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电泳涂料

Electrophoretic Coating

# 超低温系列解决方案

# ULTRA-LOW TEMPERATURE SERIES SOLUTIONS



应对您在材料端的挑战

DEAL WITH YOUR CHALLENGES IN MATERIAL ASPECT.



浩力森

品质无坚不摧

INDESTRUCTIBLE QUALITY

突破极限，百度传奇

BREAK THE LIMIT, HUNDRED DEGREE LEGEND





## E-coating Introduction

### 电泳涂装概况

电泳涂装（ED）是由电泳涂料通过电化学反应在金属材料表面形成涂膜，比普通喷涂更致密附着力更强，并且具有超强的耐盐雾、耐湿热性能，其防腐能力也远高于其他类型的防腐底漆。操作安全、简单、高效、节能。

Electrophoresis coating (ED) is an electrophoretic coating by electrochemical reaction on the surface of metal materials to form a coating film, more dense and has more adhesion than ordinary spraying, as well as super salt spray resistance, moisture and heat resistance performance, its corrosion resistance is much higher than other types of anti-corrosion primer. Operation safe, simple, efficient and energy saving.

浩力森阴极电泳涂装工艺经过近 20 年的发展，以其优异的理化性能被应用到各种涂装领域中，已经成为底漆涂装的先进成熟技术厂家之一。能适应防腐、环保、节能和顾客的多样化性能要求，阴极电泳涂料的开发也取得了快速发展，阴极电泳涂料给整个涂装行业呈现出：较低的溶剂含量；较低的烘烤固化温度；不含铅、镉、汞等有害重金属；较低的涂膜密度和加热减量；高泳透力性能；耐候性、平滑性及高边缘防腐性等特殊产品要求。

HLS cathode electrophoresis coating process, with its excellent physical and chemical performance is applied to a variety of coating fields, has become one of the advanced mature technology manufacturers of primer coating after 20 years of development. We can adapt to anti-corrosion, environmental protection, energy saving and customer's diverse performance requirements, cathode electrophoresis coating development has also made rapid development, it presents these specification to the entire coating industry: lower solvent content; lower curing temperature; no lead, no cadmium, no mercury and other harmful heavy metals, lower coating density and heating reduction, high throwing power; weather resistance; high leveling and edge corrosion resistance etc. special requirements.



# DEAL WITH YOUR CHALLENGES IN MATERIAL ASPECT

应对您在材料端的挑战

Product Introduction



## Product Introduction 产品介绍

随着全球生态环境日益恶化和世界能源危机，人们对环保、节能要求的不断提高、低温型涂装体系越来越青睐。低温固化阴极电泳涂料具有烘干温度低，节省燃料费用的特点。浩力森倡导节能环保，研制出百度超低温 OHT 系列，是一种无重金属、低温固化的环保型阴极电泳涂料。通过对多异氰酸酯、封闭剂、基础树脂的选择组合搭配，产品不仅可以达到极限 120°C /20min 的固化效果，同时也兼具优良的理化性能，与市面上的普遍电泳漆对比，低温固化烘烤，炉温温度可降低 30% 左右，燃料可节能 30% 左右。减轻电泳烘干炉污染度，减少废气排放量，更利于环境保护。涂装大型工件时不会产生应变（热变形）。减少涂膜因烘烤过程中的色变，从而提高涂膜质量。也可涂装铸件等壁厚的工作。涂层耐蚀性能优良，覆盖能力好，等特点。

With the deterioration of the global ecological environment and the world energy crisis, people's environmental protection, energy conservation requirements continue to improve and low Warm coating system is becoming more and more popular. Low-temperature cured cathode electrophoresis coatings have low drying temperatures, saving fuel costs. HLS advocates energy saving and environmental protection, developed 100d egree ultra-low temperature OHT series, is a heavy metal-free, low-temperature curing ring Cathode electrophoresis coating. Through the selection and combination of multi-isocyanate, closed agent, base resin, the product can not only achieve the cure effect at the limit of 120°C / 20min, but also with excellent physical and chemical performance, the market generally electrophoretic paint contrast, low warm curing baking temperature can be reduced by about 30%, fuel energy saving about 30%. It reduces the contamination of the electrophoresis dryer , reducing emissions, more conducive to environmental protection. No strain (thermal deformation) occurs when large workpieces are painted. subtract Less coating film due to the color change during the baking process, thereby improving the quality of the coating film. Wall-thick workpieces such as castings can also be coated. Film has good corrosion resistance, good coverage, and so on.

