



中国船级社
CHINA CLASSIFICATION SOCIETY

证书格式号/Form: W01.02-
HQ001051

工厂认可证书
CERTIFICATE OF WORKS APPROVAL

证书编号/Certificate No. QD18W00014_01

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。

This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products as described in the certificate.

制造厂/Manufacturer

山东钢铁股份有限公司莱芜分公司

Shandong Iron & Steel Co., Ltd. Laiwu Company

山东省莱芜市钢城区新兴路轧钢大街1号

No. 1, Zhagang Street, Xinxing Road, Gangcheng District, Laiwu City, Shandong Province

认可产品/Product Approved

锚链及其附件用轧制圆钢

ROLLED STEEL BARS FOR ANCHOR CHAIN CABLES AND ACCESSORIES

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《材料与焊接规范》(2015)及其修改通报第1篇 第3章
Chapter 3, Part One of China Classification Society Rules for Materials and Welding 2015 and its Amendments



证书有效期至/ This Certificate is valid until

2022年5月27日 / May. 27, 2022

发证机构 中国船级社青岛分社
Issued by CCS Qingdao Branch

签发日期 2018年6月22日
Date Jun. 22, 2018

本证书根据中国船级社《钢质海船入级规范》及有关程序规定签发。关于证书的有关规定见本证书页背面的说明。当本证书包括多页纸张时，则所有证书页为一个整体，必须同时使用。每一页证书均须由本社盖章方为有效。证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。本认可证书不代表本社对个体产品质量的检验。有关各方对所持证书的真实性有疑问时，可以向本社检验机构咨询。
This Certificate is issued pursuant to the Rules for Classification of Sea-going Steel Ships and related procedures of the Society. Refer to the back of the certificate for detailed requirements of the certificate. When the certificate consists of more than one page, all pages of the certificate are taken as a whole and are used simultaneously. No certificate page is valid without bearing the stamp of the Society and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. This approval certificate does not constitute the inspection of the Society about the quality of the unit/batch product. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices.



中国船级社总部/CCS headquarters: 北京市东直门南大街9号船检大厦 邮编: 100007 电话/Tel: +86 (10) 58112288 传真/Fax: +86 (10) 58112811
CCS Mansion, 9 Dongzhimen Nan Da Jie, Beijing 100007, China 网址/Web Site: http://www.ccs.org.cn
本地检验机构/CCS Local Office: 中国船级社青岛分社 CCS Qingdao Branch 电话/Tel: +86 (532) 85016478 传真/Fax: +86 (532) 85016456

QD07198704
No. 17539107

产品明细/ Product Description

锚链及其附件用轧制圆钢/Rolled Steel Bars for Anchor Chain Cables and Accessories	
钢材等级/Grade	: M2; M3
最大规格/Max.dimension	: Φ 130mm×7000mm
交货状态/Condition of supply	: 热轧 AR
冶炼方式/Melting process	: EAF-LF(VD)/ KR-BOF-LF
浇注方式/Casting process	: 连铸 Continuous Casting
细化晶粒元素/Grain refining elements	: 铝 Al
脱氧方式/Deoxidation method	: 镇静细晶处理 Killed and Fine Grain Treated

批准的图纸和设计计算书/ Approved Drawings and Design Calculations

图纸批准号/ Drawings Approval No. : QD18W00014

产品认可试验报告/ Approval Test Report

试验报告编号/Test Report No.	: 2018006
试验报告日期/Test Report Date	: 2018-05-23
试验单位/ Laboratory	: 山东钢铁股份有限公司莱芜分公司 Shandong Iron & Steel Co.,Ltd.Laiwu Company
试验单位地址/ Test Address	: 山东省莱芜市钢城区新兴路轧钢大街1号 No.1,Zhagang Street,Xinxing Road,Gangcheng District,Laiwu City,Shandong Province

产品适用范围/ Application of the Product

船舶与海上设施/Ships and Offshore Installations.

