS HBGS+RE800MS

性能特点：强度高、变形小、结构均一、施工方便等。

用途作用：各种软土地基加筋处理、增强土体的抗剪强度、应用于挡墙加固老路拓宽等。还适用于煤矿矿进在厚煤层、特厚煤层进行进行分层开采时用作护帮网、防止采空区窜矸与巷道支护。

包装规格：宽≤6.1m、长50m(或按客户要求)

Biaxial steel-plastic compound geogrid (steel-plastic compound support net in the coal mine)

Bi-plastic geogrid reinforced composite stick welding purposes, in addition to a wide range of applications processed foundation reinforced foundation engineering and construction, roads, coastal, river, embankment, slope protection and other projects to enhance soil shear strength to engage in outside, or a special and new mine safety net, clear protection for reconstruction of the roadway with coal, mine used to overcome the insecurity.

Product Specifications

GSZ30-30 GSZ150-150 HBGS + 400MS HBGS + RE6000MS
HBGS-RE7000MS HBGS + RE800MS

Features:

High strength, small deformation, uniform structure, easy construction.

Role Purpose:

All kinds of soft soil reinforced handle, to enhance the shear strength of soil, retaining wall reinforcement applied to the old road widened and so on. Also applies to coal mines into the thick coal seams, thick coal seam mining is used to help protect the network when stratified prevent channeling waste rock mined-out area and roadway.

Packing:

Wide ≤6.1m, length 50m (or according to customer requirements)

双向粘焊土工格栅GSZ技术指标（JT/T480-2002）

Technical Indicators of Bidirectional Bonded Geogrid GSZ (JT / T480-2002)

规格 Size / 项目 Item	GSZ30-30	GSZ40-40	GSZ50-50	GSZ60-60	GSZ80-80	GSZ100-100	GSZ150-150
纵向抗拉强度 Tenslie Strength kN/m(LD)	≥ 30	≥ 40	≥ 50	≥ 60	≥ 80	≥ 100	≥ 150
横向抗拉强度 Tenslie Strength kN/m(TD)	≥ 30	≥ 40	≥ 50	≥ 60	≥ 80	≥ 100	≥ 150
纵 / 横向延伸率 % Elongation Rate(LD TD)	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
伸长率在 1% 时纵向抗拉强度 KN/m Tenslie Strength at 1% elongation(LD)	≥ 20	≥ 32	≥ 40	≥ 48	≥ 63	≥ 81	≥ 125
伸长率在 1% 时横向抗拉强度 KN/m Tenslie Strength at 1% elongation(TD)	≥ 20	≥ 32	≥ 40	≥ 48	≥ 63	≥ 81	≥ 125
粘焊点极限剥离强力 N Max peel strength at welding point	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100	≥ 100
煤矿领域产品 Products in the rang of coal mine	离焰熄灭时间（s） Fire out time from outer flam			≤ 3			
	表面电阻值（s） surface resistivity			< 1×10^9			

注：1.上表参照标准：JT/T480-2008; 2.单向型（GDZ）及特殊规格可按用户要求生产。

Notes: 1 Table of reference on:. JT / T480-2008; 2. unidirectional (GDZ) and special specifications according to user requirements.

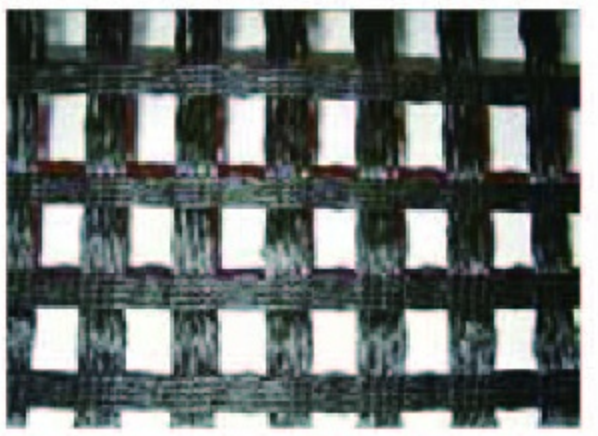
十五、双向拉伸(GSL)高强聚酯长丝经编(GSJ)土工格栅

产品规格： GSJ30-30-GSJ1 50-15 JDPP000MS JDPP4000MS
JDPP6000MS JDPP7000MS JDPP8000MS

性能特点：质轻．强度高．结构均一．抗弯折性强。经编粘焊便于施工。阻燃，抗静电．整体 性好，便于机械化作业。

用途作用：用于基础工程，道路，矿井防护．海防江河堤岸护坡等工程的地基加筋处理．提高路基的荷载。对于煤碳矿井巷道、锚喷巷道起支护作用(护帮网，假顶网)。

包装规格：宽≤6m长50m(或按用户要求)



Biaxial warp-knitted Geogrid (Plastic false ceiling net in the coal mine)

Product specification:GSJ30-30-GSJ1 50-15 JDPP000MS JDPP4000MS
JDPP6000MS JDPP7000MS JDPP8000MS

Features: light weight and high strength. The structure of uniform bending and strong. Warp welding construction. Flame retardant, antistatic.

Good integrity, convenient mechanization.

Usage: used in foundation engineering, road, mine protection. Coastal dike slope protection engineering foundation reinforcement treatment.

Increasing the load. For coal mine roadway, bolting and shotcreting roadway supporting (guard net, top net).

Packaging specifications: width of less than 6m length 50m (or according to user requirements)

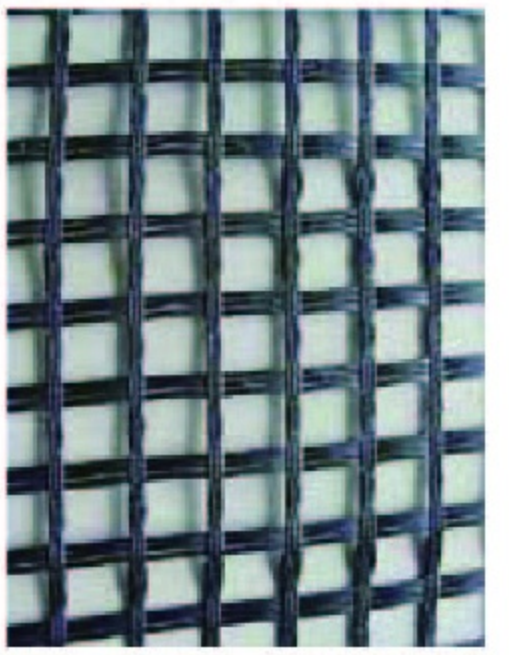
双向拉伸(GSL)高强聚酯长丝经编(GSJ)土工格栅（JT/T480-2002）

Bidirectional Tensile (GSL) High Strength Polyester Filament Warp Knitted (GSJ) Geogrid (JT/T480-2002)

产品规格 Specification	纵/横向拉伸强 KN/m Tensile strength	纵/横向2%伸长率时的伸强度 KN/m Tensile strength at2% elongation	纵/横向 5%伸长率时的伸强度 KN/m Tensile strength at5% elongation	纵/横向标称抗拉强度下的伸长率% Nominal elongation	煤矿领域产品 Products in the range of coal mine		粘焊点极限剥离强力 N Max peel strength at welding point
					离焰熄灭时间(s) Fire out time from outer flam	表面电阻值（Ω） Surfacs resistivity	
GSJ20-20	≥20	≥7.0	≥14.0	≤13.0	≤3	$<1x10^9$	≥30.0
GSJ35-35	≥35	≥12.0	≥24.0				
GSJ50-50	≥50	≥17.0	≥34.0				
GSJ80-80	≥80	≥28.0	≥56.0				
GSJ100-100	≥100	≥35.0	≥70.0				
GSJ125-125	≥125	≥43.0	≥86.0	≤14.0			
GSJ150-150	≥150	≥52.0	≥104.0				

注：1.上表参照标准JT/T480-2002。
2.单向型（GDJ）及特殊规格可按用户要求生产。
Note: 1 table reference standard JT/T480-2002.
The 2 one-way type (GDJ) and special specification can be produced according to user requirements.

