

荣盛石化股份有限公司
RONGSHENG PETROCHEMICAL CO.,LTD.

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荣盛石化股份有限公司

Rongsheng Petrochemical Co., Ltd.



荣盛石化股份有限公司（股票简称：荣盛石化，股票代码：002493）总部位于浙江省杭州市，是中国石化行业龙头企业之一。

The headquarter of Rongsheng Petrochemical Co., Ltd. (Stock abbreviation: Rongsheng Petrochemical, Stock code: 002493) is located in Hangzhou, Zhejiang Province, which is one of the leading enterprises in the petrochemical industry in China.

公司主要从事石化相关产品的研发、生产和销售，拥有原油—芳烃(PX)、烯烃—精对苯二甲酸(PTA)、乙二醇(MEG)—聚酯(瓶片、薄膜)—纺丝(POY、FDY)—加弹(DTY)上下游完整产业链。

The company is mainly engaged in the R&D, production and sales of petrochemical-related products, forming a complete industrial chain covering from crude oil-arene (PX), olefin-pure terephthalic acid (PTA), and ethylene glycol (MEG) - polyester (bottle, film) - spinning (POY, FDY) - texturing (DTY).

在石化领域，公司旗下浙江石油化工有限公司已在浙江舟山群岛新区布局 4000 万吨 / 年炼化一体化项目，该项目以“国际一流，绿色环保”为建设理念，将形成世界级大型、综合、现代的绿色石化基地。公司旗下宁波中金石化有限公司于 2015 年建成 200 万吨 / 年的芳烃项目。公司还与合作伙伴先后在宁波、大连和海南部署“逸盛系”PTA 产业，成为全球最大的 PTA 生产商之一。

In the petrochemical field, Zhejiang Petroleum & Chemical Co.,Ltd., the subsidiary company of Rongsheng Petrochemical, invests a green refining-chemical integration project with an annual processing capacity of 40 million tons of crude oil in Zhoushan archipelago islands. Based on the construction concept of “World-class and Environmental Protection”, the project will form a world-class, integrated and modern green petrochemical base. The subsidiary company Ningbo Zhongjin Petrochemical Co., Ltd. completed the aromatic project in 2015 with an annual capability of 2 million tons. Moreover, Rongsheng and his cooperators have successfully set up “Yisheng series” PTA industries in Ningbo, Dalian, Hainan, becoming one of the world’s largest producers.

在聚酯领域，荣盛已布局聚酯直接纺丝、聚酯瓶片、聚酯薄膜等配套产业，并积极打造智能化、数字化生产车间，在国内较早引进了高端工业自动化纺丝流水线装备，实现“机器换人”。

In the polyester field, Rongsheng has set up direct polyester spinning, polyester chips, polyester films and other supporting industries, and actively implements intelligent and digital workshops, which is the earlier high-tech automatic assembly line system for the chemical fiber industry to realize “Machine Replacement”.

公司坚持品质打造，核心产品通过了 ISO9001、ISO14001、OHSAS18001、Oeko-Tex Standard 100 和“浙江制造”认证。

Since established, the company devotes itself to quality management, and its core products have passed the certifications of ISO9001, ISO14001, OHSAS18001, Oeko-Tex Standard 100 and “ZHEJIANG MADE”.

荣盛积极搭建各类研发平台，坚持“自主创新”与“开放合作”双轮驱动的科技研发模式，不断增强企业科研水平。目前荣盛已构建起一定规模的自主知识产权体系，有效推动了企业的创新发展。

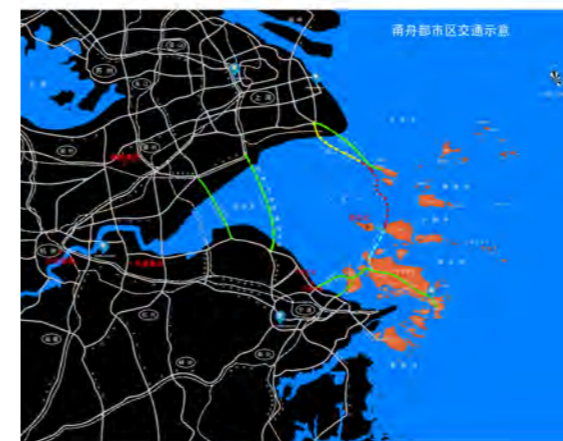
Rongsheng has actively built various research and development platforms, and persists in the R&D mode of both “Self-dependent Innovation” and “Opening up and Cooperation”, continuously strengthening R&D level. Currently, Rongsheng has set up a large scale independent intellectual property system, effectively promoting the company’s innovative development.

荣盛石化以“坚持实业报国，引领行业发展”为企业使命，在追求产业价值的同时，胸怀社会责任，坚持实施严格的安全环保一体化监管，推广先进的低耗能技术和设备，生产绿色环保产品，以切实行动为行业注入绿色能量，守护每一处“绿水青山”。

Based on the enterprise mission of “Persist patriotic action by industry, Lead industry development”, Rongsheng Petrochemical assumes social responsibility when pursuing industrial value, sticks to stricting integrated supervision on safety and environment, promotes advanced low-energy-consuming technology and equipments, and produces green and environmental-friendly products. Rongsheng infuses green energy to the industry by its practical action, then to protect our clean water and green mountains.

浙江石油化工有限公司 | 4000万吨/年炼化一体化项目

ZHEJIANG PETROLEUM & CHEMICAL CO.,LTD.
40 MMTA Integrated Refining & Petrochemical Project



企业简介 The Company Profile

浙江石油化工有限公司成立于 2015 年 6 月 18 日，是一家由民营企业——荣盛石化股份有限公司（占股 51%）、省属国企——浙江巨化投资有限公司（占股 20%）、民营企业——浙江桐昆投资有限责任公司（占股 20%）及舟山海洋综合开发投资有限公司（占股 9%）共同组建的民营控股、国企参股的混合所有制企业。

Zhejiang Petrochemical Co., Ltd. was founded on June 18, 2015. It is a mixed-ownership enterprise jointly formed by private enterprise and involved with state-owned enterprise. It is co-established by the private enterprise Rongsheng Petrochemical Co., Ltd. (holding 51% of shares), the provincial state-owned enterprise Zhejiang Juhua Investment Co., Ltd. (holding 20% of shares), the private enterprise Zhejiang Tongkun Investment Co., Ltd. (holding 20% of shares) and Zhoushan Marine Comprehensive Development and Investment Co., Ltd. (holding 9% of shares).

一体化项目概况 The Integration Project Overview

浙石化 4000 万吨 / 年炼化一体化项目总投资达 1730 亿元人民币，是目前世界上投资最大的单体产业项目，也是国内迄今为止民营企业投资规模最大的项目。

The total investment of the 40 MMTA integrated refining and petrochemical project is 173 billion RMB. At present, it is the largest single industry project invested in the world, and it is also the largest investment project of private enterprises in China so far.

项目分两期建设：一期年加工原油 2000 万吨，年产芳烃 520 万吨、年产乙烯 140 万吨；二期年加工原油 2000 万吨，年产芳烃 660 万吨、年产乙烯 280 万吨。这个世界级规模的炼化一体化项目生产出 VI 汽柴油、航煤、对二甲苯 (PX)、高端聚烯烃、聚碳酸酯等 20 多种石化产品，是中国（浙江）自由贸易试验区打造油品全产业链，落实“三基地一中心”发展战略的重要依托工程。

The construction of the Project will be executed in two phases. After completion, it will process 20 million tons of crude oil and produce 5.2 million tons of aromatics and 1.4 million tons of ethylene per year in Phase I. In Phase II, the crude oil processing capacity will reach 20 million T/A, with an annual output of 6.6 million tons of aromatics and 2.8 million tons of ethylene. This world-scale integrated refining and petrochemical project will produce more than 20 kinds of petrochemical products such as national VI gasoline and diesel oil, jet fuel, paraxylene (PX), advanced polyolefin, polycarbonate, and etc. It is a significant supporting project for China (Zhejiang) Free Trade Zone to build the whole oil industry chain and implement the “Three Bases, One Center” development strategy.

液氨

指标名称	指标		
	优等品	一等品	合格品
氨含量% \geq	99.9	99.8	99.6
残留物含量% \leq	0.1 (重量法)	0.2	0.4
水份% \leq	0.1	—	—
油含量, mg/kg \leq	5 (重量法)	—	—
	2 (红外光谱法)	—	—
铁含量, mg/kg \leq	1	—	—



液体化工产品

浙江石油化工有限公司4000万吨/年炼化一体化项目由浙江石油化工有限公司投资建设。该公司由荣盛石化、巨化集团、桐昆投资、舟山海投等四家单位合资创建，建设地点为舟山鱼山岛，依托长三角地区现有优势，以绿色石化为主体，立足科技，面向市场，建成现代大型炼油、芳烃、乙烯一体化绿色石化产业基地。

本项目位于浙江省舟山市岱山县鱼山岛，总规模为4000万吨/年炼油能力，分两期建成，两期规划均为2000万吨/年炼油（含500万吨/年芳烃）及140万吨/年乙烯等炼化一体化项目。一期炼油芳烃装置配置两套1000万吨/年常减压装置，下游配套26套装置，生产汽煤柴成品油、苯和对二甲苯等产品。一期化工项目建设140万吨/年大型乙烯装置，下游配套丁二烯、MTBE\丁烯-1、EO\EG、苯乙烯、FDPE、HDPE、PP、PC和MMA等16套化工装置。