认可保持条件/ Maintenance Requirements of Approval

1. 工厂认可后, 如果图纸、技术文件、工艺规程有较大改变, 应征得本社同意。若改变涉及或影响到产品的设计、主要制造材料、关键工艺或产品的特性、特征, 则与特性有关的图纸和技术文件应经过本社审批, 并在检验机构认为必要时, 经本社检验人员到厂进行检查和见证有关试验, 其结果应能证实仍符合认可条件。
After works approval, if there are any major changes to the drawings, technical documents, specifications, prior consent should be obtained from the survey office of the Society. If the changes involve or affect product design, major construction materials, key workmanship or product characteristics and properties, drawings and technical documents related to properties are to be examined and approved by the Society and, where deemed necessary by the survey office, the surveyor to the Society will go to the manufacturer to inspect or witness relevant tests and the results of the tests should be able to demonstrate compliance with the approval conditions

2. 工厂的质量管理体系应保持有效运行, 并且与认可时一致。如果质量管理体系发生改变, 应经原体系认证机构审核并报告本社批准。
The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.

3. 工厂认可证书获得者应接受本社每年一次的定期审核, 定期审核日为认可证书期满之日对应的每一周年日, 检查工作可在定期审核日的前后三个月内进行。Those who have obtained the certificate of works approval shall receive periodical audit done by the Society on an annual basis. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit may be done within a time span of three months before and after the annual surveillance date.

4. 在认可证书有效期内, 本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核, 以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。
Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

5. 认可证书有效期内, 如果出现可能导致本社暂停或撤消认可的情况, 工厂应及时采取有效的纠正措施。
Within the validity of the approval certificate, if cases occur that may cause the Society to suspend or withdraw the certificate, the manufacturer should take corrective actions in a prompt and effective manner.

认可后的产品检验方式/ Module of Product Inspection after Works Approval

按照规范每批抽样检验的产品/The product inspected by sampling in term of the rules:
认可后的产品检验应由本社验船师根据本社规范规定每批抽样按批准的产品检验计划进行检验, 经检验合格后由本社颁发船用产品证书。
After approval, product inspection should be carried out by sampling by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be issued by the Society upon satisfactory inspection.



对于原材料和零部件的检验要求/ Inspection Requirements for Materials and Components

产品如下原材料和零部件应由本社认可的制造厂生产/The following materials and components of the product should be manufactured by the factory approved by the Society:无/Nil.
产品如下原材料和零部件应经本社检验/The following materials and components of the product should be inspected by the Society:无/Nil.
产品如下原材料和零部件的制造厂清单, 经本社批准方可变更/The list of manufacturer for the following materials and components of the product should not be changed without the Society's approval:无/Nil.

责任声明/Statement of Responsibility

本社的认可不影响、替代与本社授权或检验无关的各方对上述工厂的认可和发证, 并且不对与本社授权或检验无关的各方负责, 不承担其未经应允而承认、接受本社认可所导致的法律和经济责任。
The approval of the Society does not affect and replace any approval and certification of the manufacturer by any parties that bear no relation with this Society's authorization or survey and therefore takes no responsibility for these parties. The Society does not undertake any legal and economic liabilities arising from accepting this Society's certificate without prior permission from this Society.

其他/Others

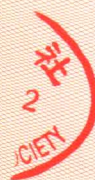
本证书由原工厂认可证书 (No. QD14W00016_01) 换新并替代原证书。
This certificate is renewed from and supersedes the previous Works Approval Certificate No. QD14W00016_01.

中国船级社青岛分社

CCS Qingdao Branch



*****本证书正文完/ End of Text*****



**APPROVAL OF MANUFACTURER
CERTIFICATE**

Certificate No:
AMM-7198
File No:
S-SM-RSP
Job Id:
263.11-004690-1

This is to certify:

That

**Shandong Iron and Steel Company Ltd, Laiwu Company
LAIWU, SHANDONG, China**

is an approved manufacturer of
Steelmaking and Rolled Steel Products

in accordance with
Det Norske Veritas' Rules for Classification Pt. 2

and the following particulars:

Product	Sections
	Bars for chain cable
Grades	See page 2
Steelmaking	Basic oxygen convertor or Electric arc furnace
	Continuous casting or Ingot casting
Deoxidation	Killed
Fine grain elements	See page 2
Delivery conditions	See page 2
Max. thickness/diameter	See page 2

Høvik, 2015-01-08
for **DNV GL**



This Certificate is valid until
2019-06-30

Hanne Anita Hjerpetjønn
for **Hanne Anita Hjerpetjønn**
Head of Section

DNV GL local office:
Qingdao

Bjørn Inge Andersen
Bjørn Inge Andersen
Surveyor

Certificate No: **AMM-7198**
File No: **S-SM-RSP**
Job Id: **263.11-004690-1**

Particulars of the approval:

Hull Structural Steel Sections				
Grade	Steelmaking¹⁾	Fine grain elements	Delivery conditions²⁾	Max. thickness (mm)
NV A, NV B	BOC, CC	Nb, Al+Nb, Nb+Ti	AR	28
NV A32, NV D32, NV A36, NV D36	BOC, CC	Nb+Ti+V	NR	28

Remarks

¹⁾ BOC: Basic Oxygen Converter; CC: Continuous Casting.