十六、双向经编玻纤土工格栅（GSB）



产品介绍：以GE纤维为主要原料，采用先进的编织工艺及特殊的涂复处理工艺制成的网状结构材料。可提高整体使用性能，是一种新型优良的土工基材。

产品规格：30-30、50-50、80-80、100-100、120-120kN

产品特点：产品有强度高、伸长率低、耐高温、模量高、重量轻、韧性好、耐腐蚀、寿命长等特点。可给路面增强、补强，防止路面车辙疲劳裂纹，热冷伸缩裂纹和下面的反射裂纹，并能将路面承载应力分散，延长路面使用寿命。

应用范围：1、旧沥青砼路面，加筋增强沥青面层，防治路面塌陷；

2、水泥砼路面改建复合式路面，抑制板块收缩等引起反射裂缝；

3、道路拓改工程，防治新老结合部及不均匀沉降而造成裂纹；

4、软土基加筋处理，利于软土析水固结，有效抑制沉降，均匀应力分布，增强路基整体强度；

5、新建道路半钢性基层产生收缩裂缝，加筋增强防止基础裂纹反射而引起的路面裂缝。

产品技术指标：JC 893.1-1998《玻璃纤维土工格栅 第一部分 沥青路面用玻璃纤维土工格栅》

Bidirectional glass fiber warp knitting geogrid

Description:

Made from GE fiber by weaving technology and coating treatment.

Specification:

30-30, 50-50, 80-80, 100-100, 120-120kN

Property:

1.High strength, low elongation

2.Heat-resistant, high modulus

3.Light weight, good flexibility

4.Anti-erosion, long lifetime

Application:

1.Roadbed reinforcement, prevent road surface crack

2.Road reconstruction

3.Soft soil reinforcement, improve road whole bearing capacity and prevent crack

Production Standard:

JC 893.1-1998

双向经编玻纤土工格栅（GSB）技术指标（JT/T480-2002）

The bidirectional glass fiber warp knitting geogrid technical indicators (JT/T480-2002)

项目 Item / 规格 Size		GSB25-25	GSB30-30	GSB40-40	GSB50-50	GSB80-80	GSB100-100	GSB125-125	GSB150-150
抗拉强度 Tensile Strength KN/m	纵向 Logitudinal	≥25	≥30	≥40	≥50	≥80	≥100	≥125	≥150
	横向 Traverse	≥25	≥30	≥40	≥50	≥80	≥100	≥125	≥150
伸长率 Elongation Rate %		≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
耐温性 Temperature Resistance ℃		-100-280	-100-280	-100-280	-100-280	-100-280	-100-280	-100-280	-100-280

注：上表参照标准：JT/T480-2002，特殊规格可按用户要求生产。

Note: The above table is referring to JT/T480-2002 standard, special sizes are available at customer's request.

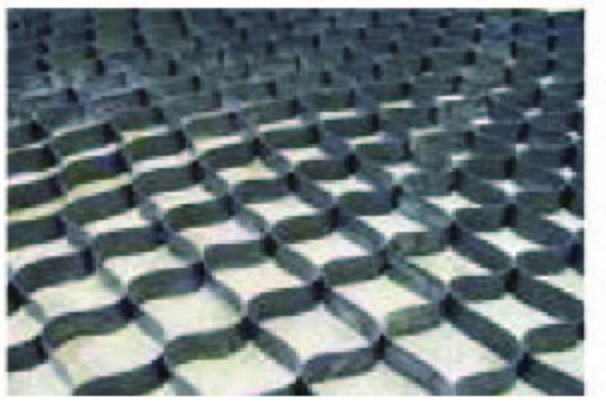
十七、土工格室

产品规格：TGLG5 TGLG8 TGLG10 TGLG15 TGLG20(cm)

性能特点：抗老化、耐酸碱、结构均一，具有很好的侧向限制固土作用，施工简便快捷等

用途作用：软土地基的加固，陡坡防护，用于公路、铁路、机场、码头，特别适用于风化的山林、沙漠及沼泽地等。

包装规格：长4.1m-6.8m



Geocell

Product specifications

TGLG5 TGLG8 TGLG10 TGLG15 TGLG20 (CM)

Performance characteristics

Aging resistant, acid and alkali resistance, uniform structure, with lateral good limit fixation, convenient and fast construction etc.

Use

Reinforcement of soft soil foundation, the steep slope protection for highway, railway, airport, wharf,, is especially suitable for weathering mountains, desert and swamp etc..

Packaging specifications

Long 4.1m-6.8m

土工格室技术指标 GB/T19274-2003

Geocell GB/T19274-2003 technical indicators

项目 Item　　规格 Size	材质为PP的土工格室 Geotechnical cell made of PP	材质为PE的土工格室 Geotechnical cell made of PE	高强度土工格室 High strength grogrid
外观 Appearance	格室片应平整、无气泡、无沟痕		
片材抗拉强度 Tensile Strength of Sheet Materials MPa	≥23(PP)	≥20(PE)	≥200
焊接处抗拉强度 Tensile Strength of Wei seam N/cm	≥100(PP)	≥100(PE)	≥150
焊接间距 Distance of Welding mm	330~550		
展开尺寸 Stretched Size mxm	4X5~6X7		

注：上表参照标准：GB/T19274-2003。特殊规格可按用户要求生产。

Note: the table reference standard: GB/T19274-2003. Special specifications can be produced according to user requirements.

十八、塑料土工网

产品介绍：是以热塑性树脂为原料，加抗紫外线助剂，经挤压成方形、菱形、六边形网格状的产品，具有抗老化、耐腐蚀等特征。公路、铁路路基中使用可有效地分配荷载，提高地基的承载能力及稳定性，延长寿命。在公路边坡上铺设，可防止滑坡，保护 水土，美化环境。水库、河流堤坝防护铺设可有效的防止塌方；在海岸工程中用其柔韧性好，渗透性好的特点来缓冲海浪溃冲击能量。

产品规格：CE121、CE131、CE151、DN1、HF10。

产品特点：1、结构均匀，可承受重载荷，提高地基的承载能力及稳定性，延长寿命；
2、具有抗老化、耐腐蚀等特征，并防止路基裂痕，避免塌方；增强路面稳定性，防止裂纹；
3、具有柔韧性强，渗透性好，不受海水侵蚀，并能吸收波浪冲击量；提高堤坝及岩石表面的防护，以防止侵蚀作用。

应用范围：适用于江河堤坝防护，海岸治理，隧道工程及防波堤导流坝的铺设等，以及用于一般软土地地基加筋处理，石笼固砂，排水垫层，边坡防护植草、沿海作业等。

产品技术指标：GB/T19470-2004《土工合成材料 塑料土工网》
JT/T 513-2004《公路工程土工合成材料 土工网》



PlasticGeonet

Description:
Made from thermoplastic resin and UV resistant by extrusion into square, diamond and hexagon net shape.
Specification:CE121、CE131、CE151、DN1、HF10
Property:
1.Uniform structure, can bear high pressure. improve the roadbed bearing capacity, enlarge its lifetime
2.Anti-aging, protect dam and rock surface from chemical erosion and sea water corrode
Application:
River bank and dam protection; seacoast treatment; tunnel project and common soft soil reinforcement.
Production standard:
GB/T19470-2004
JT/T 513-2004

塑料土工网技术指标 GB/T19470-2004 Plastic Geonet Specifications GB/T19470-2004

单位面积质量、厚度、网孔尺寸及规格偏差
Mass per unit area, thickness, aperture size and standard deviation

项 目 Item	CE 121	CE131	CE151	DN1	HF10
单位面积质量 Uint weight g/m²	730±35	630±30	550±25	750±35	1240±60
厚度 Thickness / mm	-	-	-	≥6.0	≥5.0
网孔尺寸 Mesh Size (axb)/mm	(8±1) x(6±1)	(27±2)x(27±2)	(74±5)v(74±5)	(10±1)x(10±1)	(10±1)x(6±1)
宽度偏差 Width variation， m	+0.06 0				
长度偏差 Length Variation m	+1 0				

拉伸屈服强度 Tensile strength At yield

项 目 Item	CE 121	CE131	CE151	DN1	HF10
拉伸屈服强度 Tensile strength At yield /(KN/m)	纵、横向 Vertical and horizontal≥6.2	纵、横向 Vertical and horizontal≥5.8	≥5.0	纵、横向 Vertical and horizontal≥6.0	纵、横向 Vertical and horizontal≥18