一期炼油、化工装置经过两年多建设已进入试车开工阶段，计划2019年9月陆续投产，打通全流程，主要液体化工产品有400万吨对二甲苯、80万吨乙二醇、120万吨苯乙烯、20万吨丁二烯、9万吨甲基丙烯酸甲酯、40万吨苯酚、25万吨丙酮、26万吨双酚A、20万吨碳酸二甲酯等。

产品名称	性能	主要用途
石油对二甲苯 (PX)	无色透明液体，具有芳香气味，能与乙醇、乙醚、丙酮等有机溶剂混溶。产品纯度大于99.8%，满足SH/T1486.1-2008优等品标准。	重要的有机化工原料，用于生产对苯二甲酸，进而生产对苯二甲酸乙二醇酯、丁二醇酯等聚酯树脂。聚酯树脂是生产涤纶纤维、聚酯薄片，聚酯中空容器的原料。
石油苯	在常温下是甜味、可燃、有致癌毒性的无色透明液体，并带有强烈的芳香气味。苯难溶于水，易溶于有机溶剂，本身也可作为有机溶剂。产品质量满足GB/T 3405-2011石油苯-545标准。	苯在工业上最重要的用途是做化工原料。苯的最主要的用途是制取乙苯，其次是制取环己烷和苯酚。通过经取代反应、加成反应、氧化反应等生成的一系列化合物可以作为制取塑料、橡胶、纤维、染料、去污剂、杀虫剂等的原料。大约10%的苯用于制造苯系中间体的基本原料。
工业用乙二醇 (EG)	无色具有甜味的粘稠液体。吸湿性强。能与水、乙醇和醚混合，能降低水的冰点。属低毒类。产品纯度大于99.9%，满足GB/T 4649-2018聚酯级指标。	主要用于制聚酯涤纶，聚酯树脂、吸湿剂，增塑剂，表面活性剂，合成纤维、化妆品和炸药，并用作染料/油墨等的溶剂、配制发动机的抗冻剂，气体脱水剂，制造树脂、也可用于玻璃纸、纤维、皮革、粘合剂的湿润剂。可生产合成树脂，涤纶纤维，瓶片级PET用于制作矿泉水瓶等，还可生产醇酸树脂。
工业用苯乙烯 (SM)	无色透明易挥发液体，空气中自燃温度490°C、空气中燃烧浓度1.1%~6.1%(V/V)。产品纯度大于99.8%，满足GB/T 3915-2011优等品指标。	主要用作生产聚苯乙烯树脂、ABS树脂、SAN树脂、K树脂和离子交换树脂、丁苯橡胶、SBS弹性体等，同时苯乙烯是重要的医药原料，还是重要的溶剂。
聚合级丙烯	常温常压下为无色易燃气体，溶于乙醇，在水中漂浮，不溶。化学性质活泼。产品纯度大于99.6%，满足GB/T 7716-2014优等品指标。	生产聚丙烯，可制丙烯腈、异丙醇、苯酚和丙酮、丁醇和辛醇、丙烯酸及其脂类以及制环氧丙烷和丙二醇、环氧氯丙烷和合成甘油等。
工业用乙烯	极度易燃的压缩气体，无色，能溶于醇和醚，难溶于水，化学性质活泼。产品纯度大于99.95%，满足GB/T 7715-2014优等品指标。	生产聚乙烯、乙炔氧化物、乙炔炔化物等。
1-丁烯	易燃介质，无色液体。能溶于大多数有机溶剂，不溶于水，易液化。若遇高温，可能发生聚合反应。对人体有窒息、弱麻醉和弱刺激作用。产品纯度大于99.3%，满足SH/T 1546-2009优等品指标	主要用作聚烯烃聚合原料或其他有机化工、聚合工艺等的原料。
工业用丁二烯 (BUT)	在常温常压下，无色而略带芳香气味的液体，易燃易爆，微溶于水、醇，溶于苯、乙醚、氯仿、四氯化碳、汽油、无水乙腈、二甲基甲酰胺等有机溶剂。产品纯度大于99.5%，满足GB/T 13291-2008优等品指标。	合成相橡胶的主要原料，与苯乙烯共聚，生产各种用途广泛的树脂（如：ABS树脂、SBS树脂、MBS树脂）。丁二烯还是多种涂料和有机化工产品的原料。
工业用合成苯酚 (PHE)	白色结晶，有特殊气味，可混溶于乙醇、醚、氯仿、甘油。可吸收空气中水分并液化，腐蚀性极强。化学反应能力强。本产品满足GB/T 339-2001优等品指标	重要的有机化工原料，用它可制取酚醛树脂、己内酰胺、双酚A、水杨酸、苦味酸、五氯酚、2,4-D、己二酸、酚酞n-乙酰乙氧基苯胺等化工产品及中间体，在化工原料、烷基酚、合成纤维、塑料、合成橡胶、医药、农药、香料、染料、涂料和炼油等工业中有着重要用途。
工业用丙酮 (ACE)	无色透明易流动液体，有芳香气味，极易挥发。与水混溶，可混溶于乙醇、乙醚、氯仿、油类、烃类等多数有机溶剂。产品纯度大于99.5%，满足GB/T 6026-2013优等品标准。	丙酮是重要的有机合成原料，用于生产环氧树脂，聚碳酸酯，有机玻璃，医药，农药等。亦是良好溶剂，用于涂料、黏结剂、钢瓶乙炔等。也用作稀释剂，清洗剂，萃取剂。还是制造醋酐、双丙酮醇、氯仿、碘仿、环氧树脂、聚异戊二烯橡胶、甲基丙烯酸甲酯等的重要原料。

丙烯腈	无色的有刺激性气味液体，易燃，其蒸气与空气可形成爆炸性混合物。遇明火、高热易引起燃烧，并放出有毒气体。产品纯度大于99.5%，满足GB/T 7717.1-2008优等品标准。	丙烯腈是合成纤维，合成橡胶和合成树脂的重要单体。由丙烯腈制得聚丙烯腈纤维即腈纶，其性能极似羊毛。丙烯腈与丁二烯共聚可制得丁腈橡胶，具有良好的耐油性，耐寒性，耐磨性，和电绝缘性能。丙烯腈与丁二烯、苯乙烯共聚制得ABS树脂，具有质轻、耐寒、抗冲击性能较好等优点。丙烯腈生物水合可制得丙烯酰胺及聚丙烯酰胺，它们是重要的絮凝剂，采油助剂和有机化工助剂。丙烯腈还可电解加氢偶联制得己二腈，由己二腈加氢又可制得己二胺，己二胺是尼龙66原料。
工业甲基丙烯酸甲酯 (MMA)	常温下是一种无色透明的液体，易挥发，其挥发的气体有刺激性气味，能溶于醇、醚、酚类等有机溶剂中，不溶于或微溶于水。易于燃烧，与空气混合物可发生爆炸，温度高可能引发甲基丙烯酸甲酯发生聚合。产品纯度大于99.8%，满足GB/T2305-2017优等品指标。	用于生产有机玻璃及有机玻璃模塑料，还用于表面涂层、PVC改性剂、胶粘剂、高级酯类、腈纶第二单体、光学材料、聚合物混凝土、织物浆料、医药功能高分子、磁性塑料、隐形眼镜、汽车风挡玻璃、飞机座舱盖等的制造。甲基丙烯酸甲酯还可以代替苯乙烯作为不饱和聚酯的交联剂。
双酚A (BPA)	是一种白色粒装或片状固体，156.7°C以上为液体，并伴有轻微苯酚气味，微溶于水。一般情况下溶于乙醇、丙酮、乙醚、苯及稀碱液等，微溶于四氯化碳，几乎不溶于水。纯度大于99.85%，满足GB/T 28113-2011优等品指标。	用于生产聚碳酸酯、环氧树脂、聚砜树脂、聚苯醚树脂、不饱和树脂等多种高分子材料。也可用于生产增塑剂、阻燃剂、抗氧化剂、热稳定剂、橡胶防老剂、农药、涂料等精细化工产品。
碳酸二甲酯	是一种无色透明、略有气味、微甜的液体，熔点4°C，沸点90.1°C，难溶于水，可以与醇、醚、酮等几乎所有有机物混溶。在常压下和甲醇共沸，共沸温度为63.8°C。遇明火、高温、氧化剂易燃，燃烧产生刺激烟雾。接触对皮肤有刺激作用。产品纯度大于99.5%，满足GB/T 33107-2016一级品指标。	是一种重要的有机化工中间体，多用于生产聚碳酸酯(DPC)、聚氨酯等化工产品，可替代剧毒的光气、氯甲酸甲酯、硫酸二甲酯等作为甲基化剂或羰基化剂使用，提高生产操作的安全性，降低环境污染。作为溶剂替代氟里昂、三氯乙烷、三氯乙烯、苯、二甲苯等用于油漆涂料、清洁溶剂等。作为汽油添加剂可提高其辛烷值和含氧量，提高抗爆性。DMC还可用作清洁剂、表面活性剂、柔软剂的添加剂和锂电池电解液。

甲醇

项目	指标
色度/Hazen单位（铂-钴色号）	5
密度 (g/cm ³)	0.791-0.792
沸程 (0°C 101.3Kpa, 在64.0-65.5范围内, 包括64.6±0.1) / °C ≤	0.8
高锰酸钾试验	50
水溶性试验	通过 (1+3)
水的质量分数/%	0.10
酸的质量分数 (以HCOOH计) / % ≤ 或碱的质量分数 (以NH ₃ 计) / % ≤	0.0015 0.0002
羰基化合物的质量分数 (以HCOOH计) / % ≤	0.002
蒸发残渣的质量分数 / % ≤	0.001
硫酸洗涤试验/Hazen单位（铂-钴色号） ≤	50
乙醇的质量分数 / % ≤	0.01%

聚碳酸酯

Polycarbonate (PC)



产品简介 Introduction

聚碳酸酯（简称 PC）是指分子链中含有碳酸酯基（-COO-）的非结晶型热塑性高分子聚合物。是一种综合性能非常优异的热塑性工程塑料，其在力学、光学及热性能上的优异表现使其同时具有高抗冲、高透明、高耐热三大特性，属于耐用型工程塑料。

Polycarbonate (abbreviated as PC) refers to a non-crystalline thermoplastic high molecular polymer containing a carbonate group (-COO-) in a molecular chain. It is a thermoplastic engineering plastic with excellent comprehensive performance. Its excellent performance in mechanical, optical and thermal properties makes it have three characteristics of high impact resistance, high transparency and high heat resistance. It is a durable engineering plastic.

