SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 12053

Date of issue: *September 1, 2026*

Status: FINAL REPORT

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NACE TM 0316

FOUR-POINT BEND TESTING OF MATERIALS FOR OIL AND GAS APPLICATIONS

Program: SQ-0106.V3

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1. FOREWORD

This report summarizes the results of the **SQ-0106.V3** proficiency testing program on the determination of the resistance of metals to stress corrosion cracking (SCC) and sulfide stress cracking (SSC) using a four-point bend test. This program is conducted in a bilateral format, following the "split-sample" design described in clause A.4.2 of ISO/IEC 17043: 2023 (Alternative interlaboratory comparisons).

South Quality conducted the testing program in June/July 2026 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Eng. Alfredo Schmidt
Assistant Technician:	Sergio Andrada
Statistics:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the resistance to stress corrosion cracking and sulfide stress cracking, in accordance with the following standard:

Standard
NACE TM0316 - 2023

To perform this verification, batches of steel samples were selected.

Participants in this program have not been informed in advance about the expected behavior of the samples they receive.

As a usual practice of this program, three different combinations of samples can be sent to participants:

i. Sample A (PASS) + Sample B (PASS).
ii. Sample A (PASS) + Sample B (FAIL).
iii. Sample A (FAIL) + Sample B (FAIL).

4. PARTICIPANT

Company: **SIDER TEST SRL**

Laboratory: **SIDER TEST SRL**

Country: Italy

Client ID: E546

Contact person: Lucia Soprana
General Manager
l.soprana@sidertest.it

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **50 units** Tested samples from each batch: **20 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES (SOLUTION B - ROOM TEMPERATURE - 30 DAYS)		
	BATCH: LM3145	BATCH: LM3146	BATCH: LM3147
Presence/Absence of cracks/pits	NO	YES	YES

Samples for this program are taken from the selected batches identified as **LM3146.**

For the indicated batches, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability

6. SAMPLE INFORMATION

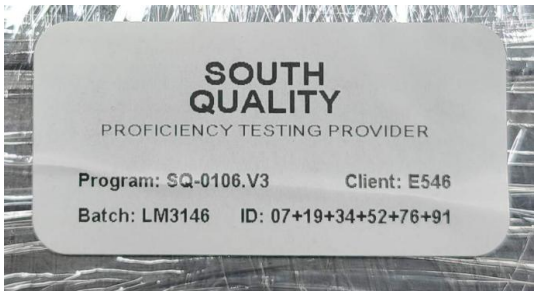
The following samples were sent for testing:

Batch:	LM3146
Sample ID:	07 + 19 + 34 + 52 + 76 + 91
Characteristics:	Low carbon steel (SAE 1010) - 150 x 19.8 x 6.3 mm

7. IMAGES

SAMPLES





8. ASSIGNED VALUES

BATCH	MAGNIFICATION	PRESENCE/ABSENCE OF CRACKS/PITS
LM3146	10x	PRESENCE OF CRACKS
	10x	ABSENCE OF PITS

9. PARTICIPANT RESULTS (SEE APPENDIX B)

CODE	MAGNIFICATION	PRESENCE/ABSENCE OF CRACKS/PITS
LM3146-07	10x	PRESENCE OF CRACKS
	10x	ABSENCE OF PITS
LM3146-19	10x	PRESENCE OF CRACKS
	10x	ABSENCE OF PITS
LM3146-34	10x	PRESENCE OF CRACKS
	10x	ABSENCE OF PITS

10. STATISTICS

The results must be treated as qualitative.

For qualitative results, the comparison will be made directly against the assigned values, so any difference will be evaluated as **Unsatisfactory**.

11. EVALUATION OF PERFORMANCE

BATCH	PRESENCE/ABSENCE OF CRACKS/PITS (10x MAGNIFICATION)		PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE	
LM3146	PRESENCE OF CRACKS	PRESENCE OF CRACKS	**SATISFACTORY**
	ABSENCE OF PITS	ABSENCE OF PITS	**SATISFACTORY**

12. CONCLUSIONS

The overall performance of this **SQ-0106.V3** program from the participant laboratory **SIDER TEST SRL**, is **SUFFICIENT** based on expected results.

The criteria used for the evaluation of the overall performance are the following:

- **SUFFICIENT** performance: No unsatisfactory results were obtained.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained.

APPENDIX A

INSTRUCTIONS

SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	Four-point bend testing of materials for oil and gas applications
CODE:	SQ-0106
VERSION:	3
STANDARD:	NACE TM 0316
COORDINATOR:	Eng. Alfredo Schmidt (aschmidt@ptsouthquality.com)

1 - General

This document serves as a guide for managing the results of the **SQ-0106.V3** program.