十九、塑料三维土工网垫

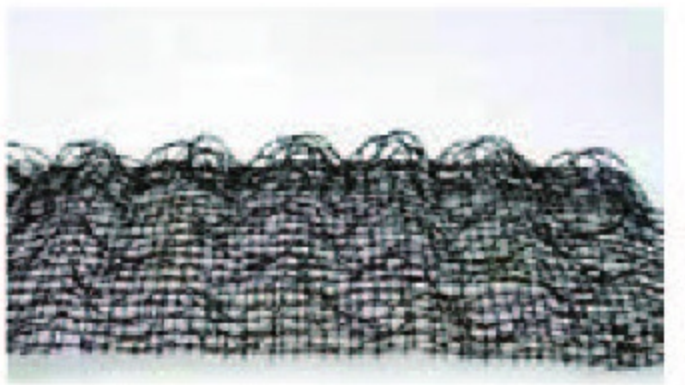
产品型号：塑料三维土工网垫

产品规格：EM2 EM3 EM4 EM5

性能特点：三维立体的空腔能有效地将草和土固定重量轻，施工简便。

用途作用：保护植被，防止水土流失，用于公路、铁路、机场、河道等的护坡植草，园林绿化、沙漠固土等。

包装规格：宽1m-2m，长50m（或按用户要求）



Plastic 3D Geomat

The product model

Plastic 3D Geomat

Product specifications

EM2 EM3 EM4 EM5

Performance characteristics

A three-dimensional cavity can effectively combine the grass and soil fixed light weight, convenient construction.

Use

Protection of vegetation, prevent soil erosion, used in highway, railway, airport, the river revetment grass, landscaping, desert soil fixation etc..

Packaging specifications

Wide 1m-2m, length 50m (or according to user requirements)

塑料三维土工网垫技术指标 GB/T 18744-2002

Earthwork mesh cushion technique index of GB/T 18744-2002

单位面积质量、厚度、尺寸及偏差

Unit weight,size and variation

项　目 Item	EM_2	EM_3	EM_4	EM_5
单位面积质量 Uint weight g/m^2	≥220	≥260	≥350	≥430
厚度 Thickness / mm	≥10	≥12	≥14	≥16
宽度偏差 Width variation / m	+0.1 0			
长度偏差 Length Variation / m	+1 0			

拉伸强度　Tensile strength

项　目 Item	EM_2	EM_3	EM_4	EM_5
纵向拉伸强度 Longitudinal tensile strength/(KN/m)	≥0.80	≥1.4	≥2.0	≥3.2
横向拉伸强度 Horizontal tensile strength/(KN/m)	≥0.80	≥1.4	≥2.0	≥3.2

二十、塑料扁丝编织土工布

产品规格：BT20-15 BT30-22 BT40-28 BT50-35 BT60-42

性能特点：耐酸碱、抗变形、具有良好的排水隔离性能，施工方便等。

用途作用：用于公路、铁路、堤坝，沿海滩涂等工程的防渗反滤、排水隔离等。

包装规格：宽2-6m，长50-100m（或按用户要求）

Plastic flat silk woven geotextile

Product specifications

BT20-15 BT30-22 BT40-28 BT50-35 BT60-42

Performance characteristics

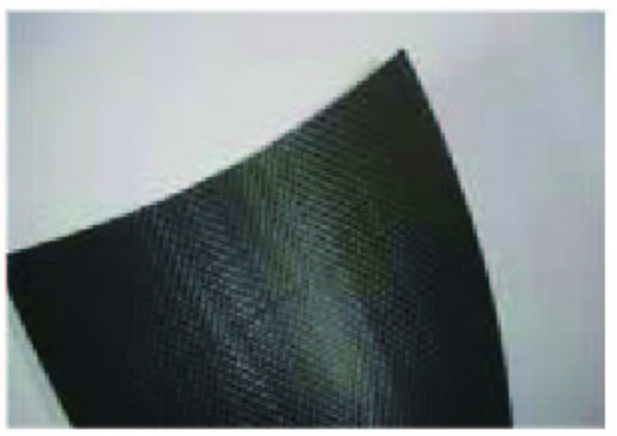
Acid and alkali resistance, resistance to deformation, with drainage good isolation performance, convenient construction etc..

Use

Used in highway, railway, dam, coastal beach engineering seepage filtration, drainage etc..

Packaging specifications

Wide 2-6m, length 50-100m (or according to user requirements)







塑料扁丝编织土工布技术指标（GB/T 17690-1999）

Plastic flat silk woven geotextile technical indicators (GB/T 17690-1999)

项目 Item	指标 Lndex						
	20-15	30-22	40-28	50-35	60-42	80-56	100-70
经向断裂强力 Breakage strength KM/m≥（LD）	20	30	40	50	60	80	100
纬向断裂强力 Breakage strength KM/m≥（TD）	15	22	28	35	42	56	70
经纬向断裂伸长率 Elongation Rate %≤（LD,TD）	28						
梯形撕破强力（纵向）Trapezoidal Tearing strength KN≥（LD）	0.3	0.45	0.5	0.6	0.75	1.0	1.2
顶破强力 Burst Strength KN≥	1.6	2.4	3.2	4.0	4.8	6.0	7.5
垂直渗透系数 Vertical Permeability Coefficient cm/s	10^{-1}~10^{-4}						
等效孔径 Sieve size (O95.)mm	0.08~0.5						
单位面积质量 Unit weight g/m2	120	160	200	240	280	340	400
允许偏差值 Variation %	±10						
抗紫外线强力保持率%	≥ 按设计或合同要求						

注：上表参照标准：GB/T17690-1999，特殊规格和涂膜防渗型可按用户要求生产。

Note: the table reference standard: GB/T17690-1999, special specifications and film anti-seepage type can be made according to the requirement of users.

德州耀华 德耀中华

二十一、HDPE双壁波纹管

性能特点：

用HDPE制成的波纹管具有机械性能优良，耐环境应力开裂性好，耐热应力开裂性好、耐化学腐蚀性好及不易渗透等优点。

用途作用：

广泛应用于公路、铁路路基，铁路工程、废弃物填埋场、隧道、绿化带、运动场及含水量高引起的边坡防护等排水领域。

HDPE corrugated pipe with double walls

Performance characteristics

Bellows made of HDPE pipe has excellent mechanical properties, environmental stress cracking resistance, thermal stress cracking, good resistance to chemical corrosion resistance and not easy penetration etc..

Usege

Widely used in highway, railway subgrade, railway engineering, waste landfill, tunnel, green belt, sports field and moisture caused by high slope protection and drainage area.







HDPE双壁波纹管技术指标（GB/T19472.1-2004）

HDPE corrugated pipe with double walls specification

外径系列管材的尺寸 Pipe diameter size

公称外径 DN/OD	最小平均外径 Dem/min Ave.od(min)	最大平均外径 Dem/max Ave/id(cmax)	最小平均内径 Dim/min Ave.od(min)	最小层压壁厚 Emin Outer layer-thickness	最小内层壁厚 Eimin Inner layer-thickness	接合长度 Amin Bonding length
110	109.4	110.4	90	1.0	0.8	32
125	124.3	125.4	105	1.1	1.0	35
160	159.1	160.5	134	1.2	1.0	42
200	198.8	200.6	167	1.4	1.1	50
250	248.5	250.8	209	1.7	1.4	55
315	313.2	316.0	263	1.9	1.6	62
400	397.6	401.2	335	2.3	2.0	70
500	497.0	501.5	418	2.8	2.8	80
630	626.3	631.9	527	3.3	3.3	93
800	795.2	802.4	669	4.1	4.1	110
1000	994.0	1003.0	837	5.0	5.0	130
1200	1192.8	1203.6	1005	5.0	5.0	150

管材的物理力学性能 The physical and mechanical properties of Tube

项目 Project	要求 Request
SN2	≥2
SN4	≥4
环刚度(SN6.3)	≥6.3
Central stiffness	≥8
KN/m² (SN12.5)	≥12.5
SN16	≥16
冲击性能 Impact Performance (TIR)%	≤10

二十二、塑料盲沟

产品规格：塑料盲沟是将热望性合成树脂加热熔化后通过喷咀挤压出纤维丝叠置在一起，并将其相接点熔结而成的三维立体多孔材料，在主体外包裹土工布作为滤膜，有多孔矩形，中空矩形，多孔圆形，中空圆形四种结构形式，具有多种尺寸规格。

性能特点：抗压强度高，耐压性能好
表面开孔率高，集排水性好
永久的使用寿命
滤膜的可选择性

施工方便：柔性好适应土体变形

用途作用：广泛应用于隧道防渗排水,铁路公路的路基排水,软基筑堤,挡土墙反滤,坡面与坡内排水,地下建筑的排水防潮,草坪的集排水系统,天台花园集排水,污水处理，垃圾填埋场等各类工程。





Plastic blind drain

Product specifications

Plastic blind drain is plastic synthetic resin melted through the nozzle extruded filaments are stacked together, the three-dimensional porous material and its contact melting into the subject, in the outer package of geotextile as membrane, porous hollow rectangle, rounded rectangle, porous, hollow circular four the structure form, with a variety of dimensions.