产品特性 Characteristics

- (1) 产品兼具透明、强韧、耐热、阻燃四大综合特性
The product has four comprehensive characteristics of transparency, toughness, heat resistance and flame retardancy.
- (2) 使用温度范围广，在 -100°C~129°C 的温度范围内仍可保持稳定的性能
Wide temperature range, stable performance over the temperature range of -100 °C ~ 129 °C
- (3) 热变形温度高
High heat reflection temperature
- (4) 成型收缩率低，尺寸稳定性良好
Low molding shrinkage and good dimensional stability
- (5) 电气特性优良
Excellent electrical characteristics

装置情况 Plant

浙石化 PC 装置采用绿色环保、国际先进的非光气法工艺技术，可生产熔融指数 5-35 范围内的 PC 产品。PC 总规划产能 52 万吨 / 年，分两期建设，一期装置设计产能 26 万吨 / 年，上游同期配套 24 万吨 / 年的双酚 A (BPA)，64 万吨 / 年苯酚 / 丙酮以及 20 万吨 / 年的碳酸二甲酯 (DMC) 装置。

Zhejiang Petrochemical PC plant adopts green environmental protection and international advanced non-phosgene process technology to produce PC products with a melt index of 5-35. The total planned capacity of PC is 520,000 tons/year, which is constructed in two phases. The design capacity of the first phase is 260,000 tons/year, with the supporting upstream 240,000 tons/year of bisphenol A (BPA), 640,000 tons/year of phenol/acetone. And a 200,000 tons/year dimethyl carbonate (DMC) unit.

主要用途 Application

作为一种综合性能优异的热塑性工程塑料，浙石化聚碳酸酯产品主要可应用于光学照明、电子电气、汽车、建筑、包装等领域，同时可与其他树脂制成塑料合金，以满足特定领域需求。

As a thermoplastic engineering plastic with excellent comprehensive performance, ZPC polycarbonate products can be mainly used in optical lighting, electrical and electronic, automotive, construction, packaging, etc., and can be made into plastic alloys with other resins to meet specific needs.



性能指标 Quality

测试项目 Test Item	单位 Unit	参考技术指标（暂定） Reference Technical Indicators (tentative)				
		G0713	G1010	G1011	G1013	G2010
焦粒及异色粒子 Pyroparticles and heterochromatic particles	个 One	≤1	≤1	≤1	≤1	≤1
熔体质量流动速率 (1.2kg) Melt mass flow rate	g/10min	6.0 ~ 8.0	9.0 ~ 11.0	9.0 ~ 11.0	9.0 ~ 11.0	9.0 ~ 11.0
拉伸屈服应力 Tensile yield stress	MPa	≥60	≥60	≥60	≥60	≥60
拉伸断裂伸长率 Elongation at break	%	≥105	≥105	≥105	≥105	≥105
弯曲模量 Bending modulus	MPa	≥2350	≥2350	≥2350	≥2350	≥2350
悬臂梁缺口冲击强度23℃ Notch impact strength of cantilever beam	KJ/m ²	≥70	≥65	≥65	≥70	≥60
热变形温度 (1.8MPa) Thermal deformation temperature	℃	≥124	≥124	≥124	≥124	≥124
透光率 (1mm) Transmittance	%	≥89	≥89	≥89	≥89	≥89
Lab色度b值 Lab chromaticity B	/	-4.0 ~ -2.0	0 ~ 2	-4.0 ~ -2.0	-4.0 ~ -2.0	0 ~ 2
主要用途 Application		挤出级 (板材等) Extrusion	改性 Compounding	通用注塑 Injection molding	抗UV注塑 Anti UV	改性 Compounding

聚丙烯 Polypropylene (PP)

聚丙烯是以丙烯 (CH₃-CH=CH₂) 为单体, H₂ 为分子量调节剂, 通过聚合反应得到的合成树脂, 存在等规、无规和间规三种不同立体结构。

Polypropylene is a synthetic resin made by polymerization of propylene (CH₃-CH=CH₂) with H₂ as the molecular weight modifier. There are three stereomers of PP-isotactic, atactic and syndiotactic.

聚丙烯不含极性基团, 具有优良的电绝缘性能, 吸水率小于 0.01%; 为半结晶性聚合物, 具有优良的化学稳定性, 除强氧化剂外, 对大多数化学药品都是稳定的, 无机酸、碱、盐的溶液对聚丙烯几乎无破坏作用。

PP contains no polar groups and has excellent electrical insulation properties. Its water absorption rate is less than 0.01%. PP is a semi-crystalline polymer with good chemical stability. It is stable to most chemical except strong oxidizers. Inorganic acid, alkali and salt solutions have almost no damaging effect on PP.

聚丙烯具有优异的延展性、抗弯曲疲劳性能和耐热性能, 比重轻, 聚丙烯熔点在 165℃ 左右, 抗张强度和表面硬度较高, 连续使用温度可达 120℃, 耐环境应力开裂性能好。

PP has good heat resistance and low density. Its melting point is at around 165℃. It has high tensile strength, surface hardness and good environmental stress crack resistance. It can withstand 120℃ continuously.

浙石化(一期) PP 装置采用 INEOS 的 Innovene 气相聚丙烯工艺技术, 总生产能力为 90 万吨 / 年。装置由两条平行生产线组成, 单线生产能力均为 45 万吨 / 年, 可生产均聚物、无规共聚物和抗冲共聚物, 特别是可生产刚性和抗冲击性非常好的高质量共聚产品。

Zhejiang Petrochemical Phase I has two sets of polypropylene(PP) plants, with designed each capacity of 450,000 tons, and total capacity of 90,000 tons per year, which are selected INEOS' s INNOVENE process, can produce all series of PP products, such as homopolymer, random copolymer, and impact copolymer PP, especially high quality copolymer products with excellent rigidity and impact resistance.

浙石化(二期) PP 装置采用 LyondellBasell 的 Spherizone 聚丙烯工艺技术, 总生产能力为 90 万吨 / 年。装置由两条平行生产线组成, 单线生产能力均为 45 万吨 / 年, 由多区循环反应器与气相反应器串联操作, 可生产均聚物、无规共聚物和抗冲共聚物全类产品。生产产品分子量分布、等规度、共聚物组成等高度可控, 各类产品综合性能比传统产品更好, 能够生产高刚性、高结晶性产品和抗冲击性、刚性很好的抗冲共聚物产品。

Phase II has two sets of polypropylene(PP) plants, with designed each capacity of 450,000 tons, and total capacity of 90,000 tons per year, which are selected LyondellBasell' s Spherizone process, taking the series connection of multizone circulating reactor and gas phase reactor, can produce all series of PP products, such as homopolymer, random copolymer, and impact copolymer PP. Compared with traditional ones, Phase II makes great progress in producing high quality copolymer products with excellent rigidity and impact resistance, with highly controllable capacity in molecular weight distribution, degree of isotacticity and copolymer composition.

主要用途 Applications

聚丙烯用途广泛多样, 可用注塑、挤塑、吹塑和中空成型等方法进行加工, 广泛应用于纺织、包装、家电、汽车和建筑等行业。

PP has a variety of applications. It is suitable for multiple processing methods such as injection molding, extrusion molding and blow molding and is widely used in the textile, packaging, electrical household appliances, automobile and real estate industries.