2 - Standard

NACE TM0316 - 2023

3 - Tests involved

TEST
Determination of the resistance of metals to stress corrosion cracking (SCC) and sulfide stress cracking (SSC) using a four-point bend test

4 - Samples

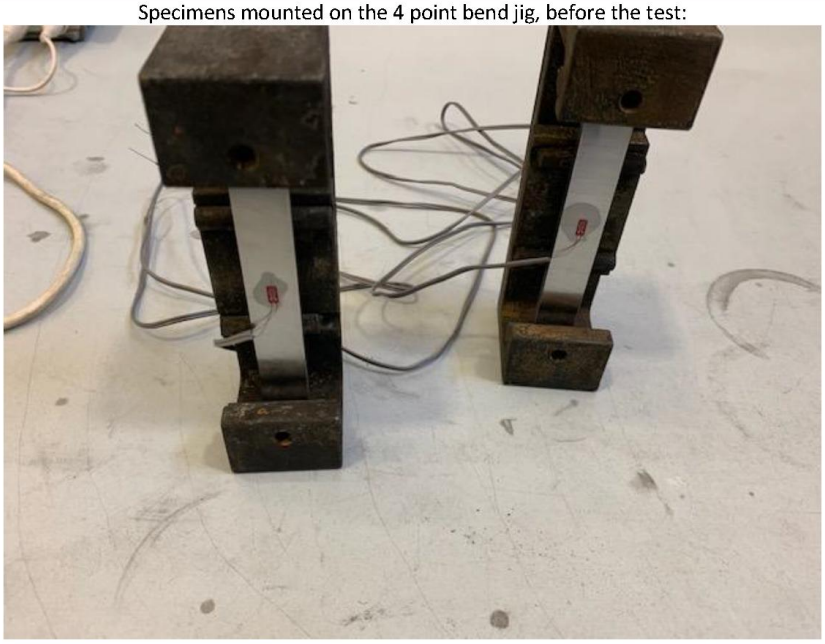
CODE	SAMPLE	QUANTITY
LM3146-XX	Carbon steel - 150 x 19.8 x 6.3 mm	6

5 - Notes

a) Being a bilateral program, there is no deadline for submitting results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **NACE TM0316**.
d) Participants receive six samples for the program. Three of the samples must be used to determine the total strain according to the **ASTM E8** standard (subsize specimen), corresponding to 0.2% plastic strain. Apply this value as the target strain in the Four-Point Bend Test, measuring deflection with a dial gauge or strain gauge at the center of the tensile face.
e) Participants must subject the remaining three samples to the Four-Point Bend Testing (**Solution B - Room temperature - 30 days**). The face subjected to tension is the face opposite to where it is identified with its ID.
f) Samples must be retained until the end of the program, which concludes with the submission of the final report.
g) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

PHOTOGRAPHS

Specimens mounted on the 4 point bend jig, before the test:



Specimens after the test (still on the jig)



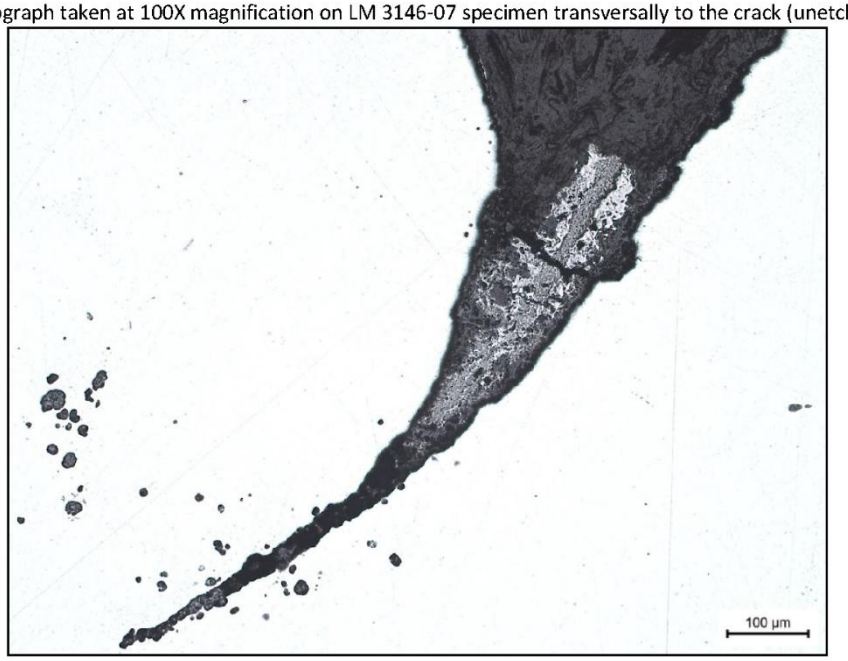
Specimens post-test removed from the jig



