



**ZEBUNG 泽邦**

—— 惠泽四海 兴邦立事 ——

**河北泽邦塑胶科技有限公司**  
HEBEI ZEBUNG RUBBER TECHNOLOGY CO.,LTD





## ENTERPRISE INTRODUCTION

Hebei Zebung Rubber Technology Co. , LTD. was founded in 2003 and located in the Rubber Industry base of Jing county in Hengshui city. The company covers an area of 60,000 square meters, with registered capital of 56.9 million yuan , and has more than 150 employees. The products involve in the petroleum industry, transportation industry, coal mining industry, construction industry, agriculture and other fields. Zebung is the high-tech enterprise in Hebei Province, with a number of invention patents, and most of the products have obtained industry certificates. It has its own R & D laboratory and engineer team, and is Grade A R&D institution of Hebei Province. It is the only domestic science and technology production enterprise that independently develops offshore pipeline and has been certified by the French Bureau Veritas (BV).

Zebung's products have been exported to France, Brazil, the United Arab Emirates, Indonesia, the Philippines, Tanzania, Venezuela and other countries and regions, and are used in many key projects and projects abroad, and have received widespread praise from overseas customers.

Zebung adheres to the enterprise tenet of "Bring convenience to global users, realize common prosperity and development. ", we firmly believe that only by mastering the strength of independent R & D core competitiveness of products, researching and developing from the forefront of the field of scientific and technological, and creating high-quality products are the source of power for Enterprise development and growth. Zebung is committed to the rubber pipeline field, to build China's right to speak and core competitiveness.



河北泽邦塑胶科有限公司成立于 2003 年，位于衡水景县橡塑工业基地。公司占地 60000 平米，注册资金 5900 万元，员工 150 余人。产品应用涉及石油行业、交通运输业、煤矿业、建筑业、农业等多个领域，是河北省高新技术企业，拥有多项发明专利，多项产品获得了行业证书。拥有自己的研发试验室与研发团队，是河北省 A 级研发机构。是国内唯一一家自主研发海洋油管的科技型生产企业并取得法国必维船级社认证证书。

泽邦公司的产品远销法国、巴西、阿联酋、印度尼西亚、菲律宾，坦桑尼亚、委内瑞拉等多个国家和地区，应用于国外的多个重点工程和项目领域，受到海外客户的广泛赞誉。

泽邦秉承“惠泽四海、兴邦立事”的企业宗旨，我们坚信只有掌握自主核心竞争力，从最前沿的科技领域不断研发，打造质量过硬的产品，才是企业发展壮大的源动力！泽邦公司致力于橡胶软管研发领域，打造属于中国的话语权和核心竞争力！

## 关于泽邦 ABOUT US









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## 生产和案例

Production And Case



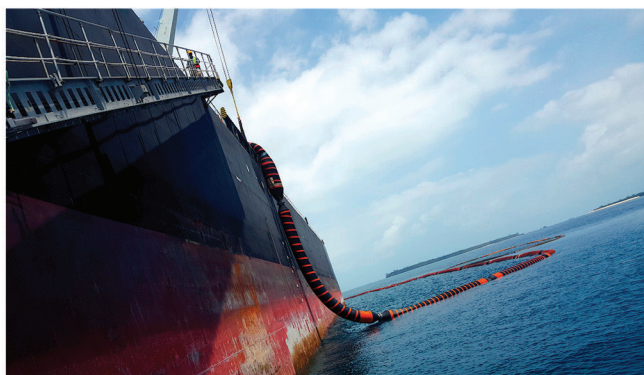
主管线 Mainline



首管 First offbuoy hose



主管线 Mainline



舷管 / 尾管 Tanker rail hose/Tail hose





主管线 Mainline



浮筒 - 软管 - 油轮 Mooring buoy-Hose-Tanker



主管线 Mainline



围栏管 Tanker rail hose



主管线 Mainline











## 单骨架漂浮油管 Single Carcass Floating Hose

泽邦的单骨架漂浮油管完全符合并超过 GMPHOM2009 的要求，并且可以满足客户严苛的参数要求。为了帮助您加快业务的发展，我们可以使用配备行业标准软件的电脑设备为新项目提供系统支持服务。

Zebung single carcass floating hose is fully compliant with and exceeds the requirements of GMPHOM 2009 and meet the most stringent customers' specification requirements. In order to help you to accelerate the development of your business, we can supply system support for new projects using computing facilities with industry standard software.

## 优势 ADVANTAGES

- 内衬可耐高含量的芳香烃  
Liner compounds with high aromatic resistance
- 橡胶和法兰的粘接强度高  
Super rubber adhesion to the flange
- 选用的增强材料保证软管有更好的耐油性和柔性  
Reinforced materials have been selected to warranty oil resistance and flexibility
- 软管外胶具有较好的抗紫外光，耐磨和耐撕裂性能  
The cover rubber guarantees resistance to UV ray, abrasion and tearing

利用有限元分析软件，可以得出端部接头较小的施加应力，除此之外，还可以得到软管的弯曲刚度，拉伸刚度和轴向刚度。这些有利于验证软管设计的合理性并且得到较好的强度和柔性。同时，我们可以提供可靠的数据以便客户建模。

With Finite Element Analysis, little stress is applied to the end fittings, in addition to get the bend stiffness, tension stiffness, torsion stiffness of the hose. It helps to verify the rationality of the hose design and get sufficient strength and flexibility. In the meanwhile, we can provide reliable data for customer modeling.

不同的系统，软管的排布不同。下面所列软管是泽邦最常用的软管类型。

The configurations of the hoses are various from different systems. The list of hoses below represents the most commonly supplied hose types by ZEBUNG.



## 一端增强半漂浮管

### One End Reinforced Half Floating Hose



一般用于连接单点系泊的终端或者其他输油设施。它实现了刚性向柔性的过渡，并且将弯矩向软管中间转移。

Usually applied to connect the terminal of the single point mooring or other oil transfer installations. It achieves the transition from rigid to flexible and shift the bending moment towards the mid-section of the hose.

- 最小储备浮力：按照标准 5%  
Min. reserve buoyancy: 5% as standard
- 按标准连续性导电配置  
Electrically continuous as standard

## 主管 Mainline Hose



主管线是软管串中最主要的组成，整根软管外径保持一致。

Mainline hose forms the majority component of the hose string, the hose outside diameter remains same over the whole length.

- 最小储备浮力：按照标准 20%  
Min.reserve bouyancy: 20% as standard
- 按标准连续性导电配置  
Electrically continuous as standard



## 变径管 Reducer Hose



变径管在大口径的主管和小口径的尾管之间，一般在较大口径的一端变径。整根软管外径保持一致。

典型的变径尺寸是：24 " / 20 " , 20 " / 16 " , 16 " / 12 " 。

The reducer hose is between the mainline hose with big bore and tail hose with small bore,the taper is made within the fitting at the larger end. The hose outside diameter remains same over the whole length. Typical reductions being 24/20" , 20/16" , 16/12" .