均聚类 Both Clustering

产品牌号 Grades		S1003	HP550J	S2040	HP500N	HP500P	HA612M	HP462R
熔体质量流动速率 (MFR2.16kg)	g/10min	3	3	37	12	17	8	26
拉伸屈服应力 Tensile strength at yield	MPa≥	30	29	29	30	29	28	29
弯曲模量 Flexural modulus	MPa≥	1000	1200	1000	1200	1200	1200	1000
简支梁冲击强度23℃ Charpy impact strength	KJ/ m ² ≥	2	3	1	2	1.7	实测	1
等规指数 Isotactic index	%	95.0~99.0	95.0~99.0	-	95.0~99.0	95.0~99.0	96.0~99.0	95.0~99.0
灰份 Ash	%≤	-	-	0.022	-	-	-	-
主要用途 Applications		挤出扁丝、地毯背衬、彩条布、编织袋 Extruded filaments, Carpet backing cloth, Color band cloth, Polypropylene(PP) knitted bag		超细旦纤维、无纺布 Ultra-fine staple fibers, Non-woven fabrics	注塑 Injection Molding	注塑 Injection Molding	流延膜 CPP	高速纺丝、BCF 膨体纱 Ultra-fine Staple Fibers, BCF Filament



无规共聚类 Random Copolymerization

产品牌号 Grades		T4401	K4912	K4826	RP220M
熔体质量流动速率 (MFR2.16kg)	g/10min	0.275	12	25	8
拉伸屈服应力 Tensile strength at yield	MPa \geq	20	26	24	19
拉伸断裂标称应变 Stretching broken column nominal strain	% \geq	300	-	-	-
弯曲模量 Flexural modulus	MPa \geq	620	900	800	600
简支梁冲击强度23°C Charpy impact strength	KJ/ m ² \geq	35	3.5	3	2
热变形温度(0.45MPa) Heat deflection temperature	°C \geq	60	-	-	实测
主要用途 Applications		冷水管材 Cold water pipes	透明料 Transparent material	透明料 Transparent material	二元热封层 Binary Heat Seal Layer

嵌段共聚类 Block Copolymers

产品牌号 Grades		K8003	K8009	EP300H	K9928H
熔体质量流动速率 (MFR2.16kg)	g/10min	2.5	10	1.8	30
拉伸屈服应力 Tensile strength at yield	MPa \geq	22	17	20	21
弯曲模量 Flexural modulus	MPa \geq	1000	900	850	1000
简支梁冲击强度23°C Charpy impact strength	KJ/ m ² \geq		9	实测	8
简支梁冲击强度-20°C Charpy impact strength	KJ/ m ² \geq	5		6	实测
主要用途 Applications		玩具、蓄电池外壳、 家电部件、汽车部件 Toys, Shells of storage batteries, Household appliances, Automotive parts	家用电器、包装用品 Household Appliances, Packages	高抗冲器具、汽车部 件 High-impact, Devices, Automotive Parts machine barrel and parts	高抗冲器具、汽车、家 电部件、洗衣机料 High-impact devices, Automotive and Household appliances parts, Washing machine barrel and parts

高密度聚乙烯 High-density Polyethylene (HDPE)

高密度聚乙烯是一种由乙烯与少量 α -烯烃单体共聚而成的高结晶非极性合成树脂，其分子结构主要为线型结构，分子中支链少，结晶度高，密度大，具有较高的使用温度、硬度和机械强度，耐化学性能好。

HDPE is a highly crystalline non-polar thermoplastic resin produced through the copolymerization of ethylene and a small amount of α -olefin monomer. HDPE is mainly a linear molecular structure and has little branching. It has a high degree of crystallization and high density. It can withstand high temperatures and has good rigidity and mechanical strength and anti-chemical corrosion.

浙江石化一期高密度聚乙烯装置采用 INNOVENE S 双环管淤浆工艺，设计产能为 30 万吨 / 年；二期高密度聚乙烯装置采用 Hostalen ACP 釜式淤浆法工艺，设计产能为 35 万吨。浙石化高密度聚乙烯产品类别齐全，能够提供中空、管材、膜料、注塑和拉丝等产品。

Zhejiang Petrochemical Phase I has selected INNOVENE S process of double-loop slurry technology, with the capacity of 300,000 tons per year, and Phase II has selected LyondellBasell's Hostalen ACP process of kettle type slurry technology, with the capacity of 350,000 tons per year, which are designed to produce high performance and multitype HDPE resins, including blow molding, piping, film, injection and yarn grade, etc.

主要用途 Applications

高密度聚乙烯可应用于多种塑料成型方法。注塑成型制作各种盆、桶、筐等日用盛器、日用杂品和家具等；中空吹塑法可用于制作各种瓶、桶、罐及工业用槽等容器；挤出成型制作各种管材和单丝等。

HDPE is suitable for many plastic molding methods. Injection molding is used for making various containers and goods of daily use, such as basins, barrels and furniture. Blow molding can be used for making various types of bottles, barrels, cans and industrial tanks. Extrusion molding is used for making pipes and single filaments.



薄膜级 Film Grade

产品牌号 Grades			J53-10	ACP 9255B
熔体质量流动速率 (MFR21.6kg)		g/10min	9.5	10.5
密度 Density		g/cm ³	0.949	0.954
拉伸屈服强度 Tensile Strength at yield	纵向MD	MPa \geq	32	30
	横向TD	MPa \geq	29	28
拉伸断裂强度 Tensile Strength at Break	纵向MD	MPa \geq	65	65
	横向TD	MPa \geq	45	50
断裂伸长率 Elongation at break	纵向MD	% \geq	500	450
	横向TD	% \geq	700	470
落镖冲击强度 Fall darts impact strength		g \geq	150	200
主要用途 Applications			T 恤袋、购物袋和衬垫 T-shirt bags, Shopping bags and Liners	

注塑级 Injection Molding Grade

产品牌号Grades		T60-800	GC7260	DMDA-8008	DMDA-8920
熔体质量流动速率 (MFR2.16kg)	g/10min	8.5	8.5	7.25	19
密度 Density	g/cm ³	0.961	0.959	0.956	0.959
拉伸屈服应力 Tensile strength at yield	MPa≥	22	23	25	22
拉伸断裂应力 Stretching broken column nominal strain	MPa≥	-	-	10	实测
拉伸断裂标称应变 Stretching broken column nominal strain	%≥	-	实测	600	实测
简支梁缺口冲击强度 Charpy notched impact strength	KJ/m ² ≥	5	实测	实测	
主要用途 Applications	板条箱、容器、箱柜 Crates, Containers, Cabinets				

中空级 Blow Molding Grade

产品牌号Grades		HD5502S	ACP5831D	ACP5840D	HM5411EA
熔体质量流动速率 (MFR2.16kg)	g/10min	0.2	0.25	0.35	
熔体质量流动速率 (MFR21.6kg)					10
密度 Density	g/cm ³	0.954	0.958	0.958	0.952
拉伸屈服应力 Tensile Strength at yield	MPa≥	22	22	22	22
拉伸断裂标称应变 Stretching broken column nominal strain	%≥		600	600	实测
弯曲模量 Flexural Modulus	MPa≥	800	1000	1000	800
环境应力开裂时间 ESCR	h≥	20	20	20	130
主要用途 Applications	20L以下的包装容器 Packaging container below 20L			60L以下的包装容器 Packaging container below 60L	

管材级 Pipe Grade

产品牌号Grades		PN049-030-122	23050
熔体质量流动速率 (MFR5kg)	g/10min	0.3	0.23
密度 Density	g/cm ³	0.949	0.95
拉伸断裂伸长率 Tensile strain at break	MPa≥	20	20
拉伸屈服应力 Tensile Strength at yield	%	-	500
简支梁缺口冲击强度 Charpy notched impact strength	KJ/m ² ≥	21	23
氧化诱导时间 OIT	h≥	35	30
主要用途 Applications	PE100双峰管材 PE100 bimodal pipe		

线型低密度聚乙烯 Linear Low-density Polyethylene (LLDPE)

线型低密度聚乙烯是由乙烯与高级 α -烯烃（如丁烯-1、己烯-1）在低压下聚合而获得的合成树脂，是含短支链的中低密度聚乙烯，产品分子量分布较窄。

Linear low-density polyethylene (LLDPE) is a copolymer produced by polymerization of ethylene and α -olefin (such as butene-1, hexene-1) at low pressure. It is low and medium density polyethylene with short chains branching. LLDPE has a narrow molecular weight distribution.

浙江石化一期 LLDPE 装置设计生产能力为 45 万吨 / 年，采用美国 Univation 公司的 Unipol 工艺技术（低压气相流化床工艺），产品具有较高的拉伸强度、冲击强度，优异的耐穿刺性及耐低温冲击性能。

The designed capacity of the Zhejiang Petrochemical Phase I LLDPE plant is 450,000 tons per year, this LLDPE Plant has selected the Unipol process (low pressure gas-phase fluidized bed technology) of US Univation company, The product has strong tensile and impact strength and excellent properties to resist puncture and impact at low temperatures.

主要用途 Applications

主要用于制作薄膜、注塑成型制品、旋转成型制品及电线电缆包覆材料等。

LLDPE is mainly used for making film injection-molding products, rotationally-molding products and wire & cable covering material.



薄膜级 Flim Grade

产品牌号 Grades		DFDA7042	DFDC7050	DFDA7047
熔体质量流动速率 MFR	g/10min	2	2	1
密度 Density	g/cm ³	0.921	0.921	0.92
拉伸屈服应力 Tensile Strength at yield	MPa \geq	7	8	12
拉伸断裂标称应变 Stretching broken column nominal strain	% \geq	200	400	500
拉伸断裂应力 Tensile Strength at broken	MPa \geq			
鱼眼 (个/1520cm ²) Fish Eyes (pcs/1520cm ²)	0.8mm \leq	8	6	6
	0.4mm \leq	20	15	15
主要用途 Applications		包装膜、农地膜、衬里膜 Packaging film, Agricultural film, Lining film	包装袋 Packing bag	包装膜、农地膜、衬里膜 Packaging film, Agricultural film, Lining film

注塑级 Injection Molding Grade

产品牌号 Grades		DNDA8320	
熔体质量流动速率 MFR	g/10min	20	
密度 Density	g/cm ³	0.924	
拉伸屈服应力 Tensile Strength at yield	MPa \geq	10	
拉伸断裂标称应变 Stretching broken column nominal strain	% \geq	80	
简支梁冲击强度23°C Charpy Impact Strength	KJ/m ² \geq	20	
主要用途 Applications		高档日常用品、垃圾箱、容器 High-end daily necessities, Garbage bins and Containers	