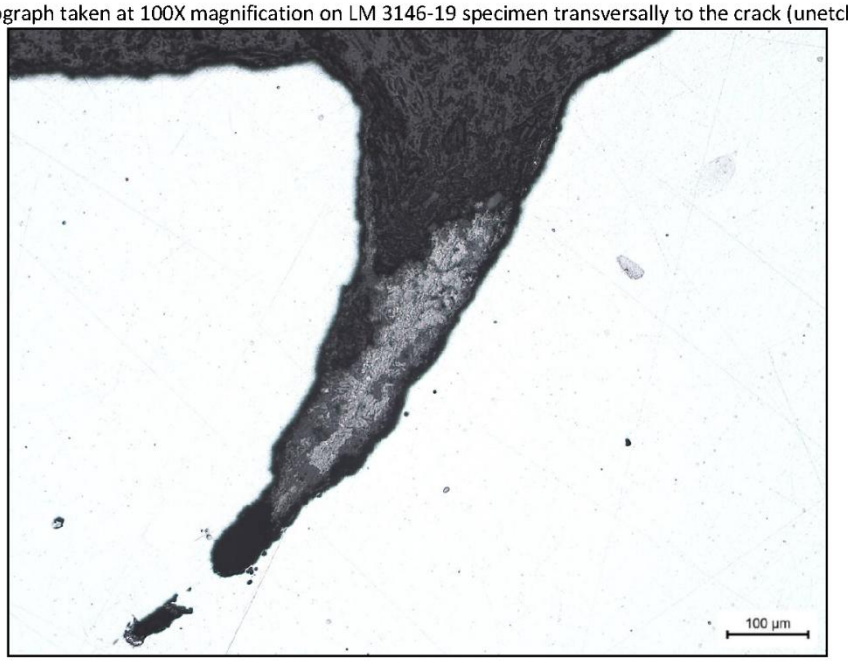
Specimens during Magnetic Particle Test



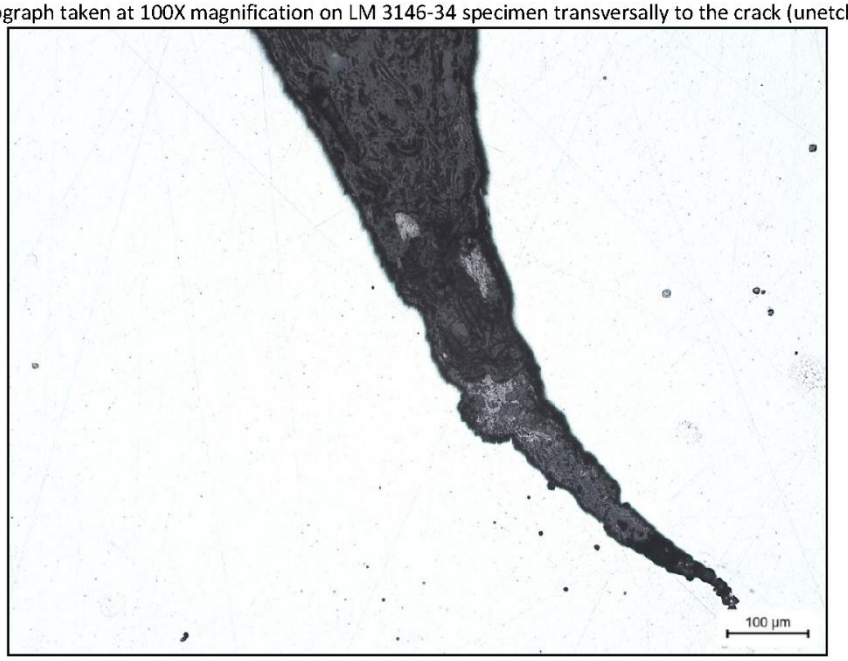
Micrograph taken at 100X magnification on LM 3146-07 specimen transversally to the crack (unetched)



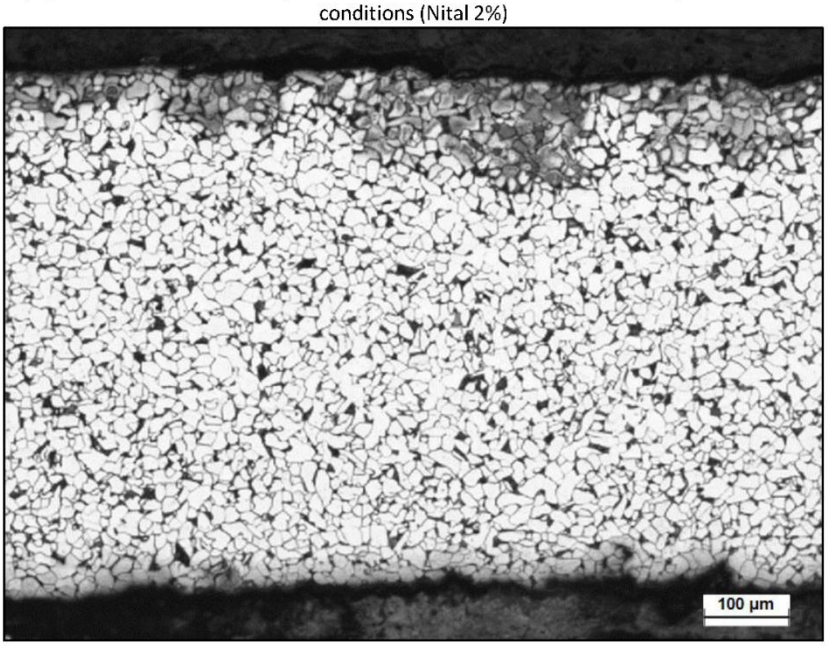
Micrograph taken at 100X magnification on LM 3146-19 specimen transversally to the crack (unetched)