²⁾ AR: As Rolled; NR: Normalising rolling

Round bars for chain cables				
Grade	Steelmaking¹⁾	Fine grain elements	Delivery condition²⁾	Max. diameter (mm)
NV K2 and NV K3	BOC or EAF, IC	Al	AR	130

Remarks

¹⁾ BOC: Basic Oxygen Converter; EAF: Electric Arc Furnace; IC: Ingot Casting.

²⁾ AR: As Rolled.



APPROVAL CERTIFICATE FOR MANUFACTURING PROCESS

Certificate No. : QDO31577-SP001 **Initial Approval** : 29th November, 2013
Product : Rolled Steels
Manufacturer : Shandong Iron & Steel Co., Ltd., Laiwu Company
No.99, Fuqian Road, Gangcheng District, Laiwu, Shandong, P.R.China

Product Description: Rolled Round Bars for Chain Cables

- Grade	: Grade 2 chain (RSBC 50) Grade 3 chain (RSBC 70)
- Steel Making	: Electric Arc Furnace
- Casting Process	: Continuous Casting
- Deoxidation	: Al-Killed
- Supply Condition	: As Rolled
- Diameter	: Max. 130 mm
- Heat Treatment	: Quenching & Tempering for RSBC 70 Normalizing for RSBC 50

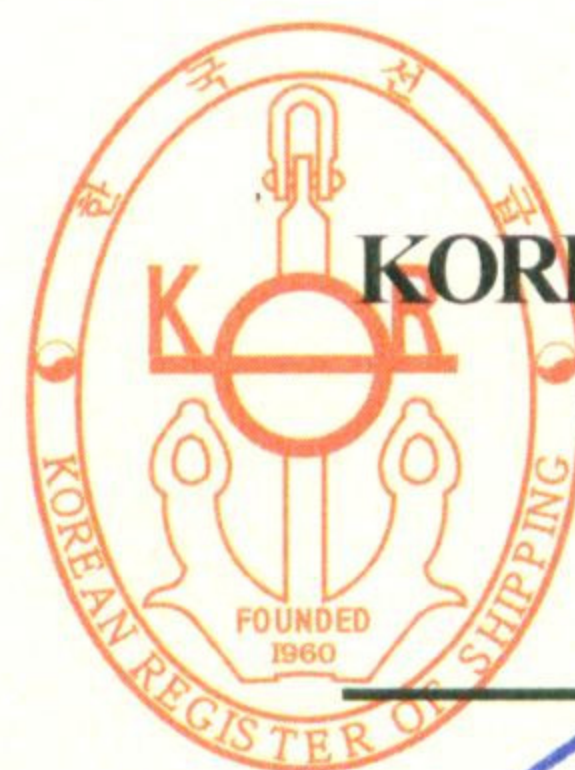
Approval Condition: Individual Product Certification is required.

THIS IS TO CERTIFY that the manufacturing process for the above mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturer and Type Approved Equipment".

Pt. 2, Ch. 1, Sec. 3, Art. 306 of the Rules for Classification of Steel Ships.

This Certificate is valid until 28th November, 2023

Issued at Shanghai, China on 28th November, 2018



KOREAN REGISTER OF SHIPPING

[Signature]
General Manager of
Technical Support Team
CHINA KR Co., Ltd.

Note : 1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.



Approval No. ST87RO

Certificate No. TA181329E

APPROVAL OF MANUFACTURING PROCESS

This is to certify that

**Shandong Iron and Steel Company, Ltd., Laiwu Company
Laiwu, Shandong
China**

has been approved for the manufacturing process of undermentioned materials by the NIPPON KAIJI KYOKAI in accordance with the requirements of 1.2, Part K of the Society's "Rules for the Survey and Construction of Steel Ships" and Chapter 1, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".