滚塑级 Rotomolding Grade

产品牌号 Grades		DNDB7149U	
熔体质量流动速率 MFR	g/10min	4.5	
密度 Density	g/cm ³	0.934	
拉伸屈服应力 Tensile Strength at yield	MPa \geq	12	
拉伸断裂标称应变 Stretching broken column nominal strain	% \geq	100	
主要用途 Applications		储罐、搅拌桶、水箱 Tanks, Mixing drums, Water tanks	

乙烯-醋酸乙烯酯共聚物 Ethylene-vinyl Acetate Copolymer (EVA)

浙江石油化工有限公司的高压聚乙烯联合装置包含 30 万吨 / 年 LDPE-EVA 和 40 万吨 / 年 LDPE 两套装置，引进 LDPE 树脂 15 个牌号、EVA 树脂 11 个牌号，可以生产密度 0.920~0.927 g/cm³ 的 LDPE 产品，以及 VA 含量从 3~28%、MI 从 0.8~36 的高端 EVA 产品，可用于包装、软管、印刷、电缆、光伏、鞋类及服装等行业。

The High pressure polyethylene integrated unit of Zhejiang Petroleum and Chemical Co.,Ltd. contains two sets of devices: 300,000 tons/year LDPE-EVA and 400,000 tons/year LDPE. This set of equipment introduces 15 grades of LDPE resin and 11 grades of EVA resin. It can produce LDPE products with a density of 0.920~0.927 g/cm³, and high-end EVA products with a VA content of 3~28% and MI from 0.8~36. the products can be used in packaging, hose, printing, cable, photovoltaic, footwear and clothing industries.

EVA 产品说明 Product Description

乙烯 - 醋酸乙烯酯共聚物 (EVA)，一般醋酸乙烯 (VA) 含量在 5%~40%。与聚乙烯相比，EVA 由于在分子链中引入了醋酸乙烯单体，从而降低了结晶度，提高了柔韧性、抗冲击性、填料相容性和热密封性能，被广泛应用于发泡鞋料、功能性棚膜、包装膜、热熔胶、电线电缆及玩具等领域。一般来说，EVA 树脂的性能主要取决于分子链上醋酸乙烯的含量。EVA 有很好的耐低温性能，其热分解温度较低，约为 230℃ 左右，随着分子量的增大，EVA 的软化点上升，加工性和表面光泽性下降，但强度增加，抗冲击韧性和耐环境应力开裂性提高。EVA 的耐化学药品、耐油性方面较之 PE、PVC 稍差，并随醋酸乙烯含量的增加，差异变化更加明显。EVA 比 LDPE 的性能优异，主要表现在弹性、柔性、光泽性、透气性等方面，另外，它的耐环境应力开裂性得到了提高，对填料的受容性增大，可以采用加入较多增强填料的方法来避免或减少 EVA 力学性能差的特性。EVA 还可以通过改性而得到新的应用，其改性主要可从两个方面考虑：一是将 EVA 作为其他单体接枝的主干；二是将 EVA 进行部分醇解。

Ethylene-vinyl acetate copolymer (EVA), generally the content of vinyl acetate (VA) is 5% to 40%. Compared with polyethylene, EVA introduces vinyl acetate monomer into the molecular chain, thereby reducing crystallinity, improving flexibility, impact resistance, filler compatibility and heat sealing performance. These characteristics make EVA widely used in foam shoe materials, functional shed films, packaging films, hot melt adhesives, wires and cables, toys and other fields. In general, the performance of EVA resins is mainly determined by the amount of vinyl acetate on the chain. EVA has good low temperature resistance, and its thermal decomposition temperature is about 230°C. As the molecular weight increases, the softening point of EVA increases, and the processability and surface gloss decrease. However, with the increase of strength, the impact toughness and environmental stress cracking resistance are improved. The chemical and oil resistance of EVA is slightly worse than that of PE and PVC, and the difference is more obvious with the increase of the content of vinyl acetate. EVA has better performance than LDPE in terms of elasticity, flexibility, gloss, and air permeability. In addition, its resistance to environmental stress cracking has been improved, and its compatibility with fillers has increased. Therefore, the method of adding more reinforcing fillers can be used to avoid or reduce the poor mechanical properties of EVA. Its modification can be considered from two aspects: one is to use EVA as the backbone for grafting other monomers; the other is to conduct partial alcoholysis of EVA.

EVA 产品质量性能 Product Quality Performance

具有良好的柔软性，橡胶般的弹性，在 -50℃ 下仍能够具有较好的可挠性。透明性和表面光泽性好，化学稳定性良好，抗老化和耐臭氧性能好，无毒性。填料的掺混性好，着色和成型加工性好。不含臭味，可生物降解；弃掉或燃烧时不会对环境造成伤害。

It has good softness, rubber-like elasticity, and still has good flexibility at -50 ° C. Good transparency and surface gloss, good chemical stability, good anti-aging and ozone resistance, and non-toxic. The filler has good blending properties, good coloring and molding processability. Odor-free, biodegradable: no harm to the environment when discarded or burned.

(1) 重量较轻：EVA 的密度介于 0.915 ~ 0.955g/cm³。

Lighter weight: The density of EVA is between 0.915 ~ 0.955g/cm³.

(2) 不含金属：符合有关国际的玩具条例 (EN-71 Part3 及 ASTM-F963)。

Metal-free: in line with relevant international toy regulations (EN-71 Part3 and ASTM-F963).

(3) 不含邻苯二甲酸盐：适合儿童玩具 (不会产生增塑剂释出危险)，其高透明、柔软及坚韧度等特性应用范围十分广泛。

Phthalates-free: suitable for children's toys (no risk of plasticizer release), and its high transparency, softness and toughness characteristics have a wide range of applications.

(4) 超强耐低温 (-70℃)：适合结冰环境。

Super low temperature resistance (-70°C): suitable for freezing environment.

(5) 抗水、盐份及其它物质：在大部分的应用情况下都能保持稳定。

Resistant to water, salt and other substances: it can maintain stability in most applications.

(6) 高热贴性：可牢固地贴于尼龙，涤纶，帆布及其它布类。

High thermal adhesion: it can be firmly adhered to nylon, polyester, canvas and other cloth.

(7) 低贴合温度：可加快生产速度。

Low bonding temperature: can speed up the production speed.

(8) 可丝印及柯式印刷：可用于多图案的产品 (但必须用 EVA 类的油墨)。

Screen printing and offset printing: can be used for multi-pattern products (but must use EVA ink).



EVA 产品主要应用 Main Application

(1) 光伏胶膜: VA 含量 26% ~ 30%。光伏电池封装胶膜 (EVA) 一种热固性有粘性的胶膜, 用于放在夹胶玻璃中间。EVA 胶膜在粘着力、耐久性、光学特性等方面具有的优越性, 使得它被越来越广泛的应用于光伏胶膜电流组件以及各种光学产品;

Photovoltaic film: VA content is 26%-30%. Photovoltaic cell encapsulation film (EVA) is a thermosetting adhesive film that is used in the middle of laminated glass. The superiority of EVA film in terms of adhesion, durability, optical properties, etc., which makes it more and more widely used in photovoltaic film current components and various optical products.

(2) 发泡鞋材: VA 含量 15% ~ 22%。EVA 树脂共混发泡制品具有柔软、弹性好、耐化学腐蚀等性能, 因此被广泛应用于中高档旅游鞋、登山鞋、拖鞋、凉鞋的鞋底和内饰材料中。另外, 这种材料还用于隔音板、体操垫和密封材领域;

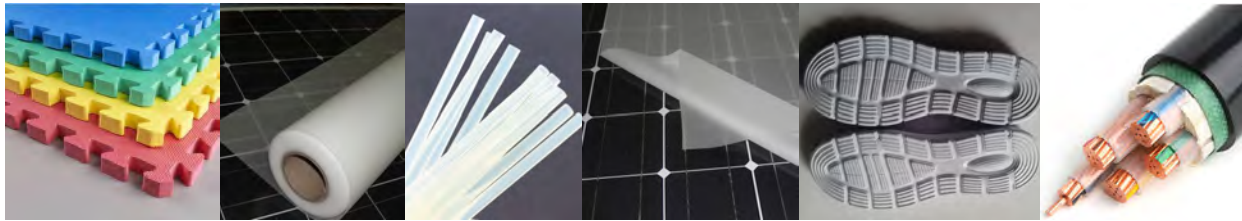
Foam shoe material: VA content is 15%-22%. Due to EVA resin blended foam products have the properties of softness, good elasticity, and chemical resistance, they are widely used in the soles and interior materials of middle and high-end tourist shoes, hiking shoes, slippers, and sandals. In addition, it is also used in the fields of sound insulation boards, gymnastics mats and sealing materials.

(3) 电线电缆: VA 含量 12 ~ 30%。由于 EVA 树脂具有良好的填料包容性和可交联性, 因此在无卤阻燃电缆、半导体屏蔽电缆和二步法硅烷交联电缆中使用较多;

Wire and cable: VA content is 12%-30%. EVA resin is widely used in halogen-free flame-retardant cables, semiconductor shielded cables and two-step silane crosslinked cables due to its filler tolerance and crosslinkability.

(4) 热熔胶: VA 含量一般 30% 以上。以 EVA 树脂为主要成分的热熔胶, 由于不含溶剂, 不污染环境且安全性较高, 非常适合于自动化的流水线生产, 因此被广泛应用于书籍无线装订、家具封边、汽车和家用电器的装配、制鞋、地毯涂层和金属的防腐涂层上。

Hot melt adhesive: VA content is generally more than 30%. The hot melt adhesive with EVA resin as the main component does not contain solvents, does not pollute the environment and has high safety, which is eminently suitable for automated assembly line production. Therefore, it is widely used in book wireless binding, furniture edge banding, automobile and household appliances assembly, shoe-making, carpet coating and metal anti-corrosion coating.