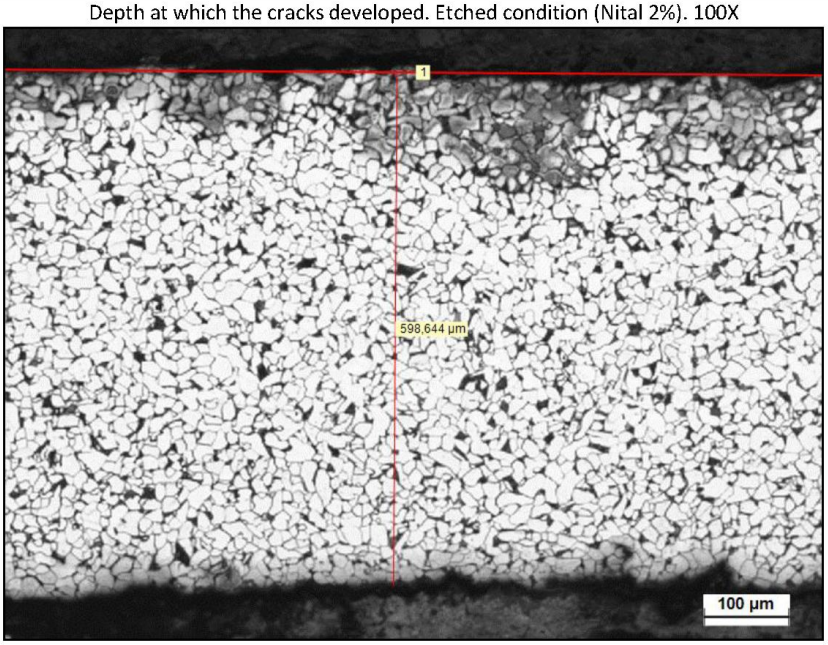
Micrograph taken at 100X magnification on LM 3146-34 specimen transversally to the crack (unetched)



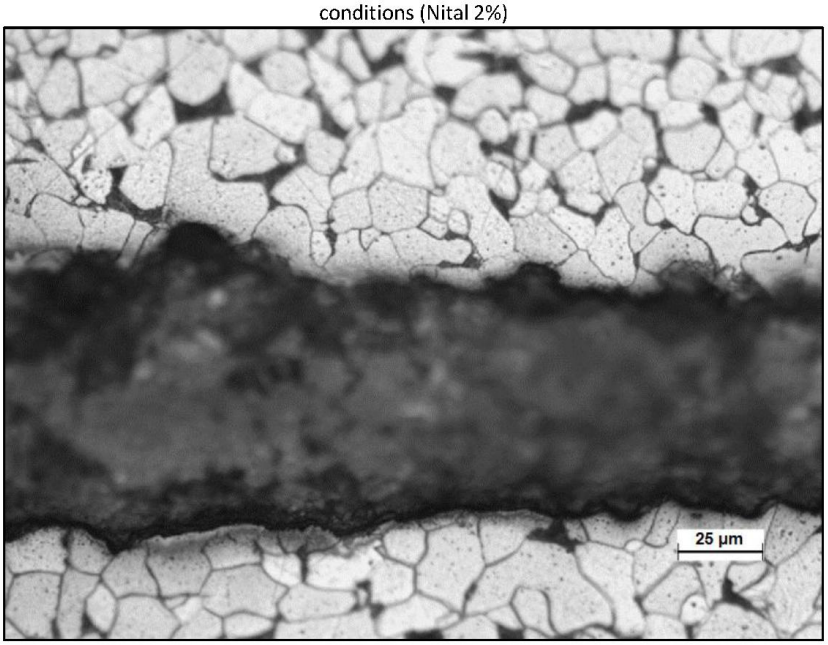
Micrograph taken on LM 3146-07 specimen in longitudinal direction. 100X magnification in etched conditions (Nital 2%)