- 最小储备浮力：按照标准 20%  
Min.reserve bouyancy: 20% as standard
- 按标准连续性导电配置  
Electrically continuous as standard



## 尾管 Tail Hose



油轮连接管线的前几根管，尾管经过特殊设计柔性较好，以提高围栏管的操作性。它经常用于连接围栏管和主管。

The last few hoses before the tanker connection hose, the tail hose is specially designed for flexibility to improve handling at the tanker end of the floating hose string. It is always used to connect the tank rail hose and the mainline hose.

- 最小储备浮力：按照标准 20%  
Min.reserve bouyancy: 20% as standard
- 按标准连续性导电配置  
Electrically continuous as standard



## 围栏管 Tanker Rail Hose



围栏管用于连接油轮歧管，此管用于搭在油轮栏杆的中间部位有较小的浮力，软管两端均有浮力。连接油轮的一端比船舷外的一端具有较大的浮力，以便于给阀门和耦合装置提供更大浮力，保护设备。

Tanker rail hose are used to connect the hose string to the tanker manifold. This hose has minimal floatation in the centre where it bends over the tanker rail, with extra floatation at each end providing hose buoyancy. The tanker connection end has a larger buoyancy unit than the outboard end to help support valve and coupling equipment.

- 最小储备浮力：20%  
Min. reserve buoyancy 20%
- 可以是连续导电配置，也可以是不连续导电配置，按客户要求生产  
Can be electrically discontinuous or continuous, depending on your requirement
- 按标准提供吊耳配置  
Supplied with lifting lugs as standard



## 单骨架水下管 Single Carcass Submarine Hose

浮筒通常用一系列的锚链固定在海床上。CALM/SPM 浮筒包括一个 360°旋转转盘以便于油轮在风标效应下随浮筒自由旋转。漂浮软管用于连接油轮歧管和浮筒输油臂。水下管用于连接旋转头和水下管汇基盘。它有多种布置方式：中国灯笼式，懒 S 型和陡 S 型。

The buoy is typically spread moored to the seabed using a series of mooring chains. CALM / SPM buoys include a 360° rotating turntable thereby allowing the moored vessel to freely weathervane around the buoy whilst moored to it. Floating hoses are used to connect the tanker manifolds to the buoy manifolds. Submarine hoses are used to connect the buoy rotating head to the subsea PLEM in various configurations, Chinese Lantern, Lazy S, Steep S, etc.

## 优势 ADVANTAGES

- 内衬可耐高含量的芳香烃  
Liner compounds with high adhesion resistance
- 橡胶和法兰的粘接强度高  
Super rubber adhesion to the flange
- 选用的增强材料保证软管有更好的耐油性和柔性  
Reinforced materials have been selected to warranty oil resistance and flexibility
- 抗压抗挤  
Compression and collapse resistance

下面所列软管是泽邦最常用的软管类型

The list of hoses below represents the most commonly supplied hose types by ZEBUNG.



## 带浮体环一端增强管

### One End Reinforced Hose With Collars



用于连接单点系泊或者水下管汇基盘的硬质管道。

For using at locations where the hose strings connect to rigid pipework on SPM or seabed PLEM.

- 按标准不连续导电配置  
Electrically discontinuous as standard.



## 不带浮体环一端增强管

One End Reinforced Hose Without Collars



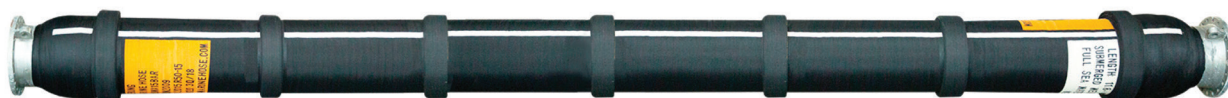
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Electrically discontinuous as standard.

## 带浮体环主管

### Mainline Hose With Collars



整根软管外径保持一致,是水下软管串的重要组成。

The hose outside diameter remains same over the whole length, it is the principal component of the submarine hose string.

- 按标准不连续导电配置  
Electrically discontinuous as standard.



## 不带浮体环主管

### Mainline Hose Without Collars



整根软管外径保持一致,是水下软管串的重要组成。

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## 双骨架漂浮油管 Double Carcass Floating Hose

双骨架漂浮管指的是“管中管”，一个主胎体被二胎体包围，双骨架软管配备泄露报警系统。当流体泄露后从主管体流出至二胎体或者主管体突然失效，检测器将对泄漏做出反应，操作人员应该替换或者拆除损坏的软管，提高了工作安全性，以免造成经济损失和环境污染。并且更重要的是即使软管工作多年后，它能保证二胎仍然有效。

Double carcass floating hose refers to a hose within a hose, a primary carcass is surrounded by a secondary carcass. The double carcass hose are provided with a leak detection system. When a leak occurs, the fluid will escape from the primary carcass to the double carcass or the primary carcass suddenly fails. The detector will react to the leak, and the operator should replace or remove the damaged hose to improve work safety, so as to avoid economic losses and environmental pollution. And this is important to ensure that the secondary carcass will function effectively even after the hose has been in service for many years.

## 优势 ADVANTAGES

- 使用较长时间后，二胎依然可以保护一胎的爆破或者泄露。  
Even after long service, the secondary carcass can still contain a primary carcass burst or leak.
- 独特的报警系统，一胎一旦失效即做出反应。  
Unique warning system, which provides clear evidence of primary carcass failure.
- 内衬可耐高含量的芳香烃。  
Liner compounds with high aromatic resistance.
- 橡胶和法兰的粘接强度高。  
Super rubber adhesion to the flange.
- 选用的增强材料保证软管有更好的耐油性和柔性。  
Reinforced materials have been selected to warranty oil resistance and flexibility.

一胎和二胎的制造和检测都是相互独立的。二胎在一胎失效后仍能正常工作。

Primary and secondary carcasses are manufactured and inspected independently of one another. The secondary carcass still works even after the primary carcass failure.

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Usually apply to connect the terminal of the single point mooring or other oil transfer installations. It achieves the transition from rigid to flexible and shift the bending moment towards the mid-section of the hose.

- 最小储备浮力：按照标准 5%  
Min. reserve buoyancy: 5% as standard
- 按标准连续性导电配置  
Electrically continuous as standard

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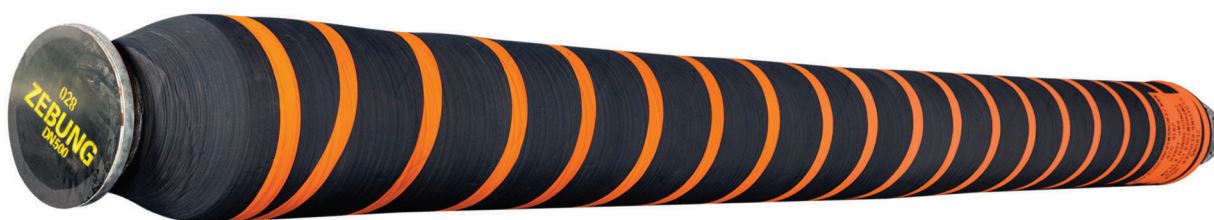
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- 最小储备浮力：20%  
Min. reserve buoyancy 20%
- 可以是连续导电配置，也可以是不连续导电配置，按客户要求生产。  
Can be electrically discontinuous or continuous, depending on your requirements.
- 按标准提供吊耳配置。  
Supplied with lifting lugs as standard.

