STANDARTS-TECHNICAL SERVICES (SHANGHAI)

SGS

TEST REPORT

No.: DB1307852
Date: Sept. 15, 2013

HEBEI SHENGTIAN PIPE-FITTING GROUP CO.,LTD
XIWANG NEW DISTRICT,MENGCUN COUNTY,HEBEI PROVINCE,P.R.CHINA

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Name	:	Smls Steel Pipe
Sample No.	:	SM17232
Product Specification	:	Φ219.1*12.7mm
Heat No.	:	234930
Supplier	:	HEBEI SHENGTIAN PIPE-FITTING GROUP CO.,LTD
Material and Mark	:	ASTM A333 Gr.6
Test Required	:	SSC Resistance Performance Evaluation-Four point Loading
Date of Receipt	:	July 20, 2013
Test Period	:	July 20, 2013 to Sept. 15,2013

Test result(s) : For further details,please refer to the following page(s)

******** To be continued ********

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

Charles Guo
Authorized signatory

SGS-CSTC Standards Technical Services (Shanghai) Co.,Ltd.

1-2/F West No. 4 Building, Lingyun Industry Park, No. 1177 Lingyun Road, Ningbo National Hi-Tech Zone, Ningbo, China <P.C.315040> Industrial Services
t: +86(0)574-8776 7006 f: +86(0)574 8776 7042 www.sgscstc.com

TEST REPORT

No.: DB1307852
Date: Sept. 15, 2013

SSC Resistance Performance Evaluation-Four point loading:
Test method:NACE MR 0175-2005,ISO7539-2:1989,ASTM A333

1. Specification dimensions

The Test specifications shall be taken 120 degrees apart around the circumference,Three test specimens are taken from pipe along rolling direction,see Figure 1. And the Figure 2 shows the dimension of test specimens. T represents the thickness of specimen and t represents wall thickness of the tube. A maximum of 1mm may be removed form internal and external surfaces.

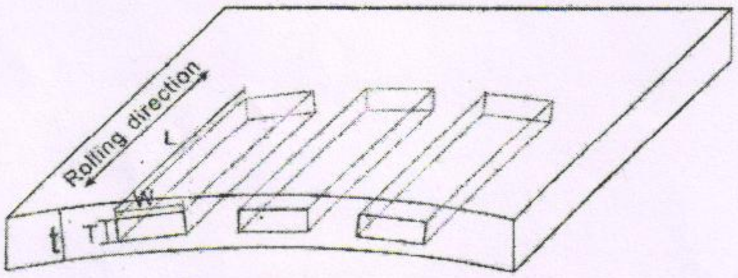


Figure 1 Test Specimen Location

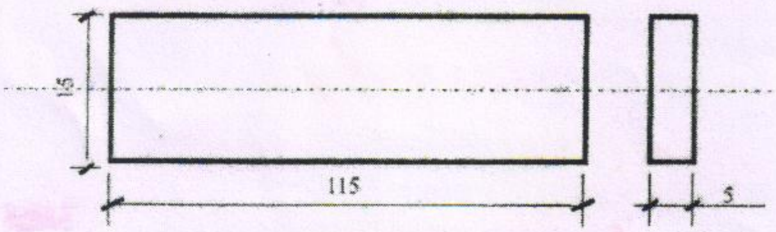


Figure 2 SSC Test Specimen Dimensions

******** To be continued ********

SGS

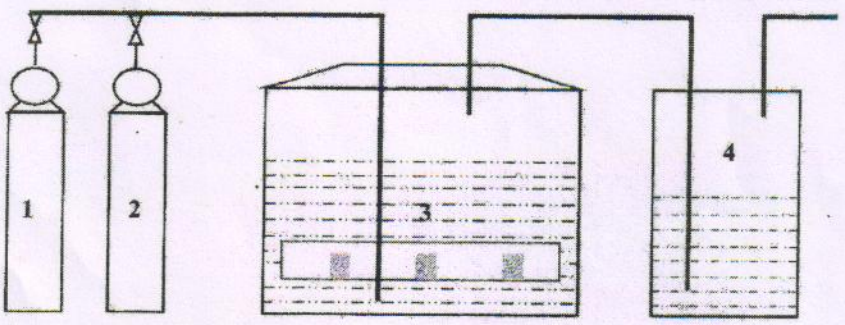
TEST REPORT

2. Test conditions and test apparatus

Test conditions and the schematic diagram of SSC test assembly are shown in Table 1 and figure 3. The schematic diagram of four-point bending test is shown in Figure 4.

Table 1 Test Conditions

Temperature	22~24℃	Load Stress (Mpa)		208.25Mpa(290Mpa×72%)	
Deaerated Gas	High-purity N_2	Test Gas	H_2S	Duration	720 hours
Test Solution	0.5wt% CH_3COOH and 5.0wt% NaCl in distilled water saturated with H_2S (NACE MR 0175 solution A)				
pH	2.8 (before H_2S injection)				
	3.7 (after test)				



1-N2 Cylinder 2-H2S Cylinder 3-Vessel and Specimens 4-H2S treating system

Figure 3 Schematic Diagram of Four-point SSC Test Equipment

******** To be continued ********

SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.