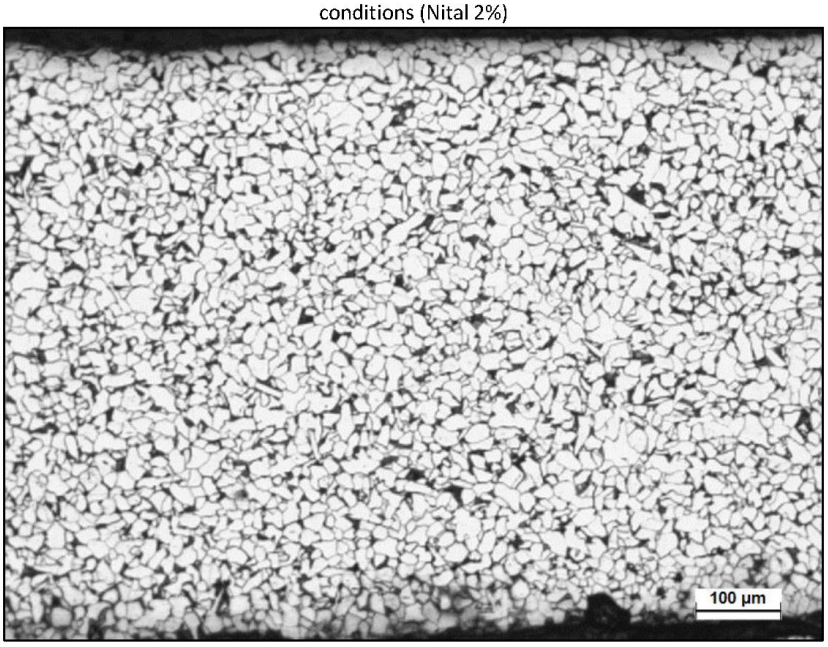
Depth at which the cracks developed. Etched condition (Nital 2%). 100X



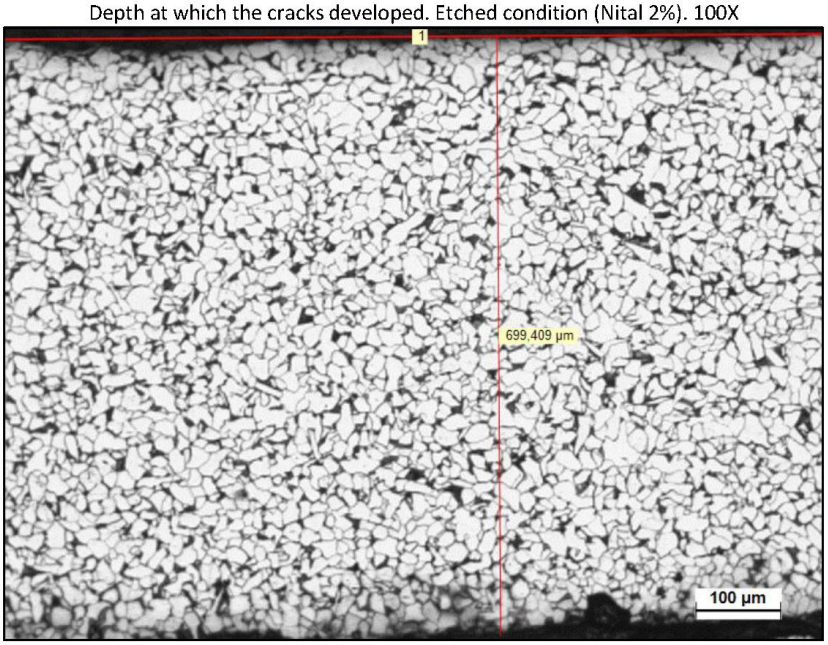
Micrograph taken on LM 3146-07 specimen in longitudinal direction. 400X magnification in etched conditions (Nital 2%)



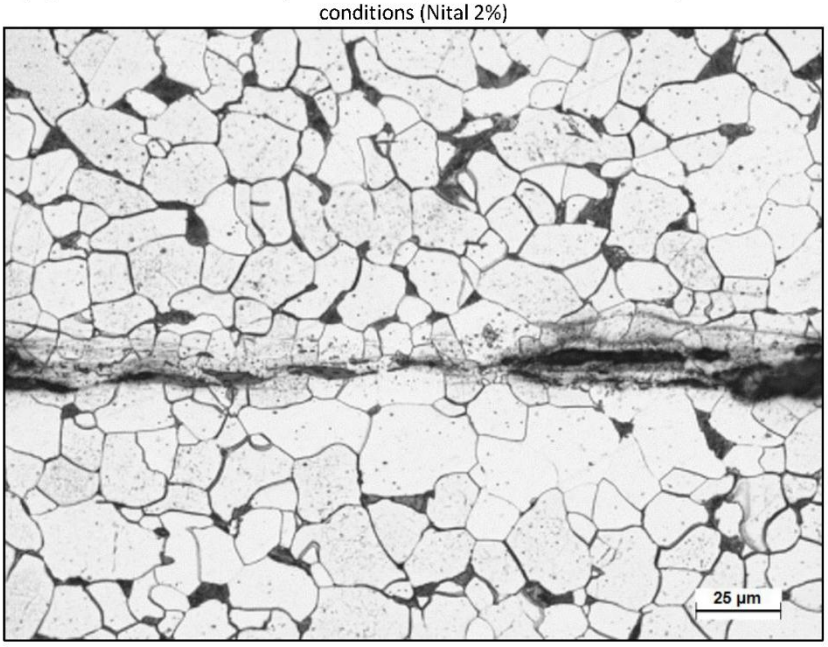
Micrograph taken on LM 3146-19 specimen in longitudinal direction. 100X magnification in etched conditions (Nital 2%)