MATERIALS : Round Bars for Chains

The details of the relevant approval conditions are given in the PARTICULARS OF APPROVAL listed in the reverse of this certificate.

The products for the ships classed with the Society are to be manufactured, tested and inspected in compliance with the Rules.

This certificate is valid from 2 December 2018 until 1 December 2023.
Issued at Tokyo on 14 November 2018.

Renewal Date : 2 December 2018


H. Kobayashi
General Manager
Material and Equipment Department



No. : TA17836E

Date : 14 August 2017

PARTICULARS OF APPROVAL

Approval Condition for Manufacturing Process of Round Bars for Chains

- | | |
|------------------------------------|---|
| 1. Manufacturer | : Shandong Iron and Steel Company, Ltd.,
Laiwu Company
Special Steel Division 100t EAF Mill |
| 2. Kind of Product | : Round Bars |
| 3. Grade | : KSBC70 |
| 4. Deoxidation Practice | : Fine-grained Killed |
| 5. Grain Refining Elements | : Al |
| 6. Max. Diameter | : 160mm |
| 7. Condition of Supply | : AR |
| 8. Steel Making Process | : Electric Arc Furnace |
| 9. Casting Process | : Continuous Casting |
| 10. Heat Treatment for Test Sample | : QT |



H. Kobayashi

General Manager

Material and Equipment Department





Steel Mill Approval letter

9th April 2014

Shandong Iron and Steel Company Ltd., Laiwu Company
Laiwu City
Shandong Province 271126
P.R.China

Refer to: KTW/LXS

File Ref: S-6

Re: Plant Survey & Testing

Gentlemen:

A survey of **Shandong Iron and Steel Company Ltd., Laiwu Company**, Laiwu, Shandong Province, People's Republic of China, was conducted by an exclusive Surveyor to the American Bureau of Shipping on the date 26 February 2014 and subsequent dates. Results of the survey indicated that the steel mill is capable of producing steel bars as listed on the attachment (s) in accordance with the Rules of this Bureau.

Therefore, **Shandong Iron and Steel Company Ltd., Laiwu Company** may produce the steel bars as listed in the attachment(s) in accordance with ABS Rules, including the witnessing of prescribed tests, provided the material in production is to the satisfaction of the attending Surveyor.

Please note that our plant survey carried out is for the product and process as listed in the attachment(s). When new or special steels or production methods are proposed, data in support of mechanical properties, weldability is to compliance with ABS Rules chapter 2-2-3, at which time another plant survey by an exclusive Surveyor will be required. It is the responsibility of your mill to inform ABS of any changes in manufacturing parameters.

This approval letter is valid until 8th April, 2019

Renewal of approval is subject to a plant audit and re-approval test as applicable as required by ABS Rules not later than **8th April, 2019**.

Very truly yours,

By: _____

L.X.Sun
Principal Surveyor



cc : ABS Greater China Material
cc : ABS Houston Material

Page 1 of 1

GREATER CHINA DIVISION

5TH FLOOR, SILVER TOWER, NO. 85 TAO YUAN ROAD, LUWAN DISTRICT, SHANGHAI 200021, P. R. CHINA
TEL: 86-21-23270888 FAX: 86-21-63229649(OPS)/63605391(ENG) WEBSITE: www.eagle.org



Attachment A to Approval letter Dated 9th April 2014


Shandong Iron and Steel Company Ltd., Laiwu Company
Laiwu City
Shandong Province 271126
P.R.China

Refer to: KTW/LXS

File Ref: S-6

ABS grades of Higher strength rolled steel bar for anchor chain:

Products	:	Bar Stock
ABS Grades	:	U2, U3
Deoxidation Practice	:	Si-Al Killed
Fine Grain Practice	:	Al Treated
Casting Practice	:	Continuous Casting (CC)
Rolling/Heat Treatment Practice	:	As-Rolled (AR)
Maximum Diameter	:	130mm
Markings	:	AB/U2, AB/U3