Performance characteristics

High compressive strength, good pressure resistance
Surface high hole rate, drainage is good
Permanent service life
Selective membrane
Convenient construction
Good flexibility to adapt to the deformation of soil

Use

Widely used in seepage prevention and drainage of subgrade drainage tunnel, railway and highway, soft base embankment, retaining wall filter, slope and slope within the drainage, drainage moisture underground buildings, water collecting and drainage system of roof garden lawn, drainage, sewage treatment, landfill and other kinds of Engineering

常见规格表 Common Specifications

1.圆形 Cricular shape

圆形	规格型号	MY5A	MY7A	MY8A	MY8B	MY10A	MY15A	MY20A
	截面尺寸 mm	外径Φ50	外径Φ70	外径Φ80	外径Φ80 内径Φ45	外径Φ100 内径Φ60	外径Φ150 内径Φ100	外径Φ200 内径Φ140

2.矩形 Pectangle

矩形	规格型号	MF7	MF12	MF13	MF30	MF40
	截面尺寸 mm	70X30 内径10x40	120x35	130X35 内径10x50x2	300X35	400X35

通水量指标表 Water flux Indicators Table

		MF7	MF12	MF13	MY5A	MY7A	MY8A	MY10A	MY15A	MY20A
截面尺寸mm		70x30 内径10x4	120x35	130x35 内径10x50x2	外径 Φ50	外径 Φ70	外径 Φ80	外径 Φ100 内径Φ80	外径 Φ150 内径Φ100	外径 Φ200 内径Φ140
抗压强度	压强MPa	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
	变形量cm	< 0.9	< 0.8	< 0.8	< 0.4	< 0.5	< 0.6	< 1.0	< 2.5	< 4
	测试方法	参照国家行业标准SL/T235-1999								
通水量	M^3/d	52.8	72	72	81	112	148	180	240	360
	M^3/h	2.2	3	3	3.3	5.0	6.2	7.5	11.2	15
	测试条件	水力梯度i=0.2;水头差Δh:0.3m,管长L:1.5m								

二十三、软式透水管

产品介绍：将涂覆PVC的钢丝加工成螺旋状作为骨架，在骨架上缠绕热轧布而成，具有通过整体的周身全方位过滤并快速有效排除地下水，渗透率高，排水量大，取代传统的聚氯乙烯打孔管渗水。

产品规格：按外径分为：50㎜、80㎜、100㎜、150㎜、200㎜、250㎜、300㎜。

产品特点：孔隙直径小，全方位透水，渗透性好；抗压耐拉度高，使用寿命长；耐腐蚀和抗微生物侵蚀性好；整体连续性好，接头少，衔接方便；质地柔软，与土结合性好等优点。

应用范围：1、挡土墙北面垂直及水平排水；2、铁路路基、路肩，软土地基排水；3、地下道的排水；4、灰坝及水利坝体的排水；5、公路中央隔离带排水及保护植被；6、运动场地的排水；7、水平钻空排水；8、滑地排水护坡；9、花园及花台排水；10、水土保持；11、地基工程的地下排水；12、洼地排水及盐碱地改造工程。

产品执行标准：

JC 937-2004《软式透水管》

Flexible Permeable hose

Description:

Made by steel wire virile coated by PVC, outer calendared with geotextile. It has the advantages of whole filtration and draining quickly and efficiently, high permeability, large tonnage, replacing traditional PVC pipe with holes.

Specification:

Distribution by outer diameter: 50mm,80mm,100mm,150mm200mm,250mm,300mm.

Property:

Pore diameter is small, round water permeability, permeability good, high compression resistant, long lifetime, corrosion resistance and good anti-microbial corrosion, good continuity, joint less, easy to connect, soft, and connect with soil easily.

Application:

1.Vertical and horizontal drainage of retaining north walls

2.The railway roadbed, curbs, soft soil drainage

3.Underpass drainage

4.The ash dam and water dam drainage

5.The central isolation belt of highway drainage and vegetation protection

6.Sports venues drainage

7.Horizontal drilling air drainage

8.Slippery slope drainage

9.Garden and flower bed drainage

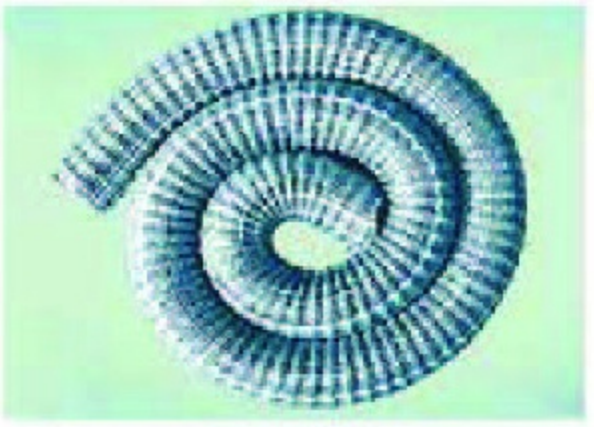
10.Water and soil conservation

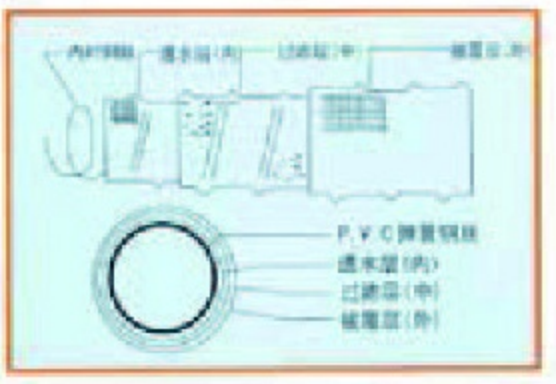
11.Underground drainage of basement

12.Swale drainage and Saline renovation project

Production Standard:

JC 937-2004 < Flexible Permeable hose>







二十四、高分子止水带



高分子止水带为片状带体状，止水带的上下两侧设置固定肋，具有柔韧性、耐用性、抗腐蚀性、变形性能优异等特点。

用途：用于水利、水电工程，堤坝涵闸、隧道地铁、人防工事、高层建筑地下室和停车场等工程的变形和施工缝、沉降缝中，起到隔离和防水的作用。

Macromolecule sealing water tapes

Polymer waterstop is flaky with body shape, water stop belt on the two sides of the fixing rib is arranged, flexibility, durability, corrosion resistance, deformation performance characteristics.

Use

For irrigation, hydropower project construction, deformation and dam culvert, tunnel, subway, civil air defense basement of high-rise building and parking lot and other engineering joint, settlement joint, play the role of isolation and waterproof.