## 双骨架水下管

### Double Carcass Submarine Hose

在主管体失效的情况下，无论是漏油还是爆破，二胎体仍可保证在安全的状态下进行作业。潜水员应定期检查泄露装置是否漏油。

In case of primary carcass failure, whether due to a leak or burst, the secondary carcass will still work to keep operations continuing in a safe stance. The leak device can be regularly checked for the presence of oil by divers.

## 优势 ADVANTAGES

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Even after long service, the secondary carcass can still contain a primary carcass burst or leak.
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下面所列软管是泽邦最常用的软管类型

The list of hoses below represents the most commonly supplied hose types by ZEBUNG



## One End Reinforced Hose With Collars



- For using at locations where the hose strings connect to rigid pipework on SPM or seabed PLEM.

## 不带浮体环一端增强管

One End Reinforced Hose Without Collars



- 用于连接单点系泊或者水下管汇基盘的硬质管道。  
For using at locations where the hose strings connect to rigid pipework on SPM or seabed PLEM.
- 按标准不连续导电配置  
Electrically discontinuous as standard.



## 带浮体环主管 Mainline Hose With Collars



- 整根软管外径保持一致，是水下软管串的重要组成部分。  
The hose outside diameter remains same over the whole length, it is the principal component of the submarine hose string.
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Electrically discontinuous as standard.

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### Mainline Hose Without Collars



- 用于连接单点系泊或者水下管汇基盘的硬质管道。  
For using at locations where the hose strings connect to rigid pipework on SPM or seabed PLEM.
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Electrically discontinuous as standard.

## 船到岸管 Ship To Shore Hose

大船不能停靠在岸边，所以石油的运输主要靠船到岸软管，这种软管一般是小口径的，可以在岸边通过小船卸载原油或石油。一般这种软管用于输送成品油介质。

Large ships can not dock at the shore, so the petroleum is transferred by using ship to shore hoses, it is commonly used with small bore hoses that offload crude oil and petroleum products from smaller vessels at the dockside. The hoses are also used for the transfer of refined oil products.







## 船到船管 Ship To Ship Hose

船到船管是连接两条并排的大船和小船的软管，这通常在两艘船都静止的状态下进行。软管应坚硬并且有柔性，一般用于石油和天然气行业。

Ship to ship hose is a transfer hose between a big vessel and a small vessel moored alongside each other, which is typically carried out with both vessels stationary. The hose should be robust and flexible, operations within the oil and gas industry.

我们会分析客户的项目，根据环境条件，流速，燃油类型，距离和压力等，进行力学分析，以便设计出最有效的结构和尺寸。

比如下面这个案例，软管连接在油轮歧管上并输送燃料。此软管长度可达 50 米，最大限度地减少了接头数量。

Working with our clients we analysis the project, in accordance with the environment conditions, flow rates, fuel types, distance and pressure, etc to carry out the mechanical analysis in order to design the most efficient hose construction and diameter for each application.

In this example it is connected to the tanker manifold and transfer of fuel is undertaken. The ability to run 50m lengths of hose minimizes the number of joints required.

## 漂浮再气化液化天然气输送软管 Floating LNG-RV Hose

天然气发电项目因其环保性而备受推崇，同时 LNG 运输成本较高并且储存困难，很多国家因地域限制，所以再气化 LNG 的管道输送不可或缺。展望行业的未来趋势，我们的漂浮再气化 LNG 输送软管将提供革命性的建设。FSRU( 浮式再气化装置) 将 LNG 再气化成再气化 LNG, 漂浮软管将再气化 LNG 输送到浮式发电船。

The projects of Natural Gas power generation are highly favored and the transport cost for LNG is too high, it is difficult to storage, many countries are limited by territory. Therefore, the hoses of regasification LNG transfer is indispensable. Looking ahead to future trends in the industry, our floating LNG-RV hoses will also offer a revolutionary construction. The LNG will be regasified by the FSRU to be LNG-RV, then it will be transferred to the floating power ship by the floating LNG-RV hose.

### 优势 ADVANTAGES


- 内胶耐甲烷，无鼓包，不起泡。  
Specialist linings for CH<sub>4</sub>, no buggles
- 操作温度 -45~80℃  
Operating temperature from -45℃ to 80℃
- 气密性好  
Excellent air-tightness





# 质量体系

## The Quality System



**BUREAU  
VERITAS**

**STATEMENT OF COMPLIANCE**

*Awarded to*

**ZEUBUNG**

河北津浦塑胶科技有限公司  
HEBEI JINPU PLASTIC TECHNOLOGY CO., LTD.

REF: N°BV- DR6-T3-16-217

<p><b>Manufacturer</b></p> <p><b>Manufacturer Place</b></p> <p><b>Hose Type</b></p> <p><b>Hose Serial No.</b></p> <p><b>Hose Dimension</b></p> <p><b>Rating Working Pressure</b></p> <p><b>Standard</b></p>	<p>Hebei Zeubung Rubber Technology Co.,LTD</p> <p>Hangzhou, Hebei, China</p> <p>Single Carcass Submarine Prototype</p> <p>12-ZB-147191065</p> <p>12-(300mm)K55(16.70mm)</p> <p>21bar (200 psi)</p> <p>OCIMF-GMPHOM 5<sup>th</sup> Edition (2009)</p>
---	--

This is to certify that the Prototype Submarine Hose "12-ZB-147191065" has been manufactured and tested in full accordance with the guideline OCIMF-GMPHOM 5<sup>th</sup> Edition (2009), with satisfactory results, for the technical requirements specified in OCIMF-GMPHOM 5<sup>th</sup> Edition (2009).

Detailed test results refer to Test Report-ZB-RUB-PROTO-201901-01-026

*Issued in Shanghai April 06, 2020*

*Shuo Yang*

---

Shuo Yang

Project Engineer

For and on behalf of


**BUREAU VERITAS MARINE CHINA LAS**

*Dongyan Wang*


---

Dongyan Wang

Offshore Department Manager




 <b>BUREAU</b> <b>VERITAS</b>	
<b>STATEMENT OF COMPLIANCE</b> Awarded to	
 湖北津浦塑胶科技有限公司 HUBEI JINPU PLASTIC TECHNOLOGY CO., LTD.	
<b>REF. N°BV- DRG-T3-18-217</b>	
<b>Manufacturer</b>  <b>Manufacturer Place</b>  <b>Hose Type</b>  <b>Hose Serial No.</b>  <b>Hose Dimension</b>  <b>Rating Working Pressure</b>  <b>Standard</b>	Hebei Zeblung Rubber Technology Co.,LTD  Hengshui, Hebei, China  Single Carcass Floating Prototype  F12-ZB-147181064  12" (300mm) x 5/16" (10.70mm)  21bar (300 psi)  OCIMF-GMPHOM 5 <sup>th</sup> Edition (2009)
This is to certify that the Prototype Floating Hose "F12-ZB-147181064" has been manufactured and tested in full accordance with the OCIMF-GMPHOM 5 <sup>th</sup> Edition(2009), with satisfactory results for the technical requirements specified in OCIMF-GMPHOM 5 <sup>th</sup> Edition(2009).	
Detailed test results refer to Test Report :Z-RUB-PROT01201902-01-30	
Issued in Shanghai April 20, 2020  Shue Yana	For and on behalf of <b>BUREAU VERITAS MARINE CHINA L.L.C.</b>  Jonathan Yana Offshore Department Manager
	
Project Engineer	



**BUREAU  
VERITAS**

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Awarded to



浙江浙北橡胶科技股份有限公司  
Zhejiang Zebing Rubber Technology Co., Ltd.