产品牌号 Grades		V5110J	V6110M	V6110S
熔体质量流动速率 (MFR 190°C/2.16kg)	g/10min	2.8	6	25
VA	%	19	28	28
拉伸强度 Tensile Strength	N/mm ²	3	-	-
熔点温度 Melting Point	°C	82	73	72
维卡软化点温度 Vicat Softening Point	°C	62	45	44
晶点 (100-300um)	500	500	500	150
晶点 (100-300um)	个/1200cm ²	N/A	N/A	≤10
晶点 (200-300um)	个/1200cm ²	≤30	≤15	
晶点 (300-500um)	个/1200cm ²	≤5	≤5	≤10
晶点 (>500um)	个/1200cm ²	≤3	≤3	≤3
色粒	个/KG	≤6	≤6	≤6
主要用途 Applications		光伏胶膜、电线电缆、弹性薄膜、热熔粘合剂和涂层制品、发泡制品 PV Films、wires and cables、elastic films、hot melt adhesives and coating products、foamed products		

高压低密度聚乙烯 High-pressure Low-density Polyethylene (LDPE)

浙江石油化工有限公司的高压聚乙烯联合装置包含 30 万吨 / 年 LDPE-EVA 和 40 万吨 / 年 LDPE 两套装置, 引进 LDPE 树脂 15 个牌号、EVA 树脂 11 个牌号, 可以生产密度 $0.920 \sim 0.927 \text{ g/cm}^3$ 的 LDPE 产品, 以及 VA 含量从 3~28%、MI 从 0.8~36 的高端 EVA 产品, 可用于包装、软管、印刷、电缆、光伏、鞋类及服装等行业。

The High pressure polyethylene integrated unit of Zhejiang Petroleum and Chemical Co.,Ltd. contains two sets of devices: 300,000 tons/year LDPE-EVA and 400,000 tons/year LDPE. This set of equipment introduces 15 grades of LDPE resin and 11 grades of EVA resin. It can produce LDPE products with a density of $0.920 \sim 0.927 \text{ g/cm}^3$, and high-end EVA products with a VA content of 3~28% and MI from 0.8~36. the products can be used in packaging, hose, printing, cable, photovoltaic, footwear and clothing industries.

LDPE 产品说明 Product Description

聚乙烯树脂是一种具有多种结构和特性, 多个品种牌号的热塑性通用树脂, 是三大通用材料之一。它主要有高压低密度聚乙烯 (LDPE), 低压高密度聚乙烯 (HDPE), 线型低密度聚乙烯 (LLDPE) 等以乙烯为主要单体的各种均聚或共聚物。

Polyethylene resin is a kind of thermoplastic general-purpose resin with multiple structures and characteristics, multiple varieties and brands, and is one of the three general-purpose materials. It mainly includes high-pressure low-density polyethylene (LDPE), low-pressure high-density polyethylene (HDPE), linear low-density polyethylene (LLDPE) and various homopolymers or copolymers with ethylene as the main monomer.

高压低密度聚乙烯(LDPE)是 $-(\text{CH}_2-\text{CH}_2)-$ 基连结的热塑性塑料, LDPE 具有刚性, 但不硬也不脆, 稍有蜡感, 这类树脂密度为 $0.910 \sim 0.935 \text{ g/cm}^3$ 。存在许多短支链是 LDPE 的特征, 1000 个碳原子链中含有 15~30 个短支链。由于 LDPE 线性结构很不规则, 降低了对称性, 因此降低了链的敛集能力。这些结构导致密度降低, 同时相应降低了结晶度, 典型 LDPE 的结晶度大约为 50%, LDPE 的分子量约为 10×10^4 到 50×10^4 。因其无毒, 可作为医疗器具、药物、食品、玩具和农作物的包装材料。

High-pressure low-density polyethylene (LDPE) is a $-(\text{CH}_2-\text{CH}_2)-$ -based thermoplastic. LDPE is a thermoplastic that is rigid, but not hard or brittle, and has a slightly waxy feel. The density of this type of resin is $0.910 \sim 0.935 \text{ g/cm}^3$. LDPE is characterized by the presence of many short branched chains, with 15-30 short branched chains in 1000 carbon atoms. Due to the irregular linear structure of LDPE, the symmetry is reduced, thus reducing the chain's convergence ability. These structures result in a decrease in density and a corresponding decrease in crystallinity. A typical LDPE's crystallinity is about 50%, and the molecular weight of LDPE is about 10×10^4 to 50×10^4 . Because it is non-toxic, it can be used as packaging materials for medical devices, medicines, food, toys and crops.



LDPE 产品质量性能 Product Quality Performance

无毒, 软化点较低, 其热熔接性、成型加工性能良好, 柔软性良好, 抗冲击韧性、耐低温性很好, 可在 $-60 \sim -80^\circ\text{C}$ 间工作, 电绝缘性优良 (尤其是高频绝缘性)。

Non-toxic, low softening point, good thermal weldability, molding processability, good flexibility, impact resistance, and low temperature resistance; can work between -60 and -80°C , and has excellent electrical insulation (especially High frequency insulation).

LDPE 的力学强度较差, 耐热性差, 抗环境应力开裂性、黏附性、黏合性、印刷性差, 需经表面处理, 如化学侵蚀、电晕等处理后方可改进其黏性、印刷性。吸水性很低 (几乎不吸水)。化学稳定性优良, 如对酸、碱、盐、有机溶剂都较稳定。对水蒸气、空气的渗透性差。易燃烧, 燃烧时有似石蜡味。在光和热作用下容易老化降解而变色, 由白转黄转褐色, 最终呈黑色, 且性能下降或龟裂。若加入一定量的抗氧化剂、紫外线吸收剂可改善性能。在化学交联剂或高能辐照下交联, 可提高软化点、温性、刚度、耐溶剂性等。适合热塑性成型加工的各种成型工艺, 成型加工性好, 如注塑、挤塑、吹塑、旋转成型、涂裹泡、热成型、热风焊、热焊接等。

LDPE has poor mechanical strength, poor heat resistance, poor environmental stress crack resistance, adhesiveness, adhesion, and printability. Also, it has very low water absorption (almost no water absorption). LDPE has excellent chemical stability, such as relatively stable to acids, alkalis, salts, and organic solvents, but has poor permeability to water vapor and air. LDPE is easy to burn and has a paraffin-like smell when burning. It is prone to degradation and discoloration under the action of light and heat, from white to yellow to brown, and finally to black, with reduced performance or cracks. Adding a certain amount of antioxidants and UV absorbers can improve performance. LDPE is cross-linked under chemical cross-linking agent or high-energy radiation to improve softening point, temperature resistance, stiffness, solvent resistance, etc. LDPE is suitable for various molding processes of thermoplastic molding and has good molding processability, such as injection molding, extrusion molding, blow molding, rotational molding, coating foam, thermoforming, hot air welding, thermal welding, etc.

LDPE 产品主要应用 Main Application

主要用途是作薄膜产品，如农业用薄膜、地面裹膜、蔬菜大棚膜等；包装用膜如糖果、蔬菜、冷冻食品等包装；液体包装用吹塑薄膜（牛奶、酱油、果汁、豆腐、豆奶）；重包收缩包装薄膜；弹性薄膜；内衬薄膜；建筑用薄膜一般工业薄膜和食品袋等。

The main purpose is to make film products, such as agricultural film, ground coating film, vegetable greenhouse film, etc.; packaging film such as candy, vegetables, frozen food, etc.; blown film for liquid packaging (milk, soy sauce, juice, tofu), Soy milk); heavy-pack shrink packaging film; elastic film; lining film; construction film, general industrial film and food bag, etc.

LDPE 还用于注塑制品，如小型容器、盖子、日用制品、注塑→拉伸→吹塑容器、医疗器具、药品和食品包装材料的管材、板材、电线电缆包覆、异型材、热成型等制品；吹塑成型制品，如食品容器有奶制品和果酱类，药物、化妆品、食品容器以及钙塑板、泡沫塑料等；旋转成型滚塑制品主要用品容器和贮槽。

It is also used for injection molding products, such as small containers, LIDS, daily products, injection molding → stretching → blow molding containers, medical appliances, medicine and food packaging materials of pipe, plate, wire and cable claddings, profiles, thermal molding products; blow-molded products, such as food containers such as dairy products and jams, medicines, cosmetics, food containers, calcium plastic panels, foam plastics, etc.; rotation-molded rotomolding products are mainly used in containers and storage tanks.



产品牌号 Grades		2420D	2420H	2426H
熔体质量流动速率 (MFR 190°C/2.16kg)	g/10min	0.3	2	2
拉伸强度 Tensile Strength	N/mm ²	10	11	11
最大拉伸强度MD	Mpa	≥23	≥22	≥22
最大拉伸强度TD	Mpa	≥16	≥13	≥13
熔点温度 Melting Point	°C	111	111	111
维卡软化点温度 Vicat Softening Point	°C	97	94	94
邵氏硬度 Shore Hardness	N/mm ²	48	48	48
晶点 (≥400um)	个/1200cm ²	<15	<15	<15
色粒	个/KG	≤6	≤6	≤6
雾度 Haze	%	≤13	≤9	≤10
主要用途 Applications	农业用薄膜、包装用膜、电线电缆、重包收缩包装薄膜、注塑制品、发泡制品 Agricultural film、Packaging film、Wires and Cables、Heavy-pack shrink packaging film、Injection molding products、Foamed products			



荣盛石化股份有限公司
RONGSHENG PETROCHEMICAL CO.,LTD.

