

# TEST REPORT

No. : SHIN1901004049ML

Date : Jan 24, 2019

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CUSTOMER NAME: JINGNING JUNWEN STEEL CO.,LTD  
 ADDRESS: NO.88 SHINIU MOUNTAIN, JINGNING SHE AUTONOMOUS  
 COUNTRY, ZHEJIANG CHINA

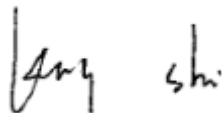
Sample Name : Stainless Steel Seamless Tube Coils  
 Product Specification : 10\*1  
 Product or Lot No. : 1811337  
 Material and Mark : TP321  
 Heat No. : YX1804-241

Above information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client.

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Test Required : Chemical Composition Analysis, Tensile Test, Flaring Test,  
 Flattening Test, Hardness Test, Metallographic Analysis  
 Date of Receipt : Jan 17, 2019  
 Testing Start Date : Jan 17, 2019  
 Testing End Date : Jan 24, 2019  
 Test result(s) : For further details, please refer to the following page(s)  
 (Unless otherwise stated the results shown in this test report refer only to  
 the sample(s) tested)

Signed for  
 SGS-CSTC Standards Technical  
 Service (Shanghai)Co., Ltd.



Kelly Shi  
 Authorized signatory



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## 1. Chemical Composition Analysis:

Test Method: C,S: ASTM E1019-18(Method A)(C/S Analyzer)

Others: SNT/2718-2010(ICP-OES)

Element	C	Si	Mn	P	S	Cr	Ni	Con.
Req.,%	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	17.00~ 19.00	9.00~ 12.00	-
Result , %	0.05	0.36	0.65	0.013	0.001	17.02	9.21	Pass

Note: The results comply with the requirement of ASTM A269-10 type TP321.

## 2. Tensile Test:

Test Method: ASTM A370-17a

Test item	Specimen type	Tensile strength (MPa)	Yield strength (0.2% offset) (MPa)	Elongation after fracture G=50mm (%)
Result	Full-size tubular specimen	565	211	52.0

## 3. Flaring Test:

Test Method: ASTM A370-17a

Sample	Specification (mm)	Expansion rate (Inside) (%)	Angle of taper mandrel (°)	Result	Conclusion
-	Φ10×1.0	≥22	60	No crack	Pass

Note: The results comply with the requirement of ASTM A269-10 type TP321.



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### 4. Flattening Test:

Test Method: ASTM A370-17a

Sample	Sample specification (OD×WT) (mm)	First step Distance between flattening plates (H) (mm)	Result	Second step Distance between flattening plates (H) (mm)	Result	Conclusion
-	Φ10×1.0	5.74	No crack	2WT	No crack	Pass

Note: The results comply with the requirement of ASTM A269-10 type TP321.

### 5. Hardness Test:

Test Method: ASTM E384-17

Test item	Sample	Test position	Result			Req.	Conclusion
HV1	-	Core	150	147	146	≤200	Pass

Note: The results comply with the requirement of ASTM A269-10 type TP321.



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### 6. Metallographic Analysis:

Reference Standard: ASTM E3-11

Etching Reagent: Copper chloride aqueous solution of hydrochloric acid

Step 1. Sampling from main body of material;

Step 2. Inlay , Cleaning, Grinding ,polishing and etching;

Step 3. Observing with the microscope.

Test Result(s):

Test Location	Microstructure of the sample
-	Seamless-pipe, see Fig.1.



Fig. 1 Microstructure of the sample 50×



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Sample Photo

\*\*\*\*\* End of report\*\*\*\*\*

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