L.X. Sun
Principal Surveyor



Related ABS Report Number: QD2359985-A

cc : ABS Greater China Material
cc : ABS Houston Material

Page 1 of 1 of Attachment A



American Bureau of Shipping (China) Ltd

Reference: LHL/JO T1606681
Project No.: 3875426
Date: 28 February 2017

SHANDONG IRON AND STEEL COMPANY LTD., LAIWU COMPANY (WCN 419958)
99 FUQIAN ROAD, GANGCHENG DISTRICT
LAIWU, CHINA

ATTN: Mr. Wei Bingbing,

Extension Steel Mill Facility and Process Approval

ABS Approval of Shandong Iron and Steel Company Ltd., Laiwu Company, Laiwu, P. R. China

We have received your declaration stating that the materials used indicated in the submittal are free from asbestos and the ABS plant survey report QD3206545 dated 19 December 2017, along with your submittals of 06 February 2016 together with enclosures relative to the subject. With regard thereto we advise that Shandong Iron and Steel Company Ltd., Laiwu Company, Laiwu, P. R. China is considered approved to produce rolled bars for manufacture of ship anchor chain or accessory applications in accordance with the requirements of *ABS Rules Part 2 for Materials & Welding (2017)* as outlined herein, provided the Rules are adhered to in all respects and all production, testing and inspection are to the satisfaction of the attending ABS Surveyor.

Product	: Product Type – Rolled Bar
Grade	: Grade Type – U3
Maximum Diameter	: 160 mm
Steel Making Practice	: EAF + LF + VD
Deoxidation Practice	: Si-Al Killed
Fine Grain Practice	: Al Treated
Casting Practice	: Continuous Cast
Rolling/Heat Treatment Practice	: As Rolled
Marking	: AB/U3

Repair by welding of rolled bars is not permitted.

The extension approval will expire with the existing certificate on 23 June 2019. Please note it is the responsibility of the facility to inform ABS of any changes to the manufacturing parameters and request renewal of approval prior to the five year expiry date.

A copy of the documentation, appropriately stamped to indicate our review, is being retained. If you need to contact ABS regarding this review please email Lihong Lin at llin@eagle.org.

Very truly yours,

Bill W. Shi
Vice President
ABS Global Engineering

By:


Xiang-Bin Meng
Principal Engineer
Ship Engineering Department

CC: ABS Greater China, Qingdao Port

ABS GREATER CHINA DIVISION

3RD FLOOR, SILVER TOWER, NO. 85 TAOYUAN ROAD, HUANGPU DISTRICT, SHANGHAI, 200021, P. R. CHINA
TEL: 86-21-23270888 FAX: 86-21-63229649 WWW.EAGLE.ORG



Drawing List

Engineering Office:	CN Shanghai SED B	
Submitter:	SHANDONG IRON AND STEEL COMPANY LTD., LAIWU COMPAN (419958)	
Drawing No	Revision No	Drawing Title
Correspondence	0	incoming letter on 06 Feb 2017
Laiwu Steel anchor chain bar extension up to 160mm test report	0	Laiwu Steel anchor chain bar extension up to 160mm test report
Laiwu Steel anchor chain bar extension up to 160mm test plan	0	Laiwu Steel anchor chain bar extension up to 160mm test plan
Laiwu Steel anchor chain bar extension up to 160mm PS Checksheet	0	Laiwu Steel anchor chain bar extension up to 160mm PS Checksheet
Laiwu Steel anchor chain bar extension up to 160mm application DOC	0	Laiwu Steel anchor chain bar extension up to 160mm application DOC
Non-asbestos declaration	0	Non-asbestos declaration

ABS GREATER CHINA DIVISION



Certificate No : MD00/4389/0003/1

Appendix 1

**SHANDONG IRON & STEEL CO., Ltd.
LAIWU COMPANY
No.99 Fuqian Street
Gang Cheng District
Laiwu City
China, People's Republic of**

Steelmaking	B.O.S. / Con Cast	Grades	
		As below	
Steelmaking	E.A.F. / Con Cast	Grades	
		As below	
Bars	Chain Cable Stock	Grades	mm diameter Maximum
As Rolled	Fine Grain Al	U2, U3	160.0

Bar over 130mm diameter is approved using EAF process route only.