ABS/SAN

荣盛石化股份有限公司
RONGSHENG PETROCHEMICAL CO.,LTD.

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浙江石油化工有限公司
Zhejiang Petroleum&Chemical Co.,Ltd.



公司简介 Company Profile

浙江石油化工有限公司是由荣盛石化股份有限公司、浙江巨化投资有限公司、浙江桐昆投资有限责任公司和舟山海洋综合开发投资有限公司共同投资建设。

Zhejiang Petroleum&Chemical Co., Ltd. is jointly invested and constructed by Rongsheng Petrochemical Co., Ltd., Zhejiang Juhua Investment Co., Ltd., Zhejiang Tongkun Investment Co., Ltd. and Zhoushan Marine Comprehensive Development and Investment Co., Ltd.

由公司投资建设的4000万吨/年炼化一体化项目位于舟山绿色石化基地内。项目规划总面积41平方公里，总投资1730亿元，年加工原油4000万吨，年产芳烃1180万吨、年产乙烯420万吨。

The company invested in the construction of a 40 million tons/year refining and chemical integration project, which is located in Zhoushan Green Chemical Base. The total planned area of the project is 41 square kilometers, with a total investment of 173 billion yuan. The annual production of crude oil is 40 million tons, the annual output of aromatics is 11.8 million tons, and the annual output of ethylene is 4.2 million tons.

公司采用乳液法技术建设ABS装置及其相应配套设施，产品以高档通用料为主。项目总规划产能160万吨/年，分两期建设，一期装置设计产能40万吨/年。

The company adopts the emulsion method technology to build the ABS plant and its corresponding supporting facilities, and the products are mainly high-grade general materials. The total planned production capacity of the project is 1.6 million tons/year, which will be constructed in two phases, and the designed capacity of the first phase is 400,000 tons/year.

ABS 树脂简介 Introduction

ABS树脂是丙烯腈、丁二烯、苯乙烯三种单体的三元共聚物，兼有三种单体共同性能的米白色热塑性树脂，因此ABS具有刚性好、冲击强度高、耐热、耐低温、耐化学药品性，机械强度和电气性能优良的特性。ABS树脂易于加工，加工尺寸稳定和表面光泽度好；同时易于涂装、着色，还可以进行喷涂、电镀、焊接和粘接等二次加工。

ABS resin is a terpolymer of three monomers of acrylonitrile, butadiene and styrene, and has the common properties of the three components. Therefore, ABS has good rigidity, high impact strength, good heat resistance, good resistance for low temperature, good chemical resistance, excellent mechanical strength and electrical properties. It is easy for processing, as it has good processing dimensional stability and surface gloss. It is also easy to paint and color, and can also be sprayed, secondary processing such as electroplating, welding and bonding.

ABS树脂的最大应用领域是家用电器、办公设备、交通运输、生活用品、玩具和建材。此外也被应用于包装、家具、体育和娱乐用品、机械和仪表工业中。

The largest application areas of ABS resin are household appliances, office equipment, transportation, daily necessities, toys and building materials. It is also used in packaging, furniture, sports and entertainment, machinery and instrumentation industries.

产品分类 Product Categories

ABS	◆ 产品 Production	◆ 特性 Features	◆ 用途 Application
通用级 General Grade	ZA0200	高刚性、高光泽 High stiffness, High gloss	家电、电子电器产品 Home appliances, Electronic and electrical products
	ZA0300	高冲击强度 High impact resistance	安全帽、鞋跟、箱包等 Helmet, heels, bags etc.
挤出级 Extrusion Grade	ZA1300	高冲击强度、挤出级 High impact resistance, Extrusion molding	管材、冰箱部件等 Pipes, refrigerator parts, etc.
阻燃级 Flame Retardant Grade	ZA320A	阻燃性 Flame retardance	控制盒、蓄电池、插座等 Control box, battery, socket, etc.
耐热级 Heat Resistant General Grade	ZA6200	耐热、中冲击 Heat resistant, Medium impact resistance	汽车装饰条、电动车部件等 Automotive trim strips, electric vehicle parts, etc.
SAN	◆ 产品 Production	◆ 特征 Features	◆ 用途 Application
通用级 General Grade	ZS0250	一般用途，本色 Injection grade, Natural color	日用品、化妆品等 Daily necessities, cosmetics, etc.
	ZS0350	高刚性、高耐化性 High stiffness, High chemical resistance	打火机、家电部件等 Lighters, home appliance parts, etc.

ABS物性 Physical property

ZA0200/ZA0300



ABS物性 Physical property

ZA1300/ZA320A/ZA6200



物性类别 Physical property category	测试方法 Test method	测试条件 Test conditions	单位 unit	通用级 General Grade	
				ZA0200	ZA0300
机械性能 Mechanical properties					
拉伸强度 Tensile Strength	ASTM D638	6 mm/min yield	Kg/cm ²	≥440	≥400
弯曲强度 Flexural Strength	D790	10mm/min	Kg/cm ²	790	640
弯曲模量 Flexural Strength	D790	10mm/min	Kg/cm ²	27000	23000
Izod冲击强度 Izod Impact	D256	1/4" , 23°C	KJ/m ²	20	37
洛氏硬度 Rockwell Hardness	D785			116	102
耐热性能 Heat resistance					
热变形温度 Heat Deflection Temperature	ASTM D648	1/4" , 120°C /hr annealed	°C	95	95
微卡软化点 Vicat Softening Point	D1525	1/8" , 50°C/hr °C	°C	105	105
燃烧性 Flammability	UL94	-	-	1.5mm HB	1.5mm HB
物理性质 physical property					
熔融指数 Melt Flow Rate	ASTM D1238	220°C, 5kg	g/10min	≥22	≥15
比重 Specific Gravity	D792	-	g/cm ³	1.04	1.03
成型收缩率 Molding Shrinkage	D955		%	0.4~0.7	0.4~0.7
产品特性 Features				高刚性、高光泽 High stiffness, High gloss	高冲击强度 High impact resistance

物性类别 Physical property category	测试方法 Test method	测试条件 Test conditions	单位 unit	挤出级Extrusion Grade	阻燃级 Flame Retardant Grade	耐热级 Heat Resistant General Grade
				ZA1300	ZA320A	ZA6200
机械性能 Mechanical properties						
拉伸强度 Tensile Strength	ASTM D638	6 mm/min yield	Kg/cm ²	≥420	≥220	≥430
弯曲强度 Flexural Strength	D790	10mm/min	Kg/cm ²	670	620	745
弯曲模量 Flexural Strength	D790	10mm/min	Kg/cm ²	21000	25000	26000
Izod冲击强度 Izod Impact	D256	1/4" , 23°C	KJ/m ²	35	20	18
洛氏硬度 Rockwell Hardness	D785			105	98	115
耐热性能 Heat resistance						
热变形温度 Heat Deflection Temperature	ASTM D648	1/4" , 120°C/hr annealed	°C	97	96	95
微卡软化点 Vicat Softening Point	D1525	1/8" , 50°C/hr °C	°C	103	104	114
燃烧性 Flammability	UL94	-	-	1.5mm HB	1.5mm V-0	1.5mm HB
物理性质 physical property						
熔融指数 Melt Flow Rate	ASTM D1238	220°C, 5kg	g/10min	4~7	40~60	≥10
比重 Specific Gravity	D792	-	g/cm ³	1.04	1.19	1.04
成型收缩率 Molding Shrinkage	D955		%	-	0.3~0.6	0.3~0.6
产品特性 Features				高冲击强度、挤出级 High impact resistance, Extrusion molding	阻燃性 Flame retardance	耐热、中冲击 Heat resistant, Medium impact resistance

注：以上数据是在特定条件下测出的代表值并非保证值，保证值为我司备案企业标准。
The above data are representative values measured under specific conditions, not guaranteed values. The guaranteed values are the standards of our company for record.

AS物性 Physical property

ZS0250/ZS0350



使用说明 Instructions

物性类别 Physical property category	测试方法 Test method	测试条件 Test conditions	单位 unit	通用级 General Grade	
				ZS0250	ZS0350
机械性能 Mechanical properties					
拉伸强度 Tensile Strength	ASTM D638	6 mm/min屈服	Kg/cm ²	710	820
弯曲强度 Flexural Strength	D790	2.8mm/min	Kg/cm ²	1000	1200
弯曲模量 Flexural Strength	D790	10mm/min	Kg/cm ²	35000	40000
Izod冲击强度 Izod Impact	D256	1/4" , 23℃	KJ/m ²	1.7	1.9
洛氏硬度 Rockwell Hardness	D785	-	-	-	-
耐热性能 Heat resistance					
热变形温度 Heat Deflection Temperature	ASTM D648	1/4" , 120℃ /hr annealed	℃	100	104
微卡软化点 Vicat Softening Point	D1525	1/8" , 50℃/hr	℃	104	108
燃烧性 Flammability	U194	-	-	1.5mmHB	1.5mmHB
物理性质 physical property					
熔融指数 Melt Flow Rate	ASTM D1238	220℃, 5kg	g/10min	2.6~3.1	0.9~1.1
比重 Specific Gravity	D792	-	g/cm ³	1.06	1.06
成型收缩率 Molding Shrinkage	D955	-	-	-	-
产品特性 Features	-	-	-	一般用途, 本色 Injection grade, Natural color	高刚性、高耐化性 High stiffness, High chemical resistance

注：以上数据是在特定条件下测出的代表值并非保证值，保证值为我司备案企业标准。
The above data are representative values measured under specific conditions, not guaranteed values. The guaranteed values are the standards of our company for record.