REF: N°V-DRC-T3-16-217

<p><b>Manufacturer</b></p> <p><b>Manufacturer Place</b></p> <p><b>Hose Type</b></p> <p><b>Hose Serial No.</b></p> <p><b>Hose Dimension</b></p> <p><b>Rating Working Pressure</b></p> <p><b>Standard</b></p>	<p>Hubei Zebing Rubber Technology Co., LTD</p> <p>Hanxian, Hubei, China</p> <p>Single Carcass Floating Prototype</p> <p>F24-B-147201162</p> <p>24" (609mm) x 36" (914mm)</p> <p>21bar (305 psi)</p> <p>OCIMF-GMPHOM 9<sup>th</sup> Edition (2009)</p>
---	---

This is to certify that the "Single Carcass Floating Hose "F24-B-147201162" has been manufactured and tested in full accordance with the petroleum OCIMF-GMPHOM 9<sup>th</sup> Edition(2009), with satisfactory results for the technical requirements as specified in OCIMF-GMPHOM 9<sup>th</sup> Edition(2009).

Detailed test results refer to Test Report: Z-RUB-PRDT-241954-00-28


Issued in Shanghai March 1, 2021



\_\_\_\_\_  
Zhang Ming  
Project Engineer

For and on behalf of

**BUREAU VERITAS MARINE CARE LINE**



\_\_\_\_\_  
Zhang Ming  
Others Designated Manager

Oil, Gas & Chemical Business Group



**BUREAU  
VERITAS**

**STATEMENT OF COMPLIANCE**

Awarded to



**ZEBELING**  
ZEBELING 聚烯烃材料有限公司  
ZEBELING POLYMER MATERIALS CO., LTD.

REF: N°BV-DRC-TJ-18217

<b>Manufacturer</b>	Hubei Zebeling R-Join Technology Co.,LTD
<b>Manufacturer Place</b>	Wangshui, Hubei, China
<b>Hose Type</b>	Single Carcass Submersible Prototype
<b>Hose Serial No.</b>	S24-ZB-147200461
<b>Hose Dimension</b>	324 (60mm) x 391 (10.70")
<b>Rating Working Pressure</b>	2.1 bar (305 psi)
<b>Standard</b>	OCIMF / API RP 14C (Edition 2009)

This is to certify that the Prototype Submersible Hose "S24-ZB-147200461" has been manufactured and tested in full accordance with the guideline OCIMF-GMPHOM 5<sup>th</sup> Edition(2009), with supplementary details for the full test requirements specified in OCIMF-GMAH IOM 5<sup>th</sup> Edition(2009).

Detailed test results refer to Test Report : Z-RUB-PROTO-331-2010-05

Issued in Shanghai March 1, 2021

*Shengrong*

\_\_\_\_\_  
Photo Type


\_\_\_\_\_  
Project Engineer

For and on behalf of  
BUREAU VERITAS MARITIME CHINA LLC

*Dongting Wang*

\_\_\_\_\_  
Signature

Offshore Development Manager  
Oil, Gas & Chemical Business Group






**BUREAU  
VERITAS**

**STATEMENT OF COMPLIANCE**

Awarded to

**ZEBUG**  
 中国船舶重工集团北京七〇三研究所  
 CHINA STATE SHIPBUILDING GROUP CO., LTD. 703 RESEARCH INSTITUTE

REF: **BVVMC-DRC-T3-16-217-03**

<b>Manufacturer</b>	Hefei Zebug Rubber Technology Co., LTD
<b>Manufacturer Place</b>	Hongshu, Hebei, China
<b>Host Type</b>	Submarine Dredge Carcass Prototype
<b>Host Serial No</b>	20A-0026-1-012014161
<b>Host Dimension</b>	24'(600mm)×35'(10,700mm)
<b>Rating Working Pressure</b>	2.1bar (205 psi)
<b>Standard</b>	OCIMF-GMPHMH 5th Edition (2009)

This is to certify that the **Prototype Submarine Dredge Carcass Host "534-28-1472104161"** has been manufactured and tested in full accordance with the guidelines **OCIMF-GMPHMH 5th Edition (2009)**. Satisfactory results for the technical requirements specified in **OCIMF-GMPHMH 5th Edition (2009)**.

Detailed test results refer to Test Reports: 2. SUB-PROTO-202105-000-028

Issued in Shanghai September 8, 2022

*Fa Xin*

Fa Xin / Hongshu, Yang

Project Engineer / Manager



For and on behalf of  
**BUREAU VERITAS MARINE CHINA LAG**

*Qingling Wang*

Qingling Wang  
 Operations Department Manager  
 Oil, Gas & Chemical Business Group

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This certificate is issued on the basis of the information provided by the client. The client is responsible for the accuracy of the information provided. The client is also responsible for the accuracy of the information provided to the client.

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 <b>BUREAU VERITAS</b>	
<b>STATEMENT OF COMPLIANCE</b>	
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<b>ZEBUB</b> 深圳市泽布塑胶科技有限公司 SHEEN YEE RUBBER PLASTIC TECHNOLOGY CO., LTD.	
REF: N°BYM-DRC-TA-18-217-04	
<b>Manufacturer</b>	: Hiseb Zebub Rubber Technology Co.LTD
<b>Manufacturer Place</b>	: Longtang, Hebei, China
<b>Host Type</b>	: Floating Double Carcass Prototype
<b>Host Serial No.</b>	: F24-B-14722D0332
<b>Host Dimension</b>	: 242 (600mm) x 351(10,700mm)
<b>Rating Working Pressure</b>	: >2bar (35 psi)
<b>Standard</b>	: OCIMF-CMPHOM 5 <sup>th</sup> Edition (2009)
<p>This is to certify that the <b>Prototype Floating Double Carcass Host "F24-B-14722D0332"</b> has been manufactured and tested in full accordance with the guideline <b>OCIMF-CMPHOM 5<sup>th</sup> Edition (2009)</b>, with satisfactory results for the technical requirements specified in <b>OCIMF-CMPHOM 5<sup>th</sup> Edition (2009)</b>.</p> <p>Detailed test results refer to Test Report : Z-RUB-FRDT-0232297-01-002</p>	
Issued in Shanghai September 9, 2022	For and on behalf of <b>BUREAU VERITAS MARINE CHINA LIAISON</b>
 Xue Yu (Xueyu Gao) Project Engineer/Project Manager	 Liang Wang Customer Department Manager Oil, Gas & Chemical Management Group
<small>           This certificate is relevant only as long as the scope of the Bureau Certificate's Area of Service remains.            The certificate is valid for 5 years from the date of issue and may be renewed at any time before it expires.            This certificate is not valid if the product or service was provided outside the geographical area covered by the certificate, unless otherwise stated.            This certificate is not valid if the product or service was provided outside the geographical area covered by the certificate, unless otherwise stated.            This certificate is not valid if the product or service was provided outside the geographical area covered by the certificate, unless otherwise stated.         </small>	
	