1! Advantage

超低温固化  
Ultra-low temperature curing

2! Advantage

不含重金属  
No heavy metals and no tin

3! Advantage

优异的结合力  
Excellent finish combination



1

Advantage

# 超低温固化

## ULTRA-LOW TEMPERATURE CURING



传统市场上的阴极电泳涂料均为高温烘烤型，一般温度都要在 180°C -200°C /20min 甚至更高。阴极电泳涂料是将封闭聚氨酯包裹在基料树脂中，然后乳化，电泳涂料的固化温度主要取决于封闭异氰酸酯的解封温度和催化剂的选型，主要还是从降低封闭异氰酸酯的解封温度入手，浩力森推出的超低温 OHT 系列产品完美的解决了固化温度问题，产品在规定条件 120°C /20min 烘烤后，通过丙酮擦拭试验，往复擦拭 50 次，涂膜无掉色，烘烤完全固化。为顾客提供了低温烘烤解决方案。

Cathode E-coating on the traditional market is high-temperature baking type, temperature usually should be 180°C -200°C / 20min or even higher. Cathode E-coating is to wrap the closed polyurethane in the base resin, and then emulsified. We basically start from the reduction of the closed isocyanate unsealing temperature. The curing temperature of E-coating mainly depends on the unsealing temperature of closed isocynate and the selection of catalyst. HLS ultra-low temperature OHT products, it perfectly solves curing temperature problem and offer low baking solution, which baked at 120°C / 20min under specified conditions through acetone wipe test, wipe back and forth 50 times, paint film no lose color, baking can be completely cured.

### 样板耐溶剂擦拭测试

Sample board solvent wipe test

SERIES PRODUCTS



使用脱脂棉用规定溶剂润湿后，往复 50 次擦拭，涂膜无掉色。  
After wetting with prescribed solvent, wipe it 50 times in turn, film no lose color

SERIES PRODUCTS

### 样板中性盐雾实验

Sample board salt spray test

SERIES PRODUCTS

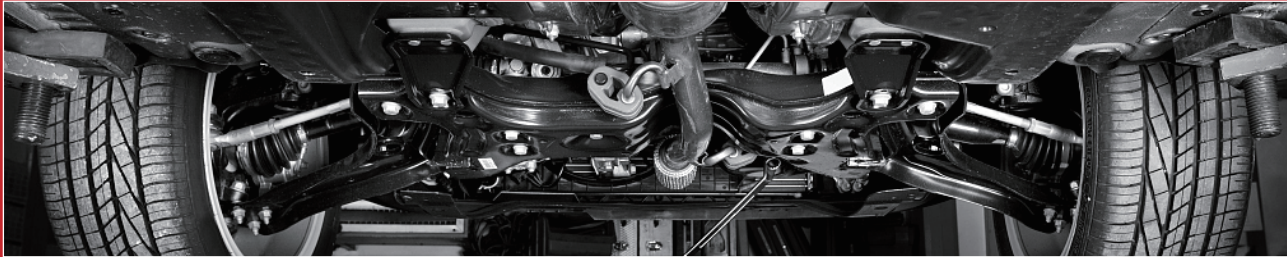


磷化板，电泳膜厚 20μm，120°C，20 分钟固化；  
720h 中性盐雾试验，划叉处无气泡；  
划叉处外面板无锈点、气泡；  
划叉处单边腐蚀宽度 1.25mm。

Phosphating plate, electrophoresis film thickness 20 μm ,  
120°C , 20 mins curing;  
720h neutral salt spray test, no bubbles at fork mark ;  
No rust points or bubbles in the outer of the fork mark ;  
Unilateral corrosion width at fork 1.25mm.