**Valid Until : 06 October 2020
Date of Issue : 03 November 2017**

G. Young

Gavin Young
 Metallurgical Specialist to Lloyd's Register EMEA
 A member of the Lloyd's Register group



*Marine & Offshore
Division*

Certificate number: 43302/A0 BV

File number: MAT 102229-2015

Product code: 90181

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

APPROVAL CERTIFICATE for MATERIALS

This certificate is issued to

Shandong Iron and Steel Company Ltd. Laiwu Company
Laiwu - CHINA

for the type of product

ROUND BARS FOR SHIP ANCHOR CHAIN CABLE

Round bars in steel grades Q2 and Q3 for ship anchor chain cables.

Requirements:

Bureau Veritas Rules on Materials and Welding for the Classification of Marine Units

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 22 Oct 2020

For BUREAU VERITAS,

At BV SHANGHAI, on 22 Oct 2015,

Jennifer Zhang



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Hot rolled round bars in steel grade Q2 and Q3 for ship anchor chain cables.

Rolling mill	Steel grade	Deoxidation practice and Refining	Delivery condition
Large dimension Ø650*1/Ø550*1/Ø550*4FM	Q2	Killed and fine grain treated with Al	As Rolled (AR) with diameter 70mm to 130mm
	Q3	Killed and fine grain treated with Al	As Rolled (AR) with diameter 70mm to 130mm
Medium dimension Ø550*1/Ø350*1/Ø300*4FM	Q2	Killed and fine grain treated with Al	As Rolled (AR) with diameter 55mm to 75mm
	Q3	Killed and fine grain treated with Al	As Rolled (AR) with diameter 55mm to 75mm
Small dimension Ø520*1/Ø450*1/Ø350*6FM	Q2	Killed and fine grain treated with Al	As Rolled (AR) with diameter 20mm to 55mm
	Q3	Killed and fine grain treated with Al	As Rolled (AR) with diameter 20mm to 55mm

Steelmaking by EAF or BOF furnace , LF furnace and VD refining.
Continuous casting.

2. DOCUMENTS AND DRAWINGS :

- "General information for works approval" issued by Shandong Iron and Steel Company, Ltd., Laiwu Company and dated November 2012.
- "Test program for steelwork approval to produce grade 2, grade 3 steel bars for ship anchor chain" Shandong Iron and Steel Company, Ltd., Laiwu Company and dated November 2012.
- Chemical composition specification on ladle for Q3 grade :

	C%	Si%	Mn%	P%	S%	Ni%	Cu%	Cr%	Nb%	V%	Mo%	Ti%	Alt %	N%
min.	0.27	0.20	1.50	-	-	-	-	-	-	-	-	-	0.02	-
max.	0.33	0.30	1.80	0.035	0.035	0.25	0.25	0.25	0.05	0.10	0.08	0.02	-	0.015

3. TEST REPORTS :

- "Test reports for BV Mill Approval" issued by Shandong Iron and Steel Company, Ltd., Laiwu Company and dated September 2013.
- "The breaking test report of anchor chain N° ZBML201307025" issued by Laiwu Steel Group, Zibo Anchor Chain Co., Ltd and dated 10 July 2013.

4. APPLICATION / LIMITATION :

As per Bureau Veritas Rules for Classification.

5. PRODUCTION SURVEY REQUIREMENTS :

The steel round bars are to be supplied by Shandong Iron and Steel Company Ltd. Laiwu Company* in compliance with the type and the requirements described in this certificate.

This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
BV product certificate is required.

6. MARKING OF PRODUCT :

As per Bureau Veritas Rules for Classification.

7. OTHERS :

Nil.

***** END OF CERTIFICATE *****



Certificate No : MD00/4389/0003/1

**SHANDONG IRON & STEEL CO., Ltd.
LAIWU COMPANY
No.99 Fuqian Street
Gang Cheng District
Laiwu City
China, People's Republic of**

has been approved as a manufacturer in accordance with the requirements of Lloyd's Register for :-

Steelmaking and Bars

This approval is subject to compliance with the Rules for the Manufacture, Testing and Certification of Materials. The full details of the processes and grades to which this approval applies are given in the Appendix of this certificate.

Lloyd's Register is to be notified of any change that may affect the validity of this Certificate.

This Certificate is issued to the above manufacturer and is valid until the date given below.

**Valid Until : 06 October 2020
Date of Issue : 03 November 2017**

A handwritten signature in blue ink, appearing to read "G. Young", is written over a horizontal line. The signature is stylized and cursive.

Gavin Young
Metallurgical Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group