统一社会信用代码 91331127787000791U		<b>营业执照</b> (副本)		副本编号: 1-1		 扫描二维码 下载国家企业信用信息公示系统APP “国家企业信用信息公示系统” “国家企业信用信息公示系统” “国家企业信用信息公示系统” “国家企业信用信息公示系统”	
名称	河北津源塑胶科技有限公司			注册资本	贰仟肆佰伍拾捌万零捌佰元整		
类型	有限责任公司(自然人投资或控股)			成立日期	2003年03月18日		
法定代表人	姚文堂			营业期限	2003年03月18日至 2028年03月17日		
经营范围	橡胶板、管、帘制品、塑胶科技研发、塑胶新产品开发;生产销售橡胶制品、金属软管、液压软管、海洋浮球输油软管、自营进出口贸易; 橡塑产品技术服务和维修。(依法须经批准的项目, 经相关部门批准后方可开展经营活动)			住所	乐清县工业园区		
登记机关				2022年 7 月 1 日			

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国家市场监督管理总局监制



## 试验设备 Test Equipment



动态拉伸试验设备 Dynamic tensile test equipment



动态扭转试验设备 Dynamic torsion test equipment



动态弯曲试验设备 Dynamic bending test equipment





静水压脉冲试验观测仪器  
Hydrostatic pulse experimental observation instrument



压扁试验机 Crush test



吉门扭转试验机 Jimen torsion testing machina



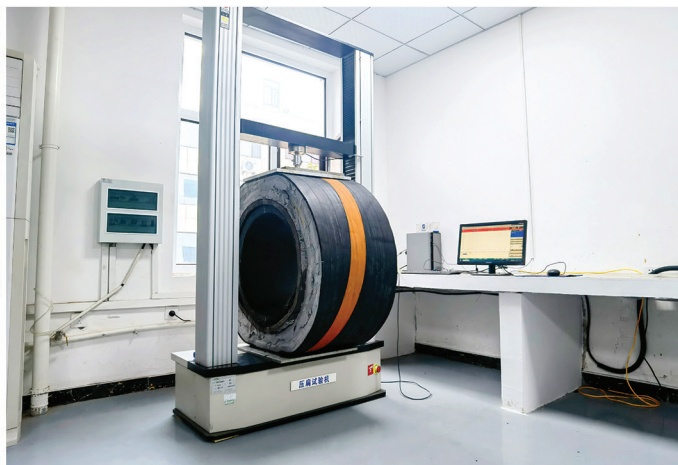
臭氧老化试验箱 Qzome aging tester



## 试验过程及项目 Test Process And Items



抽真空试验 Vacuum pumping test



压扁试验 Flattening test



动态拉伸试验 Dynamic tensile test



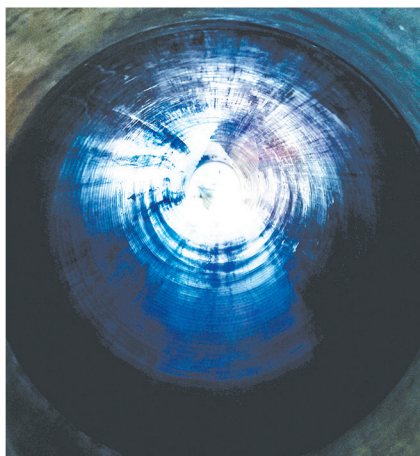
动态扭转试验 Dynamic torsion test



动态弯曲试验 Dynamic bending test



漂浮试验 Floating test



油管内壁 Inner wall of tubing





浮体环强度试验  
Strength test of floating ring



弯曲刚度试验 Bending stiffness test



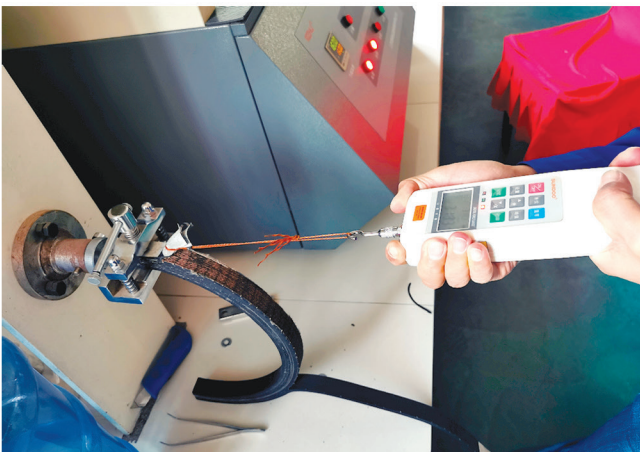
水下油管爆破试验 Bursting pressure test for submarine oil hose



长度测量 Length measurement



煤油浸泡试验 Kerosene immersion test



粘结强度测试 Bond strength test

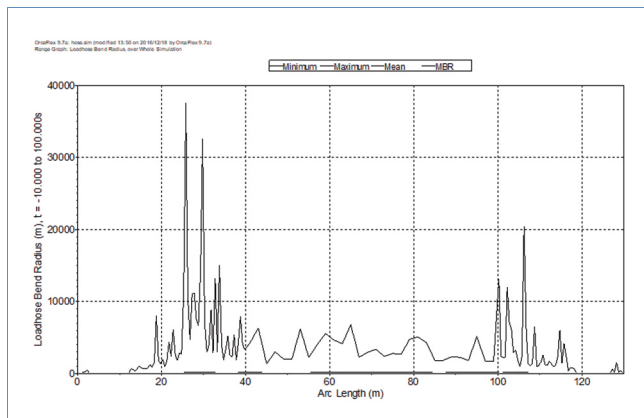


压力脉冲试验 Pressure pulse test

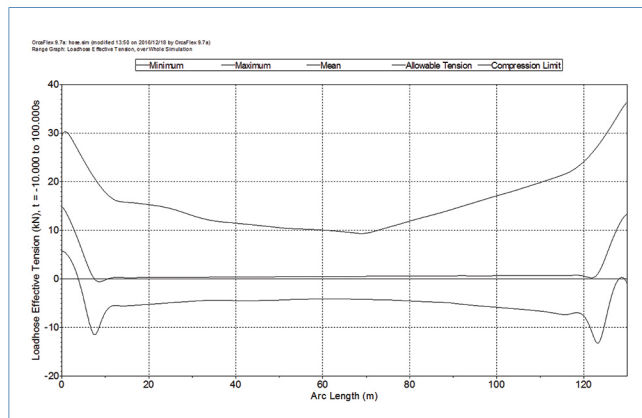


# 设计计算 FPSO- 软管 - 油轮整体水动力计算

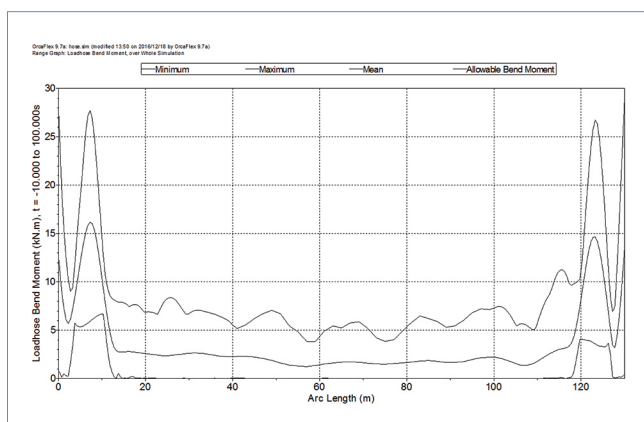
## Design Calculaion Fps0-hose-tanker globat hydrodynamic calculation