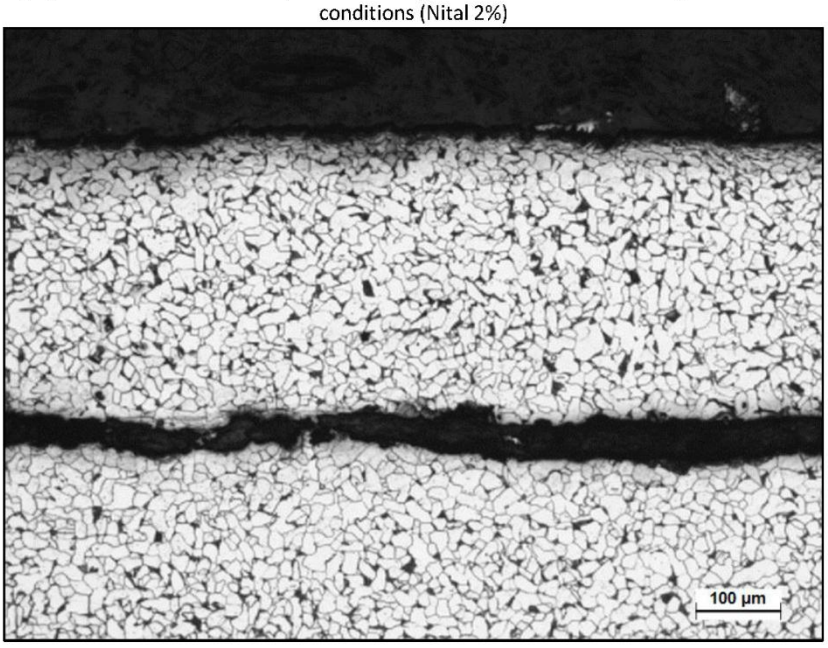
Depth at which the cracks developed. Etched condition (Nital 2%). 100X



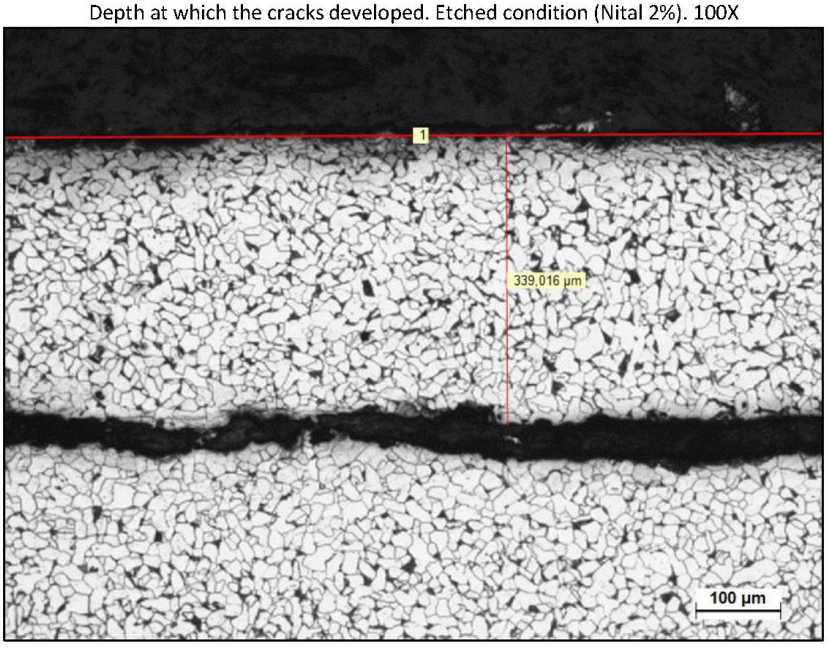
Micrograph taken on LM 3146-19 specimen in longitudinal direction. 400X magnification in etched conditions (Nital 2%)