浩力森推出的超低温 OHT 系列产品中采用 120°C 固化，同时也兼具优异的耐盐雾性能，磷化电泳板通过 720h，耐中性盐雾测试，单边腐蚀宽度 1.5mm 以内。

HLS launched ultra-low temperature OHT series reaches 120°C for curing with excellent salt spray resistance.It passed phosphation board 700h, neutral salt spray test, Single side corrosion width within 1.5mm.



SERIES PRODUCTS

2

Advantage

不含重金属，且不含锡

NO HEAVY METALS AND NO TIN

重金属

Heavy Metal

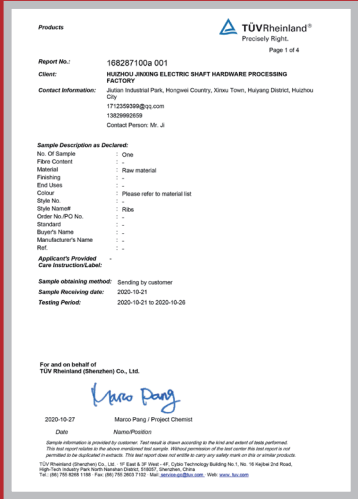
锡

TIN

SERIES PRODUCTS

无锡黑色低温高性能阴极电泳涂料中采用新型低温固化体系，不含有机锡催化剂，而是采用有机铋、锌、钛等类催化剂，同样起到促进涂膜干燥的作用，提高涂膜的干燥效果，从而获得较好的物理与化学性能。同时铋的化合物不仅可以促进涂膜交联干燥，而且具有防腐蚀的性能，是常用的防腐颜填料之一。环保类催化剂能与异氰酸根产生配位，使NCO基团极化，从而使异氰酸酯分子中带正电荷的碳原子更加活泼，更容易收到多元醇羟基的攻击。目前，浩力森的超低温 OHT 系列产品其各项指标要求均符合欧盟 RoHS、SVHC，应用于生活中的水性工业涂料还取得了美国 FDA 食品药品监督管理局的认证。

Wuxi black low-temperature high-performance cathode E-coating uses a new low-temperature curing system, free of organic tin catalyst, with catalysts contains organic tantalum, zinc, titanium etc., also plays a role in promoting the drying of the paint film, improve the drying effect of the paint film, so that the paint film has a higher cross-link density, so as to obtain better physical and chemical properties. At the same time, the bismuth compound can not only promote the cross-link drying of the paint film, but also has anti-corrosion properties, which is one of the commonly used anti-corrosion pigments. Environmentally friendly catalysts can be placed with isocyanate roots to polarize the NCO group, thus making the positively charged carbon atoms in the isocyanate molecule more active and more susceptible to attacks by polyol hydroxyl. At present, HLS's ultra-low temperature OHT series of products comply with the EU RoHS,SVHC, applied to water-based industrial coatings in life and have also been certificated by the U.S. FDA.