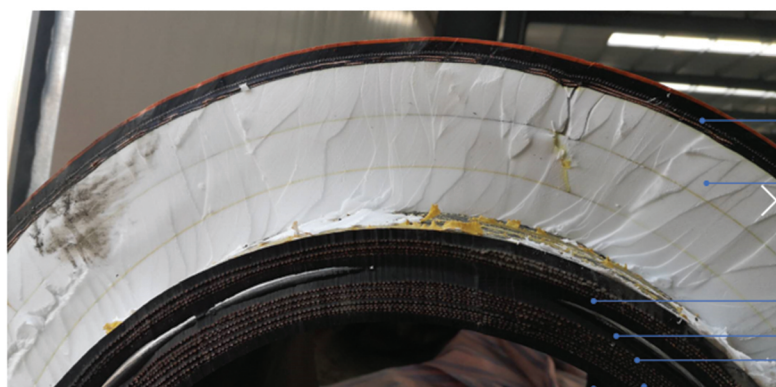
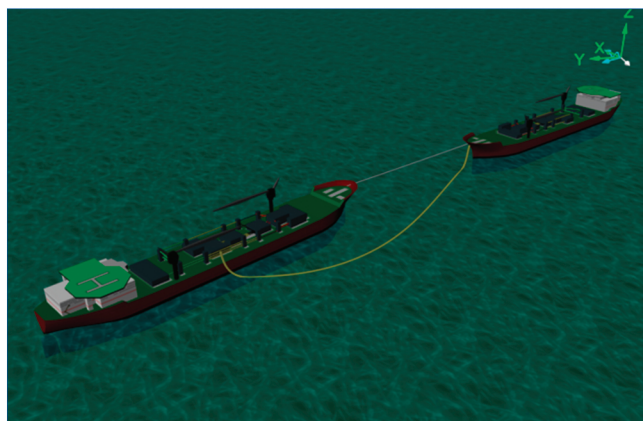
管线上的弯曲半径 Bend radius on the hose string



管线上的张力 Tension on the hose string



管线上的弯矩 Bending moment on the hose string



单胎体漂浮油管一截面结构  
Single carcass floating oil hose - Cross section structure

外胶层

Cover layer

漂浮层

Floating layer

第二增强层

Second reinforcement layer

螺旋加强筋

Spiral stiffener

中胶层

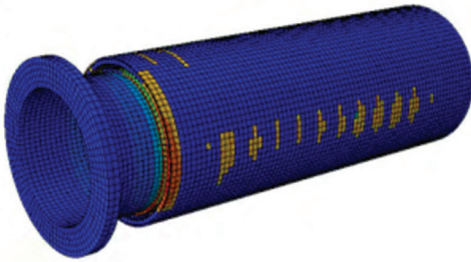
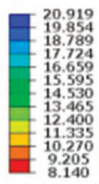
Filling rubber

第一增强层

First reinforcement layer

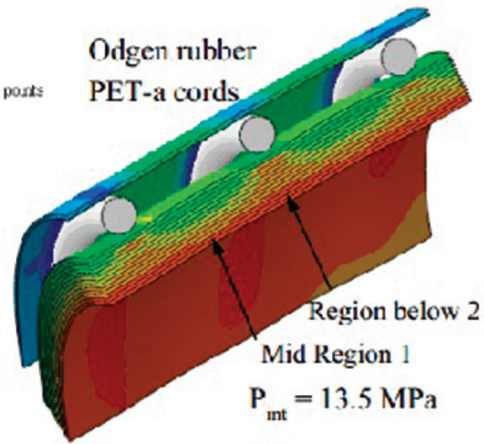
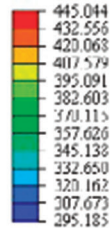
内衬层

Inner lining

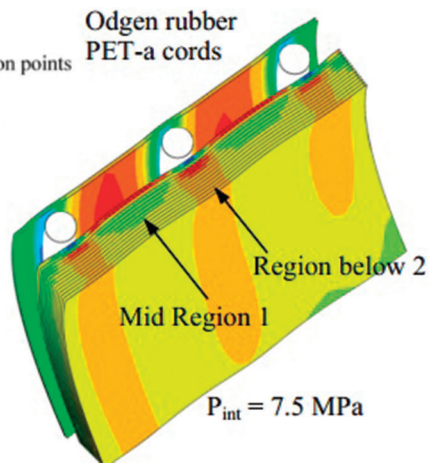
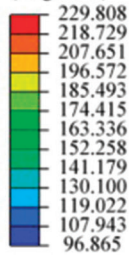


疲劳寿命计算 Fatigue life prediction

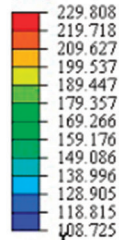
RBFOR  
Multiple section points  
(Avg: 72%)



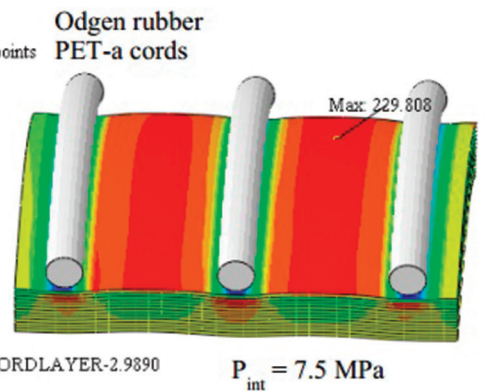
RBFOR  
Multiple section points  
(Avg: 75%)



RBFOR  
Multiple section points  
(Avg: 75%)