注塑工艺参考 Parameters For Reference	单位 Unit	通用级ABS General Grade		阻燃级ABS Flame Retardant Grade		通用级SAN General Grade	
		ZA0200	ZA0300	ZA320A	ZA320B	ZS0250	ZS0350
干燥温度 Drying Temperature	℃	80	80	70-80	70-80	80	80
干燥时间 Drying Time	hrs	2-4	2-4	2-4	2-4	2-4	2-4
最低水分含量 Minimum Moisture Content	%	0.01	0.01	0.01	0.01	0.01	0.01
熔融温度 Melting Temperature	℃	210-240	210-240	200-230	200-230	210-230	210-230
料筒温度 Barrel Temperature	℃	180-200	180-200	170-190	170-190	200-220	190-210
中段温度 Middle Section	℃	190-210	190-210	180-200	180-200	210-230	210-230
前段温度 Front Section	℃	200-210	200-220	190-210	190-210	210-230	210-230
喷嘴温度 Nozzle Temperature	℃	200-220	200-230	200-230	200-230	210-230	210-230
模具温度 Mold Temperature	℃	40-70	40-70	40-60	40-60	50-70	50-70
背压 Back Pressure	bar	10-30	10-30	5-10	5-10	5-15	5-15
螺杆转速 Screw Speed	rpm	30-60	30-60	30-60	30-60	30-60	30-60

说明： instruction:

(1) 上述提到的背压和螺杆转速只是作为一般指导方针；

The back pressure and screw speed mentioned above are only general guidelines;

(2) 在特定情况下，如低速注塑尺寸成型、薄壁成型和气体辅助成型，这些数据可能不适用或需要调整后使用；

In certain cases, such as low-speed injection molding, thin-wall molding and gas-assisted molding, these data may not be applicable or need to be adjusted for use;

(3) 为了防止在关机之前物料在模头内降解，或物料流出挤出级，建议初始设置温度稍低些。

In order to prevent the material from degrading in the die before shutdown, or the material flowing out of the extrusion stage, it is recommended that the initial setting temperature be slightly lower.



荣盛石化股份有限公司
RONGSHENG PETROCHEMICAL CO.,LTD.

合成橡胶SSBR/BR

荣盛石化股份有限公司

RONGSHENG PETROCHEMICAL CO.,LTD.

浙江石油化工有限公司

Zhejiang Petroleum&Chemical Co.,Ltd.

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浙江石油化工有限公司

Zhejiang Petroleum&Chemical Co.,Ltd.



公司简介 Company Profile

浙江石油化工有限公司成立于2015年6月18日，控股股东为荣盛石化（51%），其它股东为巨化投资（20%）、桐昆投资（20%）、舟山海综（9%）。

Zhejiang Petroleum & Chemical Co., Ltd. was established on June 18th, 2015. The controlling shareholder is Rongsheng Petrochemical Co., Ltd. (51%), the other shareholders are Zhejiang Juhua Investment Co., Ltd. (20%), Zhejiang Tongkun Investment Co., Ltd. (20%) and Zhoushan Marine Comprehensive Development and Investment Co., Ltd. (9%).

由公司投资建设的4000万吨/年炼化一体化项目位于舟山绿色石化基地内，项目占地总面积41平方公里，总投资1730亿元。

The company invested in the construction of a 40 million tons/year refining and chemical integration project, which is located in Zhoushan Green Chemical Base. The total area of the project is 41 square kilometers, with a total investment of 173 billion yuan.

一期项目于2019年底建成投产，目前多期项目建成，乙烯总产能达420万吨/年，丁二烯(BD)产能60万吨/年，苯乙烯(SM)产能180万吨/年，均为世界最大的单基地装置。

The first phase of the project was completed and put into operation at the end of 2019. Now the multi-phase project has been completed, the annual production capacity of ethylene, butadiene (BD) and styrene monomer (SM) will reach 4.2 million tons, 600,000 tons and 1.8 million tons, all of which are the largest single-base installations in the world.

合成橡胶概况 Overview of synthetic rubber

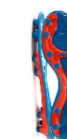
浙石化建有两套橡胶装置：年产6万吨溶聚丁苯橡胶(SSBR)、年产10万吨稀土顺丁橡胶(NdBR)装置（可共线年产7万吨顺丁橡胶BR9000）。

Zhejiang Petroleum & Chemical Co., Ltd. has built two sets of rubber plants: SSBR with an annual capacity of 60,000 tons and NdBR with an annual capacity of 100,000 tons (the latter can also co-line BR9000 with an annual capacity of 70,000 tons).

SSBR、BR主要用于高性能轮胎、鞋、输送带等橡胶工业制品。

SSBR and BR are mainly used for rubber industrial products such as high-performance tires, footwears, conveyor belts and so on.

SSBR产品组合PRODUCT PORTFOLIO



规格 Specification	牌号Name			
	SSBR2562TF	SSBR3840TF	SSBR1042F	SSBR2055F
改性与否Functionalized	F	F	F	F
生胶性能Raw rubber performance				
门尼 ML(1+4)100°C	50-60	75-85	65-75	60-70
填充油 Oil Type - p. h. r.	TDAE-37.5	TDAE-37.5	-	-
微观结构Microstructure				
结合苯乙烯含量 Bound styrene % wt	23-27	36-40	8-12	18-22
乙烯基含量 Vinyl content % wt (on BD)	60-64	38-42	40-44	53-57
主要用途Main Application	HP轮胎、鞋等 HP tires, footwears, etc	UHP轮胎、赛车胎、鞋等 UHP tires, racing car tires, footwears, etc.	冬季轮胎、HP轮胎、鞋等 Winter tires,HP tires, footwears, etc.	LRR轮胎、HP轮胎、鞋等 LRR tires,HP tires, footwears, etc.

包装Package

胶块用PE薄膜封装，牛皮纸复合编织袋或MB5箱/金属箱包装，每块净重35kg。
Sealed with PE film, packaged with kraft bag lined with plastic, or MB5 box/Metal box for rubber bales, each bale weighs 35 kg net.

规格 Specification	牌号Name			
	SSBR2260F	SSBR2658F	SSBR3640TF	SSBR3840T
改性与否Functionalized	F	F	F	No
生胶性能Raw rubber performance				
门尼 ML(1+4)100°C	65-75	65-75	51-55	75-85
填充油 Oil Type - p. h. r.	-	-	TDAE-37.5	TDAE-37.5
微观结构Microstructure				
结合苯乙烯含量 Bound styrene % wt	20-24	24-28	33.5-37.5	36-40
乙烯基含量 Vinyl content % wt (on BD)	58-62	56-60	38-42	38-42
主要用途Main Application	LRR轮胎、HP轮胎、鞋等 LRR tires,HP tires, footwears, etc.	HP轮胎、鞋等 HP tires, footwears, etc.	UHP轮胎、鞋等 HP tires, footwears, etc.	UHP轮胎、赛车胎、鞋等 UHP tires, racing car tires, footwears, etc.

保质期Shelf life

产品在存储、运输途中，应避免受热、受潮，避免阳光照射、雨淋和异物污染，保质期2年。
During storage and transportation, the product should avoid heat, damp, sunlight and rain, and foreign matter pollution. The shelf life is 2 years from the date of manufacture.



规格 Specification	牌号Name		
	BR9000	NdBR9144	NdBR9163
催化剂类型Catalyst			
Nd		√	√
Ni	√		
生胶性能Raw rubber performance			
门尼 ML(1+4)100°C	41-49	40-48	59-67
挥发分 Volatile Matter%	≤0.5	≤0.5	≤0.5
灰分 Ash%	≤0.2	≤0.2	≤0.2
填充油 Oil Type - p. h. r.	-	-	-
特性Features			
	通用型 Ordinary type	线性 Linear	高度线性 High linear
主要用途Main Application			
	轮胎、输送带、鞋等tires, conveyor belts, footwear, etc	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc.	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc.

🌈 包装Package

胶块用PE薄膜封装, 牛皮纸复合编织袋或MB5箱/金属箱包装, 每块净重35kg。
Sealed with PE film, packaged with kraft bag lined with plastic, or MB5 box/Metal box for rubber bales, each bale weighs 35 kg net.

规格 Specification	牌号Name			
	NdBR9144B	NdBR9144F	NdBR9163F	NdBR9137T
催化剂类型Catalyst				
Nd	√	√	√	√
Ni				
生胶性能Raw rubber performance				
门尼 ML(1+4)100°C	40-48	40-48	59-67	33-41
挥发分 Volatile Matter%	≤0.5	≤0.5	≤0.5	≤0.5
灰分 Ash%	≤0.2	≤0.2	≤0.2	≤0.2
填充油 Oil Type - p. h. r.	-	-	-	TDAE-37.5
特性Features				
	长链支化 Long chain & branched	改性 Functionalized	改性 Functionalized	充油 Oil-extended
主要用途Main Application				
	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc.	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc.	高性能轮胎, 传送带, V带、高尔夫球、鞋等HP tires, conveyor belts, V-belts, Golf balls, footwears, etc.

🌈 保质期Shelf life

产品在存储、运输途中, 应避免受热、受潮, 避免阳光照射、雨淋和异物污染, 保质期2年。
During storage and transportation, the product should avoid heat, damp, sunlight and rain, and foreign matter pollution. The shelf life is 2 years from the date of manufacture.