



Approval No. ST201CF

Certificate No. TA19393E

APPROVAL OF MANUFACTURING PROCESS

This is to certify that

**Dowa Forging Co., Ltd., Head Office & Factory
Ohta, Tokyo
Japan**

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 3, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".

MATERIALS : Carbon Steels
Low-Alloy Steels
Stainless Steels
Steels for Low Temperature Service
Heat Resisting Steel Bars and Wire Rods (JIS G 4311)
NSSC SN-1 (Manufacturer's Specification)

PROCESS : Forging / Heat treatment

REMARKS : See the reverse side

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 4 April 2019 until 8 October 2019.

Issued at Tokyo on 4 April 2019.

Renewal Date: 9 October 2014


H. Kobayashi
General Manager
Material and Equipment Department



REMARKS:

- 1) Semi-finished products are to be supplied by the Society-approved manufacturers who are able to deliver the said semi-finished products with the specified chemical composition corresponding to the above material approved.
- 2) For carbon steels, low alloy steels and steels for low temperature service, heat treatment is to be conducted by "Fujinetsu Industries Co., Ltd." and "Sanwa Heat Treatment Co., Ltd." under the supervision of "Dowa Forging Co., Ltd., Head Office & Factory".
- 3) For stainless steels and Heat Resisting Steel Bars and Wire Rods (JIS G 4311), heat treatment may be conducted by "Fujinetsu Industries Co., Ltd." and "Sanwa Heat Treatment Co., Ltd." under the supervision of "Dowa Forging Co., Ltd., Head Office & Factory".
- 4) For NSSC SN-1, heat treatment may be conducted by "Sanwa Heat Treatment Co., Ltd." under the supervision of "Dowa Forging Co., Ltd., Head Office & Factory".
- 5) For NSSC SN-1, product test and inspection are to be conducted in accordance with the requirements specified in Table 1.
- 6) For NSSC SN-1, chemical composition and mechanical properties are to comply with the requirements specified in Table 2 and Table 3.
- 7) For NSSC SN-1, test specimens are to be taken from the extended portion of the representative product in the lot.
- 8) For NSSC SN-1, surface inspection and dimension inspection are to be in accordance with 6.2.9, Chapter 6, Part K of the NK Rules.
- 9) For NSSC SN-1, heat treatment is to be solution treated.
- 10) For NSSC SN-1, unless otherwise specified in these remarks, Chapter 6, Part K of the NK Rules is to be followed.

Table 1 Requirements for product test and inspection

Grade	Test and inspection item	Sampling of test specimens	Sampling location of test specimens	Test Standard
NSSC SN-1 (Manufacturer's Specification)	Chemical Analysis	Each ladle	—	JIS G 1253
	Tensile Test	One specimen for each lot ¹⁾	Extended portion of the Product	Chapter 2, Part K of the NK Rules
	Hardness test			JIS Z 2243
	Surface Inspection and Dimension Inspection	Each product	—	—

Note: One lot is defined as each group of forgings that being to the same charge and the same heat treatment in the same furnace.

Table 2 Chemical composition of ladle (%)

Grade	C	Si	Mn	P	S	Ni	Cr	Mo	Cu
NSSC SN-1 (Manufacturer's Specification)	0.020 max.	3.90 ~ 4.70	1.50 max.	0.030 max.	0.030 max.	13.00 ~ 15.50	16.50 ~ 18.50	0.50 max.	0.50 max.

Table 3 Mechanical properties

Grade	Proof Stress (N/mm ²)	Tensile Strength (N/mm ²)	Elongation (L=5.65√A) (%)	Hardness (HBW)
NSSC SN-1 (Manufacturer's Specification)	245 min.	590 min.	40 min.	149 ~ 241

Note: This certificate was rewritten because of addition of the material grade.