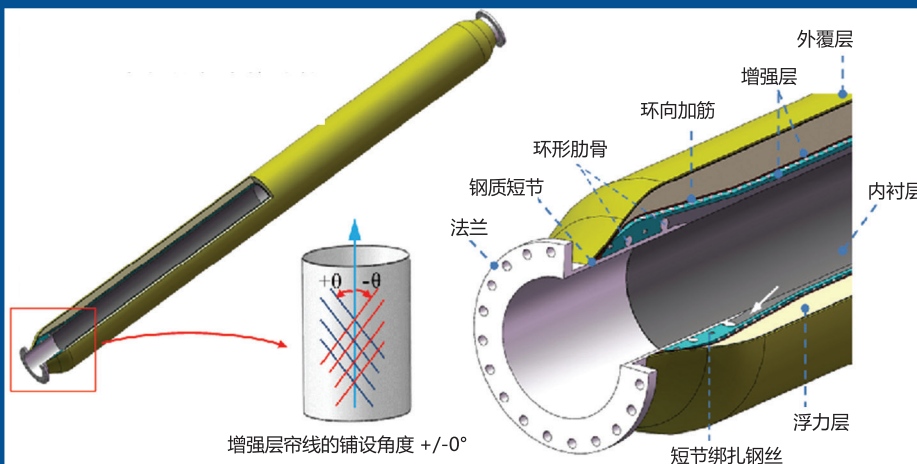


Max: 229.808  
Elem PART-CORD-LAYER-2.9890  
Node 124712



## 帘子线的拉力 (N) 计算图解

### Calculation Diagram Of Cord Tension(N)



Flange 法兰

Steel nipple 钢质短节

Frame ring 环形肋骨

Ring stiffened 环向加筋

Reinforcement layer 增强层

Cover layer 外覆层

Inner rubber layer 内衬层

Binding wire 短节捆扎钢丝

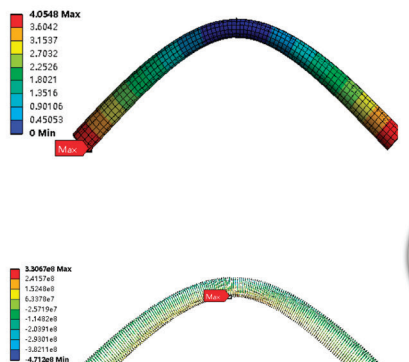
Floating layer 浮力层



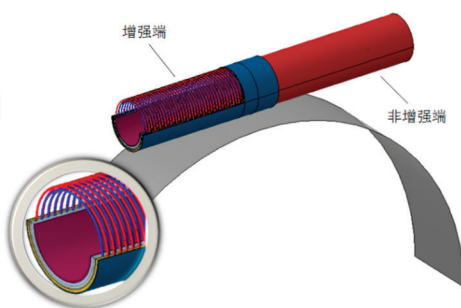
# 软管建模与疲劳分析

## Hose Modeling And Fatigue Analysis

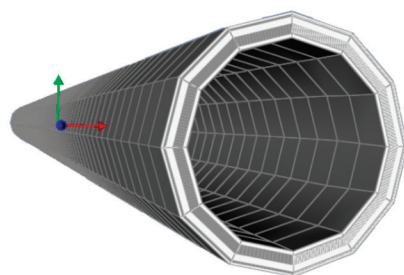
### 软管建模分析 Modeling Analysis Of Hose



软管整体变形云图  
Cloud chart of overall deformation of hose



首管弯曲盘绕模型示意图  
Schematic diagram of head pipe bending and coiling model

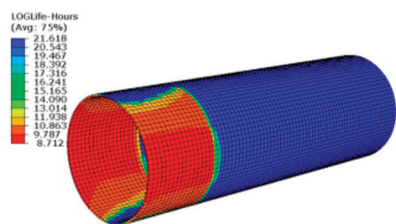


ACP 中舷管三维模型网格图  
Grid diagram of three-dimensional model of port pipe in ACP

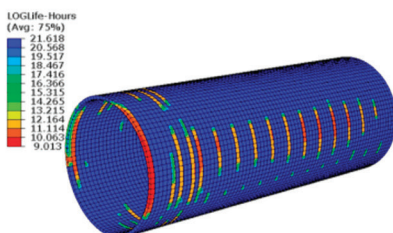
### 软管疲劳寿命分析 Fatigue Life Analysis Of Hose

将静力分析的结果导入到 FE-Safe 疲劳分析软件中，选择疲劳分析理论，设置各结构层材料参数，载入上述荷载谱，即可得到疲劳分析结果。各个结构层的对数寿命云图如下图所示：

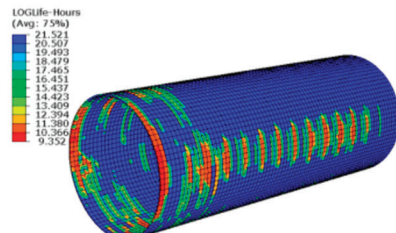
Import the static analysis results into the FE safe fatigue analysis software, select the fatigue analysis theory, set the material parameters of each structural layer, and load the above load spectrum to obtain the fatigue analysis results. The logarithmic life cloud diagram of each structural layer is shown in the following figure:



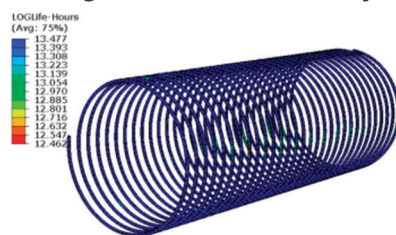
内胶层对数寿命  
Log life of inner rubber layer



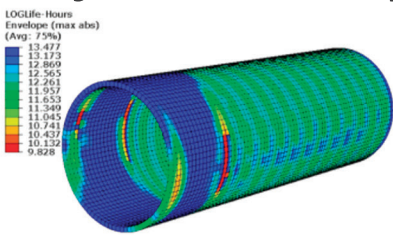
中胶层对数寿命  
Log life of medium rubber layer



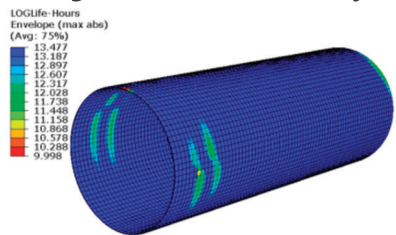
外胶层对数寿命  
Log life of outer rubber layer



螺旋钢筋对数寿命  
Log life of spiral reinforcement



第一增强层对数寿命  
Log life of reinforcement layer



第二增强层对数寿命  
Log life of first reinforcement layer

# 储运操作规范

## Storage And Transportation Operation Specification

### 运输以及仓储细则 Handling And Transport

使用固定在托盘吊眼上的四脚吊索，一次吊起一个托盘。堆放在坚实的平地上，最多叠加 3 层。

备注：可以使用叉车装卸专用托盘。否则不要使用叉车提起托盘。

Lift one pallet at a time using a four-leg chain sling secured to the pallet lifting eyes. Stack on solid, level ground, maximum 3 tiers high.

Note: A customised pallet design may be provided for fork lift handling. Such pallets will be appropriately identified. Otherwise do not lift pallets using fork lift trucks.



### 推荐的吊起方法 Recommended Method Of Lift for Individual Hoses

※ 使用额定的吊车和吊具 /Use suitable rated crane and spreader bar.

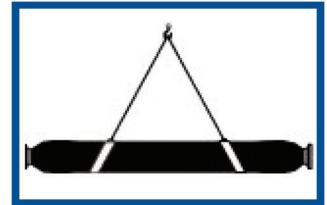
※ 吊起软管时，应使用最小 100 毫米宽的柔性吊带 /Sling the hose using minimum 100mm wide textile strops appropriately rated.

※ 至少用三条或更多的柔性吊带吊起软管 /Sling from three hooks or more spaced over the hose length.