1-2/F West No. 4 Building, Lingyun Industry Park, No. 1177 Lingyun Road, Ningbo National Hi-Tech Zone, Ningbo, China <P.C.315040> Industrial Services
t: +86(0)574-8776 7006 f: +86(0)574 8776 7042 www.sgscstc.com
Member of the SGS Group (Société Générale de Surveillance)

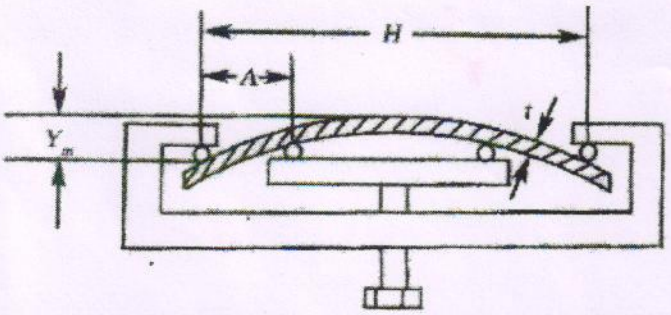


Figure 4 Schematic diagram of four-point loaded specimen

According to ISO 7539-2:1989 standard,calculate load displacement by the following equation:

$$\sigma = \frac{12Ety}{3H^2 - 4A^2}$$

Where,

σ = maximum tensional stress,i.e. load stress,Pa;

E = modulus of elasticity;

T = specimen thickness

y = maximum deflection between outer supporting points,i.e load displacement,m;

H = distance between outer supports;

A = distance between inner and outer supporting points.

3.Test procedure

See the test procedures in Section 8.6 of NACE Standard MR 0175-2005

4.Test result

208.8Mpa (290Mpa×72%) stress was loaded on the three submitted specimens in NACE Standard MR 0175 A solution. After 720 hours test duration,none of the three specimens were broken and no SSC cracks were found upon 10×magnifier examination on the tensile surface,either (See Table 2 and Figure 5)

******** To be continued ********

SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.

1-2/F West No. 4 Building, Lingyun Industry Park, No. 1177 Lingyun Road, Ningbo National Hi-Tech Zone, Ningbo, China <P.C.315040> Industrial Services
t: +86(0)574-8776 7006 f: +86(0)574 8776 7042 www.sgscstc.com
Member of the SGS Group (Société Générale de Surveillance)

TEST REPORT

Table 2 SSC Test result

Specimen No.	Minimum Thickness (mm)	Displacement (mm)	Result
D1	5.15	0.55	Unbroken,No cracks
D1	5.16	0.54	Unbroken,No cracks
D3	5.15	0.55	Unbroken,No cracks

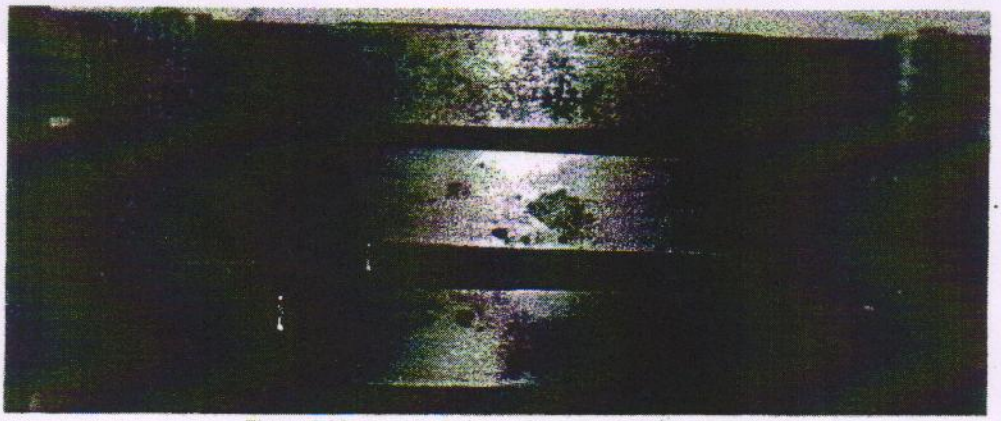


Figure 5 Macro morphology of specimens after testing

5.Conclusion:

Commissioned samples were put in standard Solution A (0.5wt% CH_3COOH +5wt% NaCl),The stress loaded on the samples was 208.8Mpa (290Mpa×72%).After 720 hours test duration,none of the three specimens were broken and no SSC cracks were found upon 10×magnifier examination on the tensile surface,either.

The submitted specimens meet the SSC evaluation requirements, according toe Acceptance Criteria.

Note:The test was carried out by external laboratory assessed as competent.

******** To be continued ********

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

1-2/F West No. 4 Building, Lingyun Industry Park, No. 1177 Lingyun Road, Ningbo National Hi-Tech Zone. Ningbo, China <P.C.315040> Industrial Services
t: +86(0)574-8776 7006 f: +86(0)574 8776 7042 www.sgscstc.com

Member of the SGS Group (Société Générale de Surveillance)

TEST REPORT

Sample photo

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

SGS-CSTC Standards Technical Services
(Shanghai) Co., Ltd.

1-2/F West No. 4 Building, Lingyun Industry Park, No. 1177 Lingyun Road, Ningbo National Hi-Tech Zone, Ningbo, China <P.C.315040> Industrial Services
t: +86(0)574-8776 7006 f: +86(0)574 8776 7042 www.sgscstc.com

Member of the SGS Group (Société Générale de Surveillance)