致力于成为全球领先的

高性能非晶合金防腐解决方案提供商

400-055-8212
zlht@zlht-kj.com
www.zlht-kj.com
苏州工业园区金浦路15号匠心楼211室

中利恒涂

ZHONGLI HENGTU

Environmentally friendly
high-performance heavy-duty
anti-corrosion coating

环保型高性能重防腐涂料

企业简介

COMPANY PROFILE

中利恒涂（苏州）新材料科技有限公司是一家专注于高性能非晶合金重防腐材料研发、生产、销售及技术解决方案定制的高科技企业，深耕非晶合金材料领域，以攻克“长效防护与绿色环保协同”行业关键技术难题为核心使命，致力于为海洋工程、能源化工、重大基础设施等高端制造领域提供性能卓越、环境友好的长效防护材料与专业服务；公司核心产品已通过中国船舶集团第七二五研究所等权威第三方检测机构全面验证，性能表现稳定可靠，并已在多个国家级重点工程中实现示范应用；致力于成为全球非晶合金重防腐材料领域值得信赖的技术引领者与产业践行者，为工业设施的长寿命安全运行与可持续发展贡献专业力量。

SCIENTIFIC RESEARCH LEADER

SCIENTIFIC RESEARCH AND INNOVATION

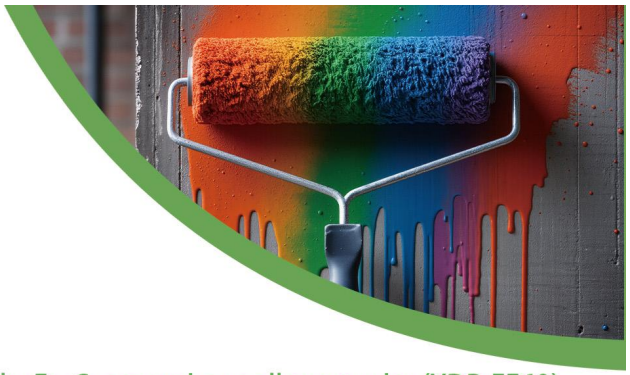
科研领军

非晶合金材料领域的知名学者与科研带头人，长期致力于非平衡材料、非晶合金及其复合材料的制备科学、性能调控与工程应用研究；成功解决了合金非晶形成能力低、工程化制备难等一系列关键科学与技术问题，开发出包括超耐腐蚀 FE-CR 系非晶合金、易加工 FE-P 系非晶合金、高强高导热 AL 基纳米晶合金等在内的多个具有自主知识产权的新型材料体系。实验室累计发表 SCI 论文 300 余篇，被引用 20000 余次，获授权国内外专利 200 余项，多项成果实现产业化转化，为我国高端装备与重大工程的材料自主保障提供了重要支撑。

科研创新

公司以“材料－结构－性能－应用”一体化研发为路径，构建了覆盖基础研究、工艺开发、产品定型与工程验证的全流程创新体系；材料体系原创性突突破，制备工艺自主可控，涂层技术集成创新、产学研协同与持续研发，通过系统的科研布局与扎实的工程转化，中利恒涂正推动非晶合金重防腐材料从实验室走向产业化，为破解国家重大工程腐蚀防护难题提供中国解决方案。

CORE MATERIAL
核心材料



鳞片状Fe-Cr系非晶合金粉末（YDP-FF60）

结构优势：原子排列长程无序、短程有序，无晶界、无缺陷，具备高度均一性、致密性、耐蚀性。

性能特点：高硬度、高耐蚀、高强韧、耐磨、耐冲击、耐阴极剥离。

环保安全：无锌、无污染、无爆炸风险，绿色制备，符合环保标准。

优势维度	恒涂合金 YDP-FF60 性能表现
化学耐蚀性	优异的化学性能，耐酸、碱、盐等，耐腐蚀性能超304不锈钢的1万倍；
力学可靠性	良好的物理性能，基体表面附着力好
环保安全性	制备及使用过程绿色环保无污染，无锌粉安全风险
工程兼容性	与外加电流阴极保护技术相容性好，具有耐阴极剥离性；
成本经济性	良好的力学性能耐剥离、耐冲击、耐磨损，是国标2~3倍；

Flaky Fe-Cr amorphous alloy powder (YDP-FF60)

Structural advantages: The atomic arrangement is disordered in the long range and ordered in the short range, with no grain boundaries or defects. It features high uniformity, compactness and corrosion resistance.

Performance features: High hardness, high corrosion resistance, high strength and toughness, wear resistance, impact resistance, cathodic disbondment resistance.

Environmental protection and safety: Zinc-free, pollution-free, no explosion risk, green preparation, meeting environmental protection standards.