※ 吊索时要考虑到软管末端法兰的局部承重能力 /Position slings to take account of local weight concentrations from the hose

※ 如果 2 点的抬升在操作上不可避免，则选择“四分之一点”的位置吊起软管，如右图所示

Use the hose “quarter points” if a 2 point lift is operationally unavoidable



### AVOID 不允许使用如下操作 – 下示意图

### Recommended Method Of Lift for Individual Hoses

※ 不允许使用细绳或类似的吊索 /Small circumference rope or similar slings

※ 不允许使用钢丝吊索 /Wire strop slings

※ 不允许用单吊索吊起软管的中间点 /Lifting by a single sling at the hose mid-point

※ 由两根吊索吊起时，不允许吊起位置在法兰上 /Lifting by two slings, one at each flange

※ 不允许用叉车叉直接吊装 /Direct lifting with fork lift truck forks

※ 不使用任何可能导致局部负荷加大 / 或软管过度弯曲的操作方法 /DO NOT use any lift method that results in severe local loading and/or over-bending of the hose

※ 不建议在不平地面拖拽软管，容易对胶管的外层和法兰造成损坏 /DO NOT use any hose movement method that involves dragging the hose over unsuitable surfaces such as to damage the cover or end flanges



### 仓储设施 Storage Facilities

在储存过程中，软管应防止如下情况 /During storage, hoses should be protected against:

※ 阳光 /Sunlight

※ 极限温度 /Temperature extremes

※ 湿气过重 /Excessive humidity

※ 臭氧 /ozone

※ 机械损伤 /Mechanical damage

※ 化学制品腐蚀 /Chemicals

※ 虫害 /Pests

如果储存在室外，软管应该放置在一个坚实的、平整的地面上，并考虑如上情况给予舒适的存储环境 /On an area of solid, level ground, with separate protection against the environment.

### 项目现场软管的移动 Hose Movement Around Site

※ 吊杆和移动式起重机 /Spreader bar and mobile crane

※ 定制软管拖曳小车 /Customised hose towing trolleys

※ 拖车与软管安全堆放 /Trailer with hoses safely stacked and chocked

※ 带有专用配件的叉车 /Fork lift trucks with specialised attachments

### 存储期间，定检项 Inspection During Storage

各式各样的机械损伤 /Sundry mechanical damage

啮齿动物的攻击 /Rodent attack

虫害 /Insect attack

一般橡胶退化 ( 裂纹 ) / General rubber degradation (cracks)

## INFORMATION REQUIRED 工况信息采集

Please complete as fully as possible to facilitate best design

为了更好的匹配设计, 请尽可能全面的填写如下信息:

- 1.Customer (客户信息): \_\_\_\_\_
- 2.Port/Field (港口以及应用领域): \_\_\_\_\_
- 3.Location (位置): \_\_\_\_\_
- 4.System (应用系统):            CALM                      SALM                      CMBM                      SBM                      OTHER
- 5.Environment Conditions 环境因素
  - 5.1 Sea depth (水深): \_\_\_\_\_
  - 5.2 Tidal Range (潮汐变化): \_\_\_\_\_
  - 5.3 Operational Conditions 使用工况
    - (a) Wave Height (波高): \_\_\_\_\_
    - (b) Wave Period (周期): \_\_\_\_\_
    - (c) Wind speed (风速): \_\_\_\_\_
6. Purpose 用途:        ☐ Loading (吸排)        ☐ Unloading (排)
7. Cargo 介质
  - 7.1 Kind of cargo 介质种类: ☐ Crude Oil (原油)  
   ☐ Liquid Petroleum products (液化柴汽油)  
   ☐ Natural gas (天然气)
  - 7.2 Specific Gravity (密度): \_\_\_\_\_
  - 7.3 Max Aromatic Carbon Content (最大芳香碳含量): \_\_\_\_\_
- 8.Operating Pressure (工作压力)
  - 8.1 Operating Pressure at Buoy (浮标端工作压力): \_\_\_\_\_
  - 8.2 Operating Pressure at Tanker (油轮端工作压力): \_\_\_\_\_
  - 8.3 Maximum Pressure (最大工作压力): \_\_\_\_\_
- 9.Temperature (温度)
  - Fluid (介质温度): \_\_\_\_\_
  - Ambient (气温): \_\_\_\_\_
- 10.Flow Rate (流速): \_\_\_\_\_
- 11.Hose line
  - 11.1 Number of lines (几条线)
  - 11.2 Floating Mainline (Size&number) 漂浮主管尺寸及数量: \_\_\_\_\_
  - 11.3 Floating Tail/Rail(Size&number): \_\_\_\_\_  
漂浮尾管 / 围栏管尺寸及数量
  - 11.4 Submarine Line(Size&number) 水下管尺寸及数量: \_\_\_\_\_
12. Submarine hose Line Configuration 水下管组态  
☐ Chinese Lantern 中国灯笼式    ☐ Lazy-S 懒 S 型    ☐ Sleep-S 深 S 型    ☐ other 其他
- 13.Vessels 油轮
  - 13.1Size:D.W.T. Max (最大载重吨位): \_\_\_\_\_  
D.W.T. Average (平均载重吨位): \_\_\_\_\_  
D.W.T. Minimum (最小载重吨位): \_\_\_\_\_
  - 13.2 Frequency of operation(Vessel /Month) 操作频率 (船 / 月): \_\_\_\_\_



## QUOTATION REQUIRED 报价信息采集表

Please complete as fully as possible to allow prompt quotation

请尽可能完整地填写如下信息，以便及时报价

Customer (客户信息): \_\_\_\_\_

Date of Inquiry (询价日期): \_\_\_\_\_

Required date of quotation (报价日期): \_\_\_\_\_

Required of delivery (交货期): \_\_\_\_\_

Destination (应用地点): \_\_\_\_\_

Condition 条款: ☐ EXW With TAX ☐ FOB Tianjin ☐ CIF (Port (目的港): \_\_\_\_\_)

Currency 支付方式: ☐ US Dollar 美金 ☐ Chinese RMB 元 ☐ Others 其他

### 1.Hose 胶管

1.1 Specification 行业标准: ☐ GMPHOM2009 ☐ Customer's Spec (客户要求)

1.2 Rated Pressure 工作压力: ☐ 15Bar ☐ 19Bar ☐ 21Bars

1.3 Fluid 介质: ☐ Crude oil (原油) ☐ Liquid Petroleum products (液态柴汽油)

☐ Nature gas (天然气) ☐ Others 其他 (\_\_\_\_\_)

1.4 Flange Standard 法兰标准: ☐ ANSI 150

☐ ANSI 300

1.5 Flange Face 法兰面: ☐ Flat face(FF) 平面 ☐ Raised face(RF) 凸面

1.6 Third Party Inspection 第三方检测

☐ Not Required (Manufacturer's test certificates for each hose to be submitted)

不需要第三方检测 (仅提供每条胶管的工厂检测证书)

☐ Required: 需要第三方检测

☐ All hose (同一批所有胶管) ☐ Random test (抽检)

☐ At Customer's account (买家支付第三方检测费用)

☐ At Manufacturer's account (工厂支付第三方检测费用)

1.7 Package (包装):

1.8 Drawing (图纸): ☐ Required with BID (随标书一起提交)

☐ Required when ordered (下订单时候需要)

1.9 Logo 商标: ☐ ZEBUNG (工厂品牌) ☐ Customer's Brand (客户商标)

1.10 Details 胶管详情

No.	Description 胶管描述	Size 尺寸	Length 长度	Quantity 数量	Remarks 备注
1					
2					
3					



官方微信公众号



官方抖音号

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