3

Advantage

优异的面漆结合力

EXCELLENT FINISH COMBINATION

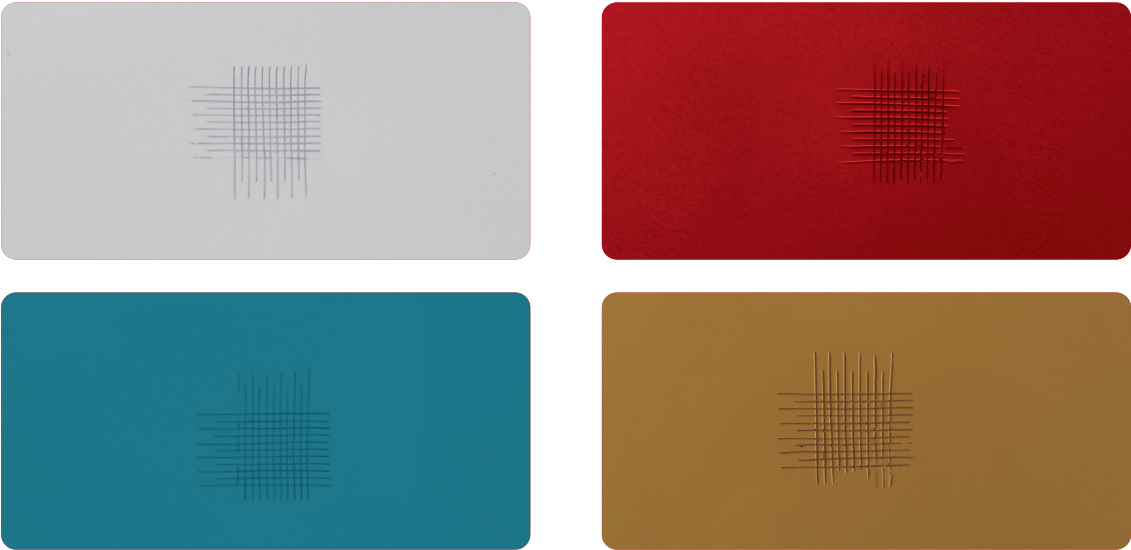
SERIES PRODUCTS

浩力森研发的超低温 OHT 系列产品，在搭配不同型号的面漆时，表现出优异的结合力，通过划格试验测试，切割边缘完全平滑，面漆不能单独黏附剥落，附着力 0 级，与面漆的结合力优异。为顾客提供了质量的保证，满足各行业顾客的特殊需要。

Ultra-low temperature products show excellent binding effect when paired with different models of paint. The cutting edge is completely smooth, any one of mesh does not exfoliation through cross-cut test, adhesion level 0, providing customers with a composite coating construction quality assurance and meet the special needs of customers in various industries.

附着力试验 Adhesion test

SERIES PRODUCTS





# Experimental Data

## 实验数据

### 涂膜性能指标 FILM PERFORMANCE INDEX

项目 PROJECT		指标 INDICATOR	检验标准 TEST STANDARD
外观 Appearance	正常 / 异常 Normal / abnormal	正常 Normal	目测 Ocular estimate
硬度 Hardness	≥	2H	GB/T 6739
杯突 Cup drawing	mm, ≥	7	GB/T 9753
附着力 Adhesion	Level 级	0	GB/T 9286
柔韧性 Flexibility	mm	1	GB/T 1731
冲击 Impact	kg·cm	50	GB/T 1732
光泽 Gloss	60°	60 - 90	GB/T 9754
耐水性 Water resistance	h, (23±2)°C , ≥	240	GB/T 1733
耐酸性 Acid resistance	h, (0.1N H <sub>2</sub> SO <sub>4</sub> ), ≥	48	GB/T 9274
耐碱性 Alkali resistance	h, (0.1N NaOH), ≥	48	GB/T 9274
耐油性 (汽油、柴油) Oil resistance	h, (film thickness 膜厚 ≥ 20μm), ≥	48	GB/T 1763-79

# Application Area

## 应用领域

浩力森超低温 OHT 系列产品可适用于所有的金属底材涂装，广泛应用于含橡胶、塑料等不能用于高温烘烤的行业；在特殊要求的压缩机行业、汽车配件行业、五金制造行业获得诸多认可。

HLS ultra-low temperature OHT series products can be applied to all metal substrate coating, widely used in rubber, plastics and other industries which can’ t stand high temperature baking; HLS has been recognized in the compressor industry has special requirement, auto parts industry, hardware manufacturing industry.