Advantage dimension	Performance of the constant coating alloy YDP-FF60
Chemical corrosion resistance	It has excellent chemical properties, resistant to acids, alkalis, salts, etc. Its corrosion resistance is over 10,000 times that of 304 stainless steel.
Mechanical reliability	It has excellent physical properties and good adhesion to the substrate surface
Environmental protection and safety	The preparation and usage process is green, environmentally friendly and pollution-free, with no safety risks of zinc powder
Engineering compatibility	It has good compatibility with impressed current cathodic protection technology and is resistant to cathodic disbondment.
Cost economy	It has excellent mechanical properties, including resistance to peeling, impact and wear, which are 2 to 3 times the national standard.

INDUSTRY PAIN POINTS

行业痛点

腐蚀：工业资产的“隐形杀手”

1. 经济损失巨大：中国工程院重大咨询项目显示，我国海洋腐蚀年总成本超 2 万亿元，占 GDP 的 1% 以上；

2. 材料占比集中：海工装备、化工厂区中，钢铁材料和混凝土占比超 90%，是腐蚀破坏的主要载体；

3. 双碳战略需求：1 吨钢生产排放 1.8 吨 CO_2、1 吨水泥生产排放 1 吨 CO_2，减少因腐蚀导致的重复建设，是工业降碳的重要路径 ——腐蚀防护，既是经济需求，更是绿色使命。

Corrosion: The "Invisible Killer" of Industrial Assets

Huge economic loss Major consulting projects of the Chinese Academy of Engineering show that the total annual cost of Marine corrosion in China exceeds 2 trillion yuan, accounting for more than 1% of the GDP.

Concentrated material proportion: In Marine engineering equipment and chemical plant areas, steel materials and concrete account for over 90%, being the main carriers of corrosion and damage.

The dual carbon strategy demands: 1 ton of steel production emits 1.8 tons of CO_2, and 1 ton of cement production emits 1 ton of CO_2. Reducing redundant construction caused by corrosion is an important path for industrial carbon reduction - corrosion protection is not only an economic demand but also a green mission.

传统重防腐涂料：难以突破的多重局限

Traditional heavy-duty anti-corrosion coatings: Multiple limitations that are difficult to break through

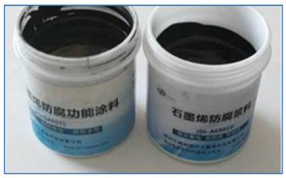
长期以来，行业依赖富锌涂料，但存在诸多瓶颈，且世界范围内锌替代材料研发数十年无重大进展：>>

For a long time, the industry has relied on zinc-rich coatings, but there are many bottlenecks, and there has been no significant progress in the research and development of zinc alternative materials worldwide for decades. >>

替代困境：全球范围内，寻找锌粉替代材料的研发数十年进展甚微，玻璃鳞片、石墨烯、铁红漆等方案均未实现根本性突破。

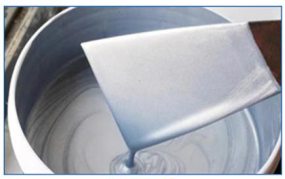
Substitution dilemma: Globally, the research and development of alternative materials for zinc powder has made little progress over the past decades. Solutions such as glass flakes, graphene, and iron red paint have not achieved fundamental breakthroughs.

玻璃鳞片



石墨烯

铁红漆



铝粉漆

防腐效果弱 WEAK ANTI-CORROSION EFFECT

含锌量高达 60%-80%，但海洋环境防腐年限仅 6-9 年，耐中性盐雾时长仅 1000-1500 小时；

The zinc content is as high as 60%-80%, but the anti-corrosion life in Marine environments is only 6-9 years, and the duration of resistance to neutral salt spray is only 1000-1500 hours.

安全隐患大 SIGNIFICANT SAFETY HAZARDS.

锌粉生产、运输、储存过程存在爆炸风险；

There is an explosion risk during the production, transportation and storage of zinc powder.

环境污染重 SEVERE ENVIRONMENTAL POLLUTION

锌离子易造成海洋与土壤污染；

Zinc ions can easily cause pollution to the ocean and soil.

力学性能差 POOR MECHANICAL PROPERTIES

抗变形能力弱，涂层附着力仅 5-8MPA，施工需 3 层，成本高且效率低。

Weak resistance to deformation, coating adhesion is only 5-8 mpa, and three layers are required for construction, which is costly and inefficient.