高分子止水带技术指标 GB/T 18173.2 -2014

Macromolecule sealing water tapes Specifications

项目 Project			指标 Index			适用试验条目 Applicable test items
			B、S	J		
				JX	JX	
硬度hardness(邵尔A)/度			60±5	60±5	40-70[a]	5.3.2
拉伸强度tensile strength/MPa		≥	10	16	16	5.3.3
拉断伸长率Elongation at break/%		≥	380	400	400	
压缩永久变形 Compression permanent deformation/%	70°Cx24 h,25%	≤	35	30	30	5.3.4
	23°Cx168 h,25%	≤	20	20	15	
撕裂强度tear strength/(kN/m)		≥	30	30	20	5.3.5
脆性温度Brittleness temperature/ °C		≤	-45	-40	-50	5.3.6
热空气老化 Hot air ageing 70 °Cx168h	硬度变化(邵尔A)/度	≤	+8	+6	+10	5.3.7
	拉伸强度/MPa	≥	9	13	13	
	拉断伸长率/%	≥	300	320	300	
臭氧老化Ozone aging 50x10^{-8}:20%,(40+2)°Cx48h			无裂痕			5.3.8
橡胶与金属粘合[b] Rubber-metal bonding [b]			橡胶间破坏	—	—	5.3.9
橡胶与帘布粘合强度[c]/(N/mm)		≥	—	5	—	5.3.10

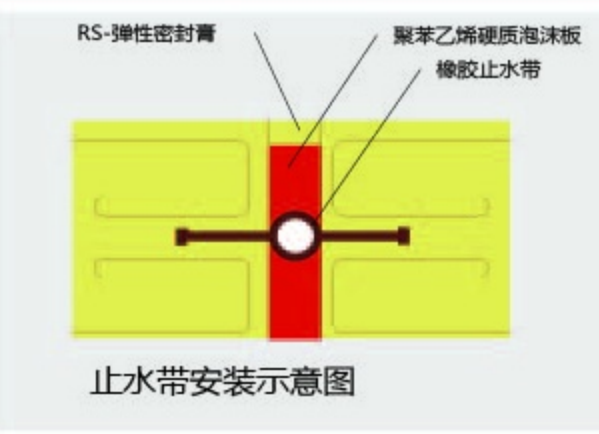
遇水膨胀橡胶符合止水带中的遇水膨胀橡胶部分按GB/T 18173.3的规定执行。

注：若有其他特殊需要时，可由供需双方协议适当增加检验项目。

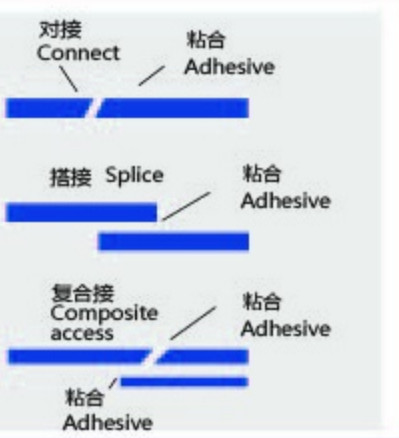
a：该橡胶硬度范围为推荐值，供不同沉管隧道工程JY类止水带设计参考使用

b：橡胶与金属粘合项仅适用与钢边复合的止水带。　　c：橡胶与帘布粘合项仅适用与窗帘复合的JX类止水带。





止水带安装示意图



二十五、PVC塑料止水带



产品介绍：PVC塑料止水带由优级聚氯乙烯树脂与各种化工添加剂，经挤出等工序而制成的止水带产品。它充分利用聚氯乙烯树脂的变形特性在建筑构造接缝中起到防漏、防渗作用，且具有耐腐蚀、耐久性好的特点。

产品规格：具有良好的耐磨性、耐腐蚀、耐久性性能，适应变形能力强、防水性能好等特点。

产品特点：B型：适用于变形缝止水带；

S型：适用于施工缝用止水带；

G型：钢边止水带；

应用范围：一般用于荒山、矿山修复，高速公路和铁路边坡绿化、河岸护坡，内河整治等工程中。

PVC plastic water stop

Product Name: PVC plastic water stop belt is made of high-grade polyvinyl chloride resin and various chemical additives through extrusion and other processes. It makes full use of the deformation characteristics of polyvinyl chloride resin to play a leak-proof and seepage-proof role in the construction joints, and has the characteristics of corrosion resistance and good durability.

Product features: It has good wear resistance, corrosion resistance, durability, strong deformation adaptability, good waterproof performance and so on.

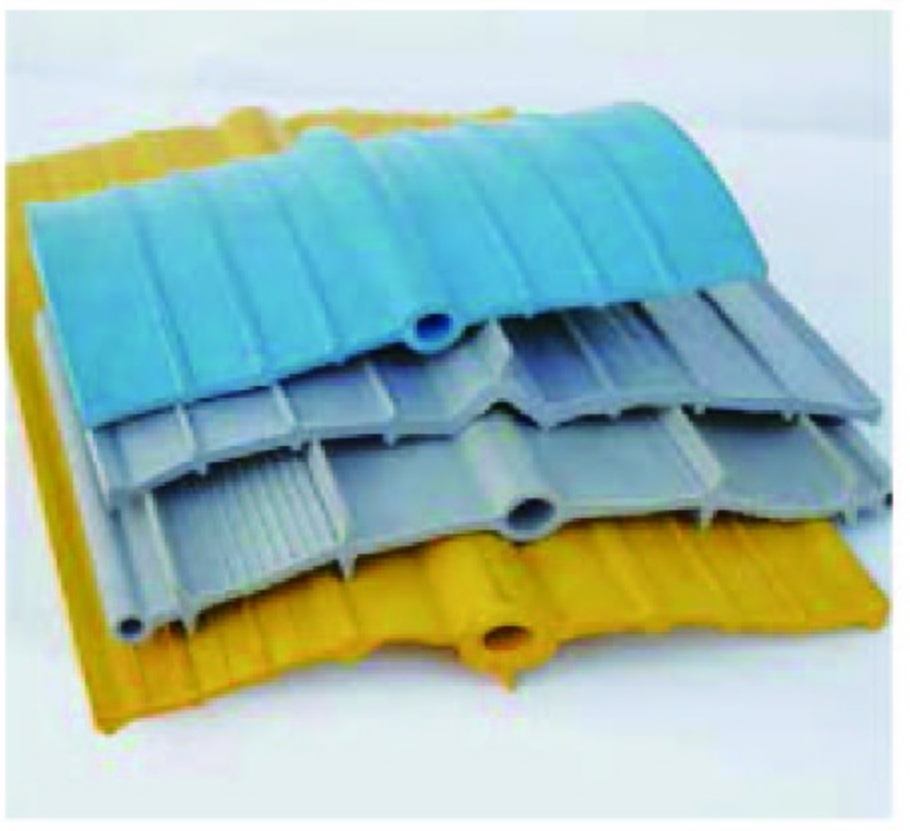
Product Specification: Type B: Suitable for deformation joint water stop belt;

Type S: Suitable for water stopper for construction joints.

G type: steel edge water stop belt;

Scope of application: PVC plastic waterproof belt is mainly used in the basic engineering which is integrated with concrete in construction joint and deformation joint when concrete is poured. Such as tunnels, culverts, diversion aqueducts, dams, liquid storage structures, underground facilities, etc.





二十六、止水条

1、此类产品预置于混凝土施工缝、后浇缝的界面上，二次浇筑混凝土后（即被混凝土包裹的状态下）遇水膨胀能彻底堵塞缝隙水。
2、在静水中浸泡其整体性完好不解体。适用于水流速度较高的水利工程。
3、膨胀速度缓慢，抗水压能力强，适用于雨季和水丰富的施工工地使用。
4、施工方法简便。按施工方法操作，其防水抗渗的可靠性远远优于传统的钢板、橡胶及塑料止水带。
5、主体材料为无机矿物原料，具有耐老化、抗腐蚀、无污染等特性。

适用范围及条件：遇水膨胀止水条适用于混凝土施工缝、后浇缝的止水。同时也适用于建筑构件拼装接缝；盾构法隧道管片接缝；接缝的嵌缝；板缝墙缝的止水。广泛用于贮水池、沉淀池、地下室、地下车库、地铁、隧道、涵洞、大坝、防洪堤等各种地下建筑工程和水利工程。



Sealing strip

1, such products are preset in the concrete construction joint, after pouring seam interface, two times after pouring of concrete (i.e., surrounded by the concrete condition) of water swelling can completely blocked slit water.
2, in still water soaked the whole do not collapse. Suitable for high flow velocity of water conservancy project.
3, the expansion speed is slow, the pressure resistant ability, suitable for the rainy season and water rich construction site use.
4, the construction method is simple. According to the construction method of operation, steel, rubber and plastic sealing waterproof anti permeability of its reliability is much better than the traditional belt.
5, the main material for inorganic mineral raw materials, has anti-aging, corrosion resistance, no pollution and other characteristics.

