



APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM000000X
Revision No:
9

This is to certify:

That

Jiangsu Asian Star Anchor Chain Co., Ltd.
No.88, Meirengang Road, Dongxing, Jingjiang,
Jiangsu, 214533, China

is an approved manufacturer of
Chain Cables

in accordance with

DNV-OS-E302 – Offshore mooring chain, Edition July 2022
DNV class programme CP-0237 – Manufacture of offshore mooring chain and accessories
DNV rules for classification – Ships
DNV class programme CP-0254 – Manufacture of anchor chain cables and accessories – Anchor chain cable manufacturer or Anchor chain accessories manufacturer

and the following particulars:

Product	Offshore mooring chain cables, Stud-link anchor chain cable
Grades	R3, R3S, R4, R4S, R5 and R6, NV K2, NV K3
Delivery condition	See pages 2 and 3
Max. diameter	See pages 2 and 3
Remarks	See pages 2 to 4

Manufacturer approved by this certificate is accepted to deliver according to DNV GL, DNV and GL rules. Materials to be applied to DNV classed object shall fulfill the material requirements in the applicable DNV class rules.

Issued at **Høvik** on **2022-12-13**

for **DNV**

This Certificate is valid until **2025-12-31**.

DNV local unit: **Jiangyin**

Approval Engineer: **Dechun Lou**

Sondre Løken
Head of Section

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: AM 311

Revision: 2022-09

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Particulars of the approval

Particular of approvals for Offshore mooring chain as per DNV-OS-E302 and DNV CP-0237				
Grade ³⁾	Chain type	Max. Diameter (mm)	Delivery condition ¹⁾	Bar manufacturer ²⁾
R3	Stud-link	107	QT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
		127		Suzhou Suxin Special Steel Co., Ltd.
		157		Daye Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works Co., Ltd.
		167		Jiangsu Shagang Group Huaigang Special Steel Co., Ltd.
	Studless	107	QT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
		127		Suzhou Suxin Special Steel Co., Ltd.
		157		Daye Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works Co., Ltd.
		167		Jiangsu Shagang Group Huaigang Special Steel Co., Ltd.
		220	DQT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
	Stud-link	114.3	QT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
		157		Baosteel Special Materials Co., Ltd.
		157		Daye Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works Co., Ltd.
		114.3	QT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
		157		Daye Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works Co., Ltd.
		167	QT	Baoshan Iron & Steel Co., Ltd., Core Base.
		220	DQT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
R4	Stud-link	107	QT	Baoshan Iron & Steel Co., Ltd., Core Base.
		132		Daye Special Steel Co., Ltd.
		147		Xining Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works, Co., Ltd.
		167	QT	Shijiangzhuang Iron & Steel Co., Ltd. Special Steel Branch
	Studless	107	QT	Baoshan Iron & Steel Co., Ltd., Core Base.
		132		Daye Special Steel Co., Ltd.
		147		Xining Special Steel Co., Ltd.
		157		Jiangyin Xingcheng Special Steel Works, Co., Ltd.
		220	DQT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
		167	QT	Shijiangzhuang Iron & Steel Co., Ltd. Special Steel Branch
R4S	Stud-link	124	QT	Jiangyin Xingcheng Special Steel Works, Co., Ltd.
	Studless			
	Studless	200	DQT	Jiangyin Xingcheng Special Steel Works Co., Ltd.
R5	Stud-link	137	QT	Baoshan Iron & Steel Co., Ltd., Core Base.
	Studless			
R6	Stud-link	107	QT	Baoshan Iron & Steel Co., Ltd., Core Base.
	Studless			

Remarks:

¹⁾ QT: Quenched and Tempered; DQT: Double Quenched and Tempered.

²⁾ The approval is limited to the listed bar manufacturer.

³⁾ For approved material specification see table S1.

Particular of approvals for separate heat treatment of connecting common links as per DNV-OS-E302 and DNV CP-0237

Grade ²⁾	Chain type	Max. diameter (mm)	Delivery condition ¹⁾
R3	Studless	120	QT
R3S	Studless	120	QT
R4	Studless	147	QT
R5	Studless	137	QT
R6	Stud	107	QT

Remarks:

¹⁾ QT: Quenched and Tempered.

²⁾ For approved material specification see Table S1.

Particular of approvals for stud-link anchor chain cable acc. to Rules for classification-Ships and DNV CP-0254

Grade	Max. diameter (mm)	Delivery condition ¹⁾
NV K2	90	N
NV K3	152	QT

Remarks:

¹⁾ N: Normalised; QT: Quenched and Tempered.