COATING PERFORMANCE
涂料性能

恒涂合金重防腐防腐涂料(PEK-YDH50)性能

The performance of Hengtu Alloy heavy-duty Anti-corrosion Coating

试样号	试样直径（mm）	断裂伸长（mm）	最大力（N）	拉伸强度（MPa）
1	20	1.06	6683.59	**21.27**
2	20	0.88	6554.35	**20.86**
3	20	1.28	5481.45	**17.44**
4	20	1.83	7072.84	**22.51**
5	20	0.79	5408.08	**17.21**
平均值	-	-	6235.41	**19**

平均拉伸强度19Mpa，远超领域其他产品

The average tensile strength is 19Mpa, far exceeding that of other products in the field

落球冲击50cm

涂层无裂纹，无脱落

弯折实验1mm

涂层无裂纹，无脱落

实验条件	结果
酸性盐雾（酸性，500小时）	无气泡、无龟裂、无剥落
耐碱性（5%NaOH，30天）	无气泡、无脱落、无生锈
耐酸性（5%HCl，30天）	无气泡、无脱落、无生锈

5000h中性盐雾试验，无起泡脱落锈蚀，耐酸碱盐腐蚀性能优异

（第三方中国船舶集团第七二五研究所测试结果）

(Test results from the 725 Research Institute of China State Shipbuilding Corporation, a third party)

PRODUCT INTRODUCTION

产品介绍

1. 适合新建设施、化工厂、电厂、桥梁、沿海工程等钢铁结构
2. 针对各种使用中的钢结构修补、特别是难以进行彻底除锈部位的维护
3. 适用各种施工窗口期短、高湿度环境、潮水浸没区域等钢结构的修复

1.It is suitable for steel structures of new facilities, chemical plants, power plants, Bridges, coastal projects, etc

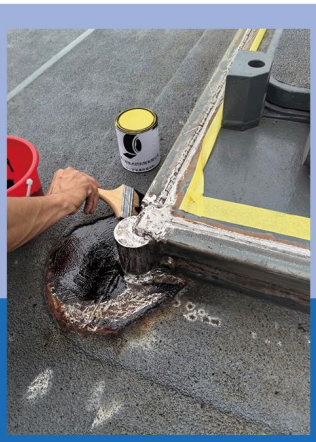
2. For the repair of various steel structures in use, especially the maintenance of parts that are difficult to thoroughly remove rust

3. It is applicable to the repair of steel structures in various environments with short construction window periods, high humidity, and areas submerged by tides

APPLICATION SCENARIOS

应用场景

055 驱逐舰

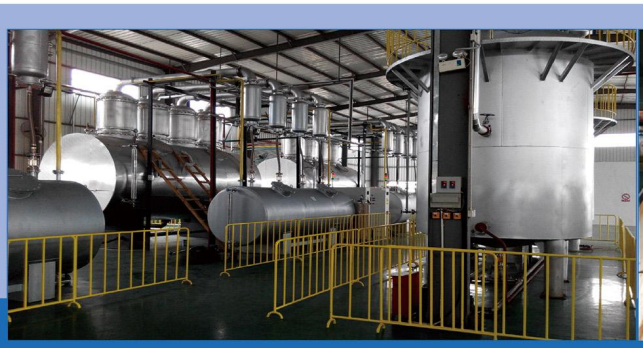


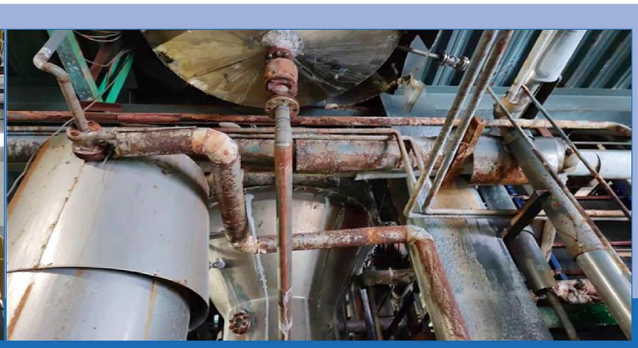
某舰船甲板、舰舷、侧炮口等

APPLICATION SCENARIOS

应用场景

豫东某化肥厂





建筑面积约三万平米，钢结构约六万平米，每年钢结构因腐蚀更换面积达 80%，需停产两个月，直接经济损失超过 1000 万元。

采用恒涂合金耐腐蚀涂料，钢结构使用寿命可提升 3-5 倍，年节省 1000 万元以上，单次刷涂可节省 4500 万元以上，且可避免各种泄露，结构失稳风险。

APPLICATION SCENARIOS

应用场景

南方某海上风电场

单个常用尺寸海上风电桩表面积 25 平米左右，停靠平台超过 100 平米。目前多个海上风电场仅服役 1 年不到就出现各种腐蚀现象，安全隐患严重。

若采用恒涂合金耐腐蚀涂料可提高停靠平台使用寿命 3 倍以上，同时钢结构寿命提高 5 倍以上。大幅节省检修次数和维护成本