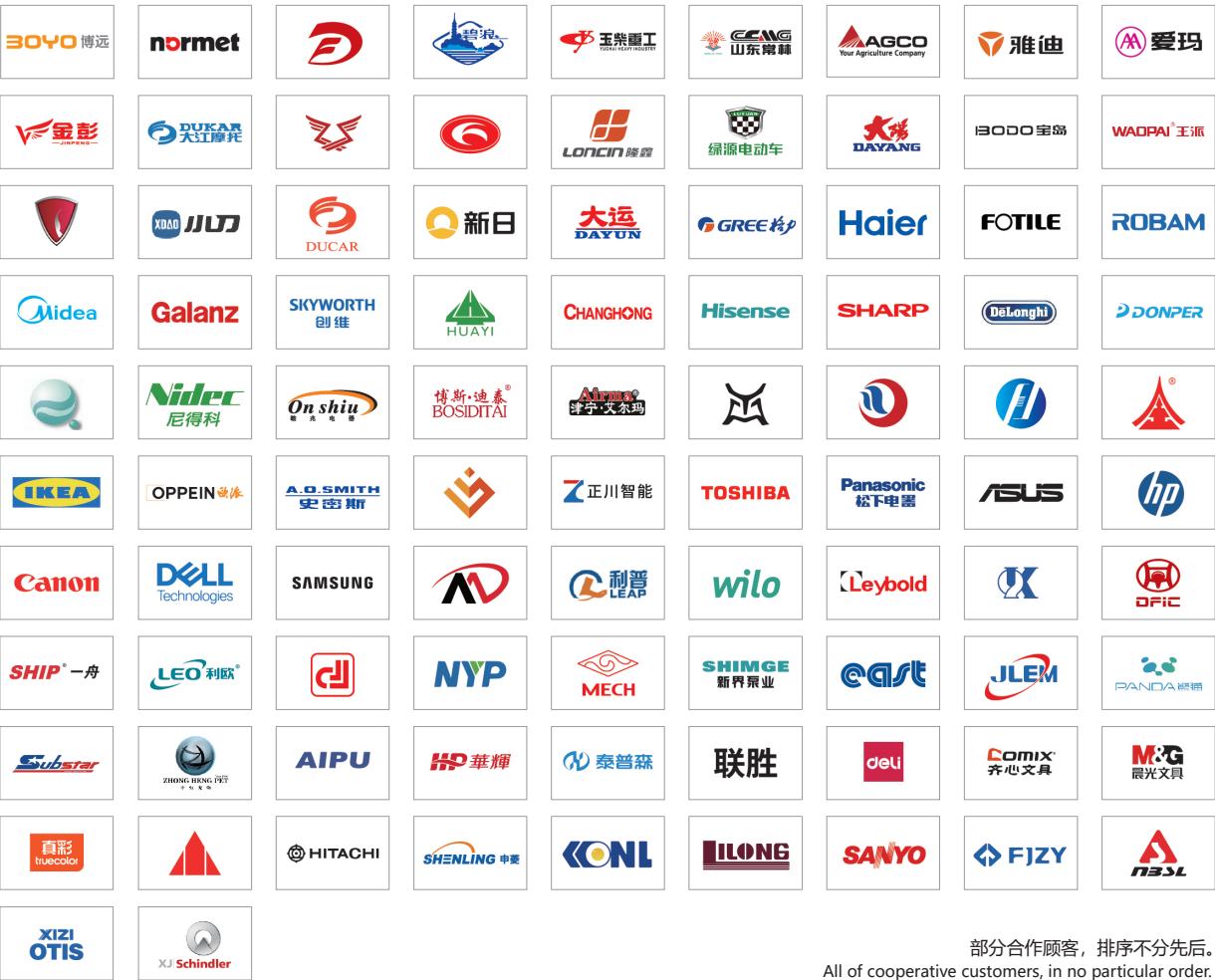


# Customer Service

## 服务顾客

浩力森是国内率先进入尖端环保表面材料应用领域的自主品牌之一。目前，电泳涂料、水性涂料、低碳涂料、粉末涂料、新材料等各类产品，广泛应用于汽车及汽车零部件行业，工程机械行业，轨道交通行业，航天海运行业，摩电行业，电梯行业，集装箱行业，家电家居行业，3C 电子行业，重防腐行业等众多领域。

HLS is one of the first domestic brands who is first to enter the field of cutting-edge environmentally friendly surface materials applications. At present, E-coating, water-based coating, low-carbon coating, powder coating, new material etc. products' applications cover automobile and auto parts industry, construction machinery industry, rail transit industry, air and sea transportation, motorcycle and electric vehicle industry, elevator industry, container industry, home appliances industry, home furnishing industry, 3C electronics industry and heavy duty etc.



部分合作顾客，排序不分先后。  
All of cooperative customers, in no particular order.



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#### Consultation method:

Scan customer service QR code to add WeChat to communicate  
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Can participate in a variety of activities from time to time HLS.



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