Table S1 - Specification for chemical composition ⁹⁾ - Offshore mooring chain																
Grade,	Dia. (mm)		C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Al	Nb	Ti	V	N
R3	107 ¹⁾	Min	.27	.15	1.40	-	-	-	-	-	-	.020	-	-	-	-
		Max	.33	.35	1.90	.025	.025	.25	.30	.08	.20	.050	-	-	-	.009
	157/ 220 ¹⁾	Min	.27	.15	1.40	-	-	-	-	-	-	.020	-	-	-	-
		Max	.33	.35	1.90	.025	.020	.60	.30	.20	.20	.050	-	-	-	.009
	127 ⁴⁾	Min	.27	.15	1.40	-	-	-	-	-	-	.020	-	.007	-	-
		Max	.33	.35	1.90	.025	.025	.25	.30	.20	.20	.050	-	.030	-	.009
	157 ²⁾	Min	.27	.17	1.20	-	-	-	-	-	-	.020	-	-	-	-
		Max	.35	.37	1.90	.025	.020	.60	.50	-	.20	.060	-	-	-	.012
	167 ⁶⁾	Min	.27	.15	1.40	-	-	-	-	-	-	.020	-	.015	-	-
		Max	.34	.37	1.90	.025	.020	.60	.35	.20	.20	.055	-	.030	-	.009
R3S	157/ 220 ¹⁾	Min	.20	.15	1.20	-	-	.40	.10	.20	-	.020	.02	-	-	-
		Max	.31	.30	1.60	.025	.025	.70	.20	.50	.20	.050	.06	-	-	.009
	114.3 ¹⁾	Min	.20	.15	1.20	-	-	.40	.10	.20	-	.020	.02	-	-	-
		Max	.31	.30	1.60	.025	.025	.70	.20	.50	.20	.050	.06	-	-	.009
	157 ²⁾	Min	.18	.17	1.20	-	-	.50	-	.15	-	.020	.03	-	-	-
		Max	.28	.37	1.90	.025	.025	2.00	.50	.50	.20	.060	.07	-	-	.012
	167 ³⁾	Min	.22	.10	.80	-	-	.40	.20	.20	-	.015	.010	-	-	-
		Max	.33	.60	1.60	.020	.005	1.60	1.0	.70	.30	.050	.050	.009	.02	.012
R4	107 ³⁾	Min	.16	.15	1.00	-	-	.50	.20	.20	-	.020	.025	-	-	.015
		Max	.26	.60	1.90	.025	.025	2.00	1.50	.80	.40	.050	.040	-	-	
	132 ²⁾	Min	.15	.17	.80	-	-	1.00	1.00	.20	-	.020	.03	-	-	-
		Max	.24	.37	1.60	.020	.015	1.70	1.40	.60	.20	.060	.07	-	-	.012
	147 ^{5), 8)}	Min	.22	.15	1.20	-	-	.80	.70	.40	-	.020	.02	-	-	-
		Max	.26	.30	1.60	.025	.025	1.30	1.00	.60	.20	.060	.06	-	-	.009
	157/ 220 ¹⁾	Min	.22	.15	1.20	-	-	.80	.70	.40	-	.020	.02	-	-	-
		Max	.26	.30	1.60	.025	.025	1.30	1.00	.60	.20	.050	.06	-	-	.009
	167 ^{7), 8)}	Min	.22	.15	1.20	-	-	.80	.70	.40	-	.020	.02	-	-	-
		Max	.26	.30	1.60	.025	.025	1.30	1.00	.60	.20	.050	.06	-	-	.009
R4S	124/ 200 ¹⁾	Min	.20	.15	1.00	-	-	.90	.70	.30	-	.020	.02	-	-	-
		Max	.25	.30	1.80	.025	.020	1.90	1.20	.65	.20	.050	.06	-	-	.009
R5	137 ³⁾	Min	.18	.15	.30	-	-	.90	.60	.20	-	.015	.010	-	.03	-
		Max	.25	.45	1.80	.020	.008	2.00	1.20	.55	.50	.040	.050	-	.10	.012
R6	107 ^{3), 8)}	Min	.24	.10	.30	-	-	.70	2.50	.35	-	.015	-	-	.04	-
		Max	.33	.60	.80	.020	.005	1.60	3.50	.80	.30	.050	.010	.010	.11	.012

Remarks:

¹⁾ Jiangyin Xingcheng Special Steel Works Co., Ltd.

²⁾ Daye Special Steel Co., Ltd.

³⁾ Baoshan Iron & Steel Co., Ltd., Core Base.

⁴⁾ Suzhou Suxin Special Steel Co., Ltd.

⁵⁾ Xining Special Steel Co., Ltd.

⁶⁾ Jiangsu Shagang Group Huaigang Special Steel Co., Ltd.

⁷⁾ Shijiangzhuang Iron & Steel Co., Ltd. Special Steel Branch.

⁸⁾ H ≤2ppm, O ≤25ppm.

⁹⁾ The content of Sn, Sb, As and B may be required. In such cases, the maximum content shall be 0.020 % for Sn, 0.020 % for Sb, 0.020% As and 0.001% for B.

Miscellaneous:

1) Approval of procedures detailed in the approval letter: M-CN-JGYC/LJY/P261.1H-J-6681.