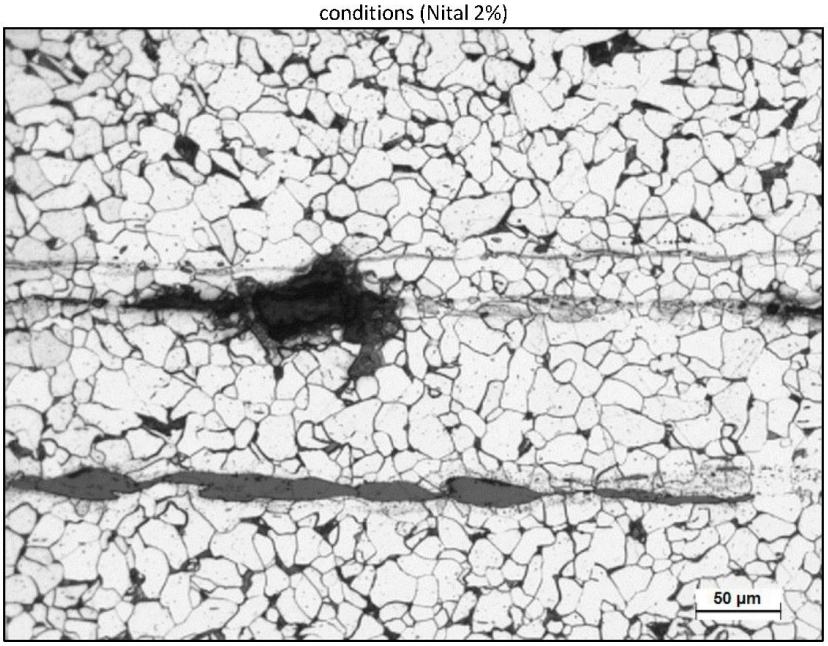
Micrograph taken on LM 3146-34 specimen in longitudinal direction. 100X magnification in etched conditions (Nital 2%)



Depth at which the cracks developed. Etched condition (Nital 2%). 100X



Micrograph taken on LM 3146-34 specimen in longitudinal direction. 200X magnification in etched conditions (Nital 2%)



APPENDIX B

PARTICIPANT RESULTS (TR #6315 / 26)

SIDERTEST
mechanical chemical non destructive tests

Head Office: Strada della Barunella, 1/B - 29015 Castel San Giovanni(PC) ITALY
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Tel. +39 0523 881900 Fax +39 0523 842903 sidertest@sidertest.it www.sidertest.it

Verifica di Autenticità/ Authenticity Verification

RAPPORTO DI PROVA/ TEST REPORT

MIC 6315 / 26

Page 1 of 6

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

00680

Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

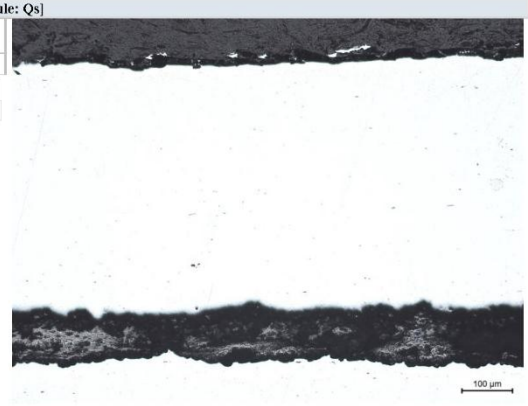
Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96409 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 1/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Matcrial

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-07. SOHIC #1 ON SSC.

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

I risultati presenti in questo rapporto di prova si riferiscono al solo campione così come ricevuto dal Cliente, che esegue il campionamento, salvo in caso di trattamenti termici effettuati dal Laboratorio. I campi in blu sono forniti dal cliente. La conformità ai documenti in "Specifica" riguarda solamente le prove presenti in questo rapporto di prova. Il simbolo * antecedente a "ID_Prova" indica una prova non accreditata da ACCREDIA. Dichiarazioni false, fittizie o fraudolente e modifiche del presente rapporto di prova costituiscono reato punibile secondo le norme penali vigenti. Il rapporto di prova non può essere riprodotto parzialmente, salvo nostra approvazione scritta. Il Laboratorio non è responsabile dei dati forniti dal cliente che possono influenzare la validità dei risultati / This test report refers only to the examined sample as received from the Customer, except in case of heat treatments carried out by the Laboratory. Clients are in charge of sampling. Blue fields are supplied by the Client. Compliance with documents in "Specification" refers only to the tests described on this test report. The * symbol before "ID_Prova" indicates that the test is not accredited by ACCREDIA. Any false statement or modification of this test report is a violation of law and the Laboratory may take legal action. This test report cannot be partially reproduced without our written approval. Laboratory is not responsible for information supplied by the customer which can affect the validity of the result.