Applicable scope and condition:
Sealing strip is suitable for concrete construction joint, after pouring seam sealing water swelling. At the same time, also suitable for building component assembly joints of shield tunnel segment joint; method; seam caulking; sealing seam wall joint.
Widely used in tank, sedimentation tank, basement, underground garage, subway, tunnels, culverts, dams, levees and other kinds of underground engineering and hydraulic engineering.

止水条技术指标 GB/T 18173.3 -2014

Technical specification of Sealing strips

项目 Item	指标 Value		
	PN-150	PN-220	PN-300
体积膨胀倍率%≥ Volume expansion ratio	150	220	300
高温流淌性（80℃x5h） High temperature flow	无流淌 no flow	无流淌 no flow	无流淌 no flow
低温试验（-20℃x2h） Low temperature test	无脆裂 No embrittlement	无脆裂 No embrittlement	无脆裂 No embrittlement

BW-C、BW-S产品常用规格尺寸

长度x宽度x厚度 length x width x thickness	备 注 NOTE
5000x20x15	用户可根据工程需要，设计任何形状尺寸， 我公司均可生产。 Users can design any shape and size according to project needs, our company can produce all
5000x30x20	
5000x50x20	

二十七、生态袋

产品介绍：是由PET或PP为原料，通过纺粘法制成的双面熨烫定型无纺布然后加工成规定尺寸的袋子，袋体内根据当地土壤情况按科学比例填充土、砂、肥料等填充物，然后喷播适宜当地气候生长的草种植被，形成能够恢复或营造新的生态系统的产品。



产品规格：生态袋坯布克重：150～180g/㎡,生态袋几何尺寸根据工程设计要求。

产品特点：1、具有抗紫外线，抗老化，无毒，不助燃，裂口不延伸的特点；

2、袋体柔软，整体性好，透水性强，抗冲刷，耐久性能优良；

3、可塑性好、施工工序简便；

4、耐腐蚀性强,耐微生物分解，水土保持性优，易于植物生长；

5、集环境保护、生态绿化、水土保持三位一体的综合功能，形成生态护坡系统。

应用范围：一般用于荒山、矿山修复，高速公路和铁路边坡绿化、河岸护坡，内河整治等工程中。

Ecologicalbag

Eco bag material is a kind of non woven geotechnical fabric, it is a high strength plane stable material net made of polypropylene rayon acupuncture. The erosion of this special preparation polypropylene can be anti ultraviolet, not affected by a chemical substance in the land. This material is not a qualitative change in decay, erosion permanent nondegradable and resistance to insect pests. Eco bag with physical and permeability of industry approved. Eco bag raw material moisture resistance, no moisture absorption, moisture appeared not to destroy the bag, the bag can not be deformed, insoluble in liquid pollution. Raw materials used in American imported PP material, anti UV, anti ageing, non-toxic, non combustion, good stability, characteristics of breach does not extend, mainly used in the construction of flexible vegetation slope. Eco bag green, is the barren, mining rehabilitation, side slope greening of expressway construction, one of the important methods in river regulation.

Application field:

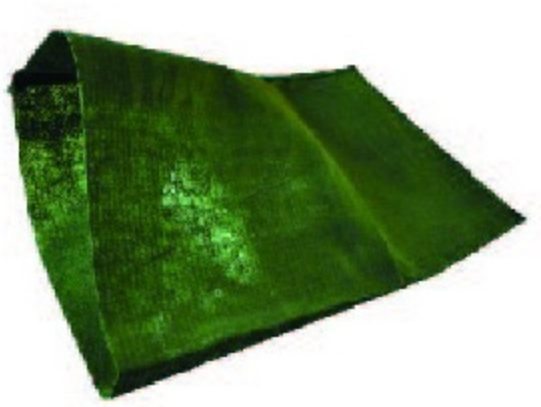
The water transport engineering, reservoir fluctuation zone: ecological riparian green complex, wetland, lake and coastal engineering project, highway subgrade slope, slope protection, the culvert pier import and export "character" wall.

The city garden project: green mountain, mountain slope excavation, retaining wall engineering, city center, ecological riparian Park Lake, landfills, golf etc..

The real estate landscape engineering: artificial landscape river, residential area, landscape gardening, hydrophilic wall slope retaining wall, roof greening etc..

The other engineering: emergency treatment of the collapse of the slope, desert greening, nature reserve, ecological flood control wall, vertical wall, the existing hardware structure of the ecological greening etc..







二十八、普通橡胶止水带

本产品广泛应用于各种类型的混凝土及现浇混凝土结构中。例如:暗渠、挡水坝、蓄水池、倒虹吸、地铁、涵洞、隧道等。

Ordinary rubber waterstop

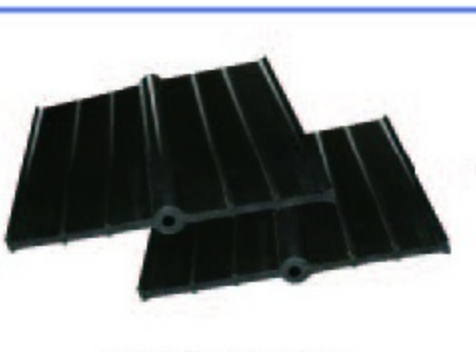
This product is widely used in various types of concrete and cast-in-place concrete structures. For example: underground channel, retaining dam, reservoir, inverted siphon, subway, culvert, tunnel, etc.



中埋式橡胶止水带
Middle buried rubber waterstop



外贴式橡胶止水带
External rubber waterstop



可卸式橡胶止水带
Detachable rubber waterstop



注浆管橡胶止水带
Grouting pipe rubber waterstop

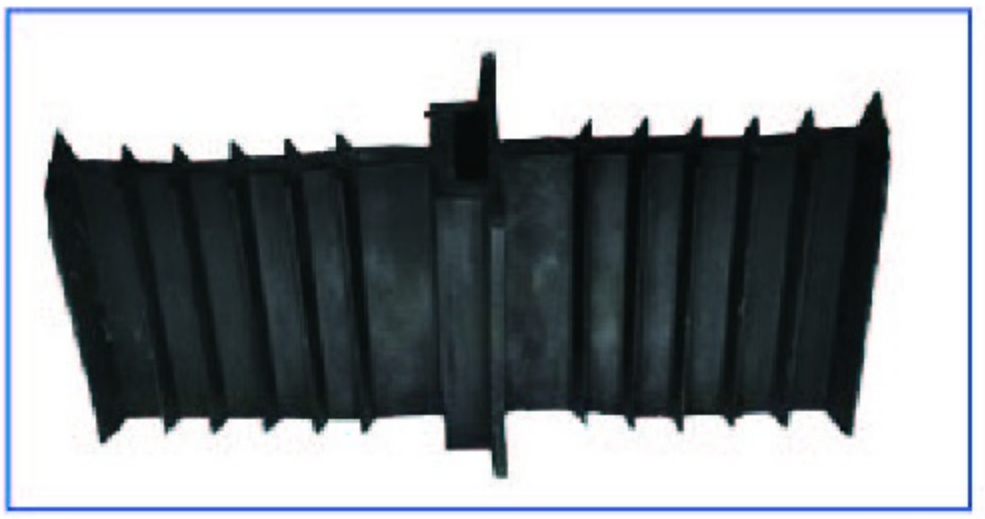
二十九、Z9-30止水带

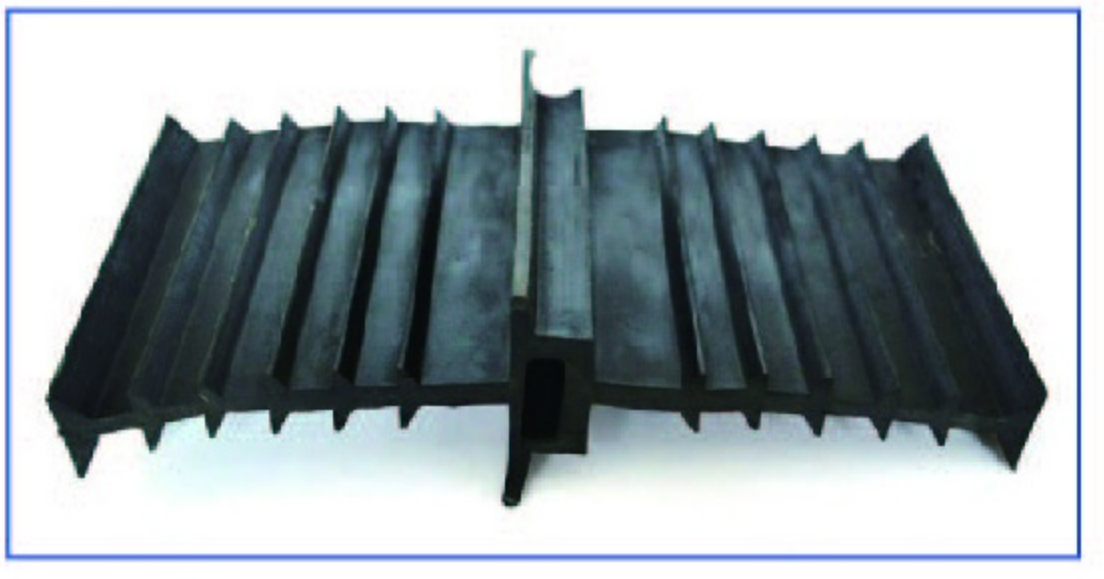
止水带的作用及适用范围

29-30型橡胶止水带为船坞专用橡胶止水带，中央为长方形加长边设计，左右单面各五条燕尾型防水线，两边也为燕尾设计，这样的形式大大增加了Z9-30型止水带与混凝土的附着力。一般规格为300mm宽8mm厚.也可根据客户需求按图纸加工定做!

Function and application scope of waterstop

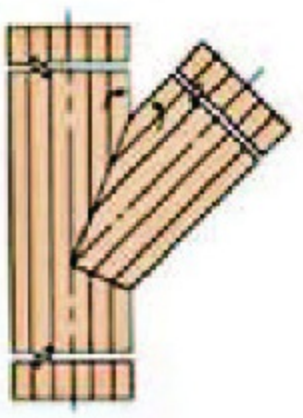
The 29-30 rubber waterstop is a special rubber waterstop for the dock. The center of the rubber waterstop is designed with a rectangle and an extended edge. There are five swallowtail water proofing lines on the left and right sides, and the two sides are also designed with swallowtail The form of the sample greatly increases the adhesion between the z9-30 type waterstop and the concrete. The general specification is 300 mm wide and 8 mm thick. It can also be customized according to the customer's requirements!



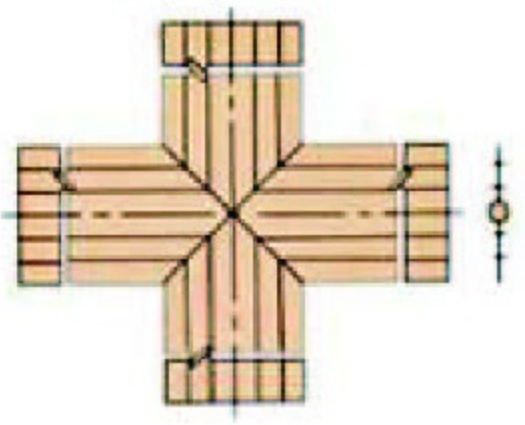


三十、止水带接头形式一览表

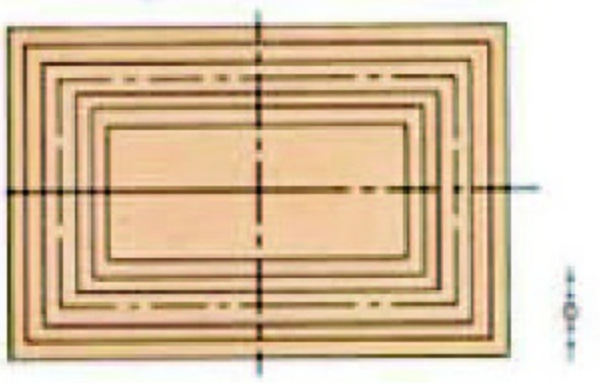
一、斜角型



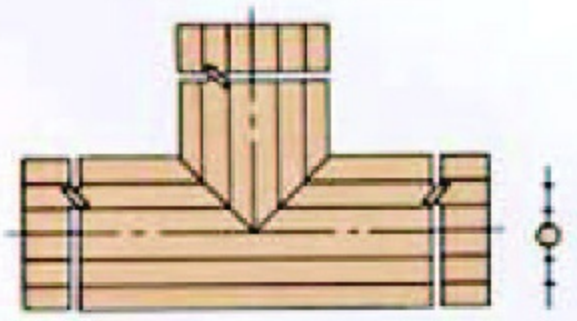
二、十字型



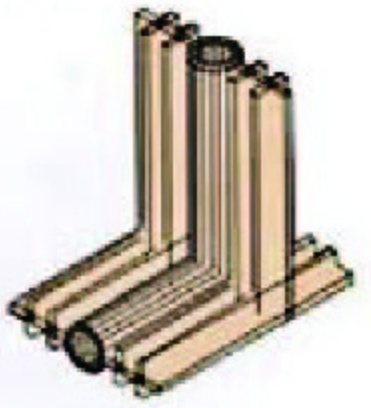
三、环形



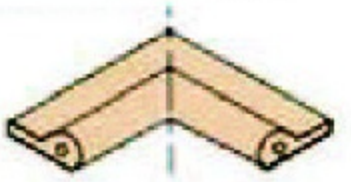
四、平行丁字形



五、丁字形



六、直角形



内直角

外直角



橡胶止水带施工与安装

止水带是在混凝土浇注过程中部分或全部浇埋在混凝土中。由于混凝土中有许多尖角的石子和锐利的钢筋，所以在止水带定位和混凝十浇捣过程中，应注意安装定位方法和浇捣压力，以避免止水带被刺破。由于塑料和橡胶的抗撕裂强度比拉伸强度低3-5倍。所以如果止水带刺破将会大幅度降低止水带抵抗外力的能力，故在施工中要格外注意。具体注意事项如下:

1、在绑扎钢筋和支模时，止水带必须采取可靠的固定措施。避免在浇注混凝土时发生位移，保证止水带在混凝土中的正确位置。(施工图)

2、固定止水带时，只能在止水带的允许部位上穿孔打洞。不得损坏本体部分。

3、止水带的固定方法应接设计要求的施工规范进行。常用的固定方法有:利用附加钢筋固定；专用卡具固定；用乾丝和模板固定等。不论采用何种固定方法，都必须保证止水带定位准确。不损环止水带有效部分。方便混凝土浇捣。

4、止水带应尽量在工厂中连接成整体。如因制造工艺、运输条件等限制，需在现场连接的，应采用热压硫化胶合(橡胶止水带)或焊接(塑料止水带)，其接头外观应平整光洁，抗拉强度不低于母材的80%， 不加任何处理的所谓“搭接”是绝对不允许的。

5、止水带的各种交叉连结点，本公司生产成配件。以保证在施工中现场连接只在直线段进行。

6、在供货时，可提供相应规格止水带接头模具，技术人员尚可随时到施工现场指导，根据实际情况，需方可与我公司联系。

Construction and installation of rubber waterstop

The waterstop is partially or completely poured and buried in the concrete during the concrete pouring process. As there are many sharp stones and sharp steel bars in the concrete, they are located in the waterstopDuring the process of concrete pouring and tamping, attention shall be paid to the installation and positioning method and pouring and tamping pressure to avoid the water stop being punctured. Because the tear strength of plastic and rubber is 3-5 times lower than the tensile strength.Therefore, if the waterstop is punctured, its resistance to external forces will be greatly reduced, so special attention should be paid in the construction. Specific precautions are as follows:

1. When binding reinforcement and formwork, the waterstop must be fixed reliably. Avoid displacement when pouring concrete, and ensure the correct position of waterstop in concrete.(construction drawing)

2. When fixing the waterstop, holes can only be punched on the allowed parts of the waterstop. Do not damage the body part.

3. The fixing method of waterstop shall be in accordance with the construction specifications required by the design. The common fixing methods are: fixing with additional reinforcement; fixing with special fixture; fixing with dry wire and formwork And so on. No matter what fixing method is adopted, the waterstop must be positioned accurately. Do not damage the effective part of the ring water stop. It is convenient for concrete pouring and tamping.

4. The waterstop shall be connected as a whole in the factory as far as possible. If it needs to be connected on site due to the limitations of manufacturing process and transportation conditions, hot press vulcanization glue (rubber waterstop) shall be usedOr welding (plastic waterstop), the joint appearance shall be flat and smooth, the tensile strength shall not be less than 80% of the base metal, and the so-called "lap joint" without any treatment is absolutely not allowed.

5. All kinds of cross connection nodes of waterstop are produced into accessories by our company. In order to ensure that the site connection is only carried out in the straight section during the construction.

6. At the time of supply, the water stop joint mold of corresponding specifications can be provided, and the technical personnel can still guide at the construction site at any time. According to the actual situation, the demander can contact our company.

三十一、防草布

防草布又称为“园林地布”、“杂草抑制席”、“抑草布”，是一种纵横编织的塑料编织布，透气性好、渗水快、防治杂草生长的一种园艺和农业用地面防草布。

Grass cloth

Weed-proof cloth, also known as "garden floor cloth", "weed restraint mat" and "grass restraint cloth", is a kind of plastics woven cloth, which has good air permeability, fast seepage and weed control.

产品展示

Product display





三十二、汽车地毯

德州耀华土工材料有限公司生产各类汽车地毯，用于汽车脚垫、车厢内饰、行李箱、顶蓬呢等，毯面克重从200克到1000克，并有多种幅宽可供选择，产品立体饱满，阻燃环保，高档典雅。

Automobile carpet

Dezhou Yaohua Geotechnical Material Co., Ltd. for the production of all kinds of car carpet, used car Ottomans, interior compartment, luggage, top woolen blanket surface, weight from 200 grams to 1000 grams, and a variety of width available for selection, product stereo full, green flame retardant, high-grade and elegant.

产品展示

Product display



三十三、展览地毯

德州耀华土工材料有限公司是展览地毯用户的最佳选择和最好的合作伙伴，我们可以提供多种颜色及幅宽选择，而且我们的质量也已经在全球范围不同的市场中都得到了认可。广泛应用于国内外各种大型展览活动。

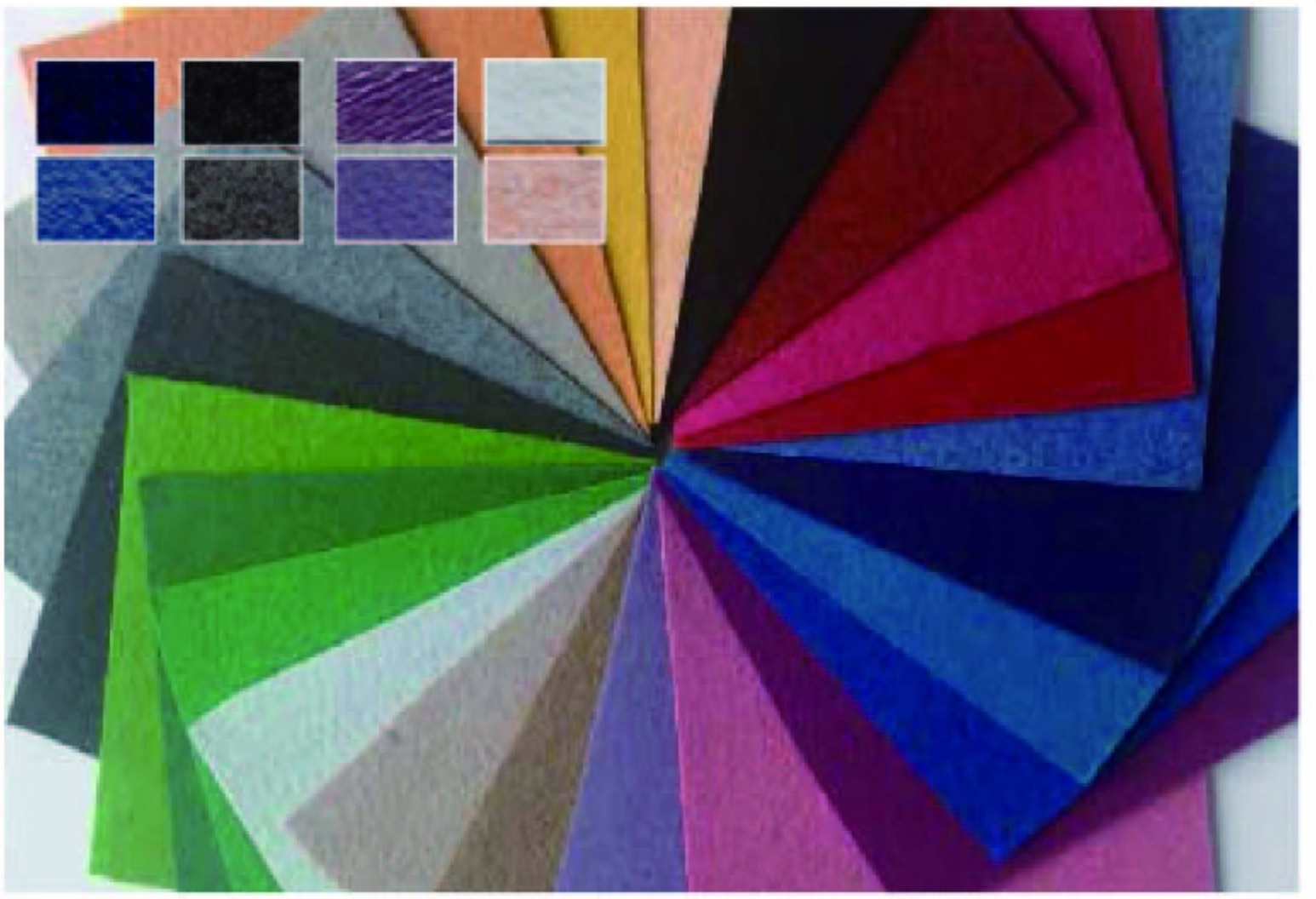
我们也可以根据客户的需求提供阻燃或覆膜产品。

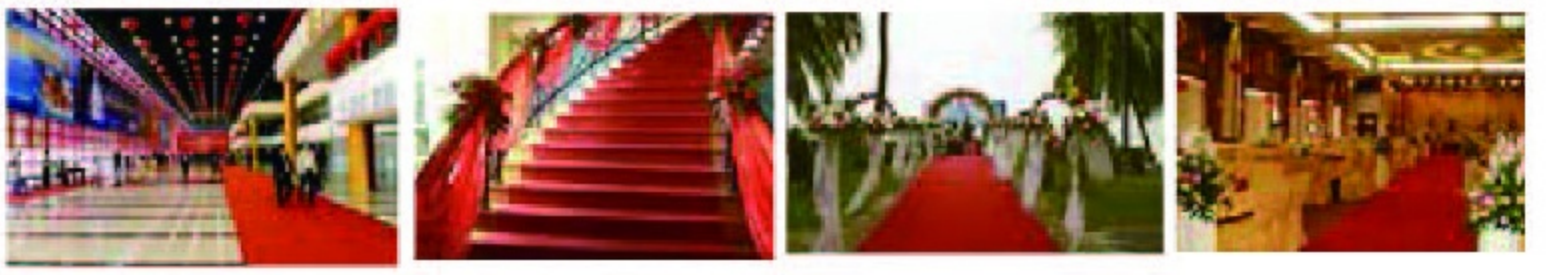
Exhibition carpet

Dezhou Yaohua Geotechnical Material Co., Ltd. is the best choice for exhibition carpet users and the best partners, we can provide many kinds of color and widthSelection, and our quality is also in a global context has different market have been recognized. Widely used in a variety of domestic and foreign large-scale.
Exhibition activities.
We can also provide fire retardant or resin coated products according to customer's demand.

产品展示

Product display





三十四、家居地毯

地毯可以为您的家增添温暖、舒适感，同时噪音也小于硬质地面材料。 德州耀华土工材料有限公司可以为消费者提供平面、条纹、起绒，提花等多种类型的针刺地毯，可以在花型、质地、颜色、底背、宽度等各方面都有多种选择。

Home Furnishing carpet

Carpet can add warmth and comfort to your home, at the same time, noise is less than the hard ground material.Dezhou Yaohua Geotechnical Material Co., Ltd. can provide consumers with plane,stripes, fleece, jacquard etc. Various kinds of needle carpet, can back, in the bottom of a pattern, texture, color, width and so on various aspects have many choices.

产品展示

Product display