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19/03/2026	Antonielli Stefano	Amani Paolo		
Data Rapporto di prova/ Test Report Date: 31/07/2026				

I: Internal construction
E: External construction

DECISION RULE
• Ql → Qualitative
• Qs → Semi-quantitative
• Qn → Quantitative (Implicit Uncertainty)
• Qi → Quantitative (Non Implicit Uncertainty) - the uncertainty is reported in the test report and is used for conformity assessment. The result can be COMPLIANT or NOT COMPLIANT

Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

SIDERTEST
mechanical chemical non destructive tests
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Tel. +39 0523 881900 Fax. +39 0523 842903 sidertest@sidertest.it www.sidertest.it

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RAPPORTO DI PROVA/ TEST REPORT

MIC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

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Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96410 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 2/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Material

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-07. SOHIC #2 ON SSC.

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

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Data Rapporto di prova/ Test Report Date: 31/07/2026				

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Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

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Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

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Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96411 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 1/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Material

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-19. SOHIC #1 ON SSC.

Esito/ Conclusion: **Requisiti non specificati/ Unspecified requirements**

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Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

SIDERTEST
mechanical chemical non destructive tests
Head Office: Strada della Barianella, 1/B - 29015 Castel San Giovanni(PC) ITALY
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Tel. +39 0523 881900 Fax. +39 0523 842903 sidertest@sidertest.it www.sidertest.it

Verifica di Autenticità/ Authenticity Verification

RAPPORTO DI PROVA/ TEST REPORT

MIC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

00680

Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96412 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 2/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Material

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-19. SOHIC #2 ON SSC.

Esito/ Conclusion: **Requisiti non specificati/ Unspecified requirements**

I risultati presenti in questo rapporto di prova si riferiscono al solo campione così come ricevuto dal Cliente, che esegue il campionamento, salvo in caso di trattamenti termici effettuati dal Laboratorio. I campi in blu sono forniti dal cliente. La conformità ai documenti in "Specifica" riguarda solamente le prove presenti in questo rapporto di prova. Il simbolo * antecedente a "ID_Prova" indica una prova non accreditata da ACCREDIA. Dichiarazioni false, fittizie o fraudolente e modifiche del presente rapporto di prova costituiscono reato punibile secondo le norme penali vigenti. Il rapporto di prova non può essere riprodotto parzialmente, salvo nostra approvazione scritta. Il Laboratorio non è responsabile dei dati forniti dal cliente che possono influenzare la validità dei risultati./
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Data Ingresso Materiale/ Date of Material Arrival	Responsabile di Reparto o sostituto/ Department Manager or Deputy	Responsabile Laboratorio o Sostituto/ Laboratory Manager or Deputy	Ispettori/ Inspector	Cliente/ Customer
19/03/2026	Antonielli Stefano	Amani Paolo		
Data Rapporto di prova/ Test Report Date: 31/07/2026				

I: Internal construction
E: External construction

DECISION RULE
- Ql → Qualitative
- Qs → Semi-quantitative
- Qa → Quantitative (Implicit Uncertainty)
- Qk → Quantitative (Non Implicit Uncertainty) - the uncertainty is reported in the test report and is used for conformity assessment. The result can be COMPLIANT or NOT COMPLIANT

Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

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RAPPORTO DI PROVA/ TEST REPORT

MIC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

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Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

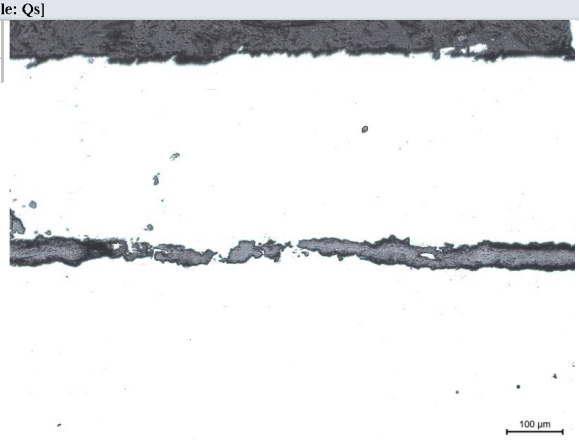
Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96413 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 1/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Material

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-34. SOHIC #1 ON SSC.

Esito/ Conclusion: **Requisiti non specificati/ Unspecified requirements**

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19/03/2026	Antonielli Stefano	Amani Paolo		
Data Rapporto di prova/ Test Report Date: 31/07/2026				

I: Internal construction
E: External construction

DECISION RULE
- Ql → Qualitative
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Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

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RAPPORTO DI PROVA/ TEST REPORT

MIC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

00680

Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

ESAME MICROGRAFICO/ Micrographic examination [Decision rule: Qs]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Data esecuzione/ Date of Testing
96414 I	ASTM E3 – 26 / ASTM E407 – 23	SOHIC #1 ON SSC.	B T 2/3	23/07/2026

Ingrandimento/ Enlargement	Attacco/ Etching	Area esaminata/ Examined area
100 X		Specimen in Base Material

5.0 x 20.0 = 100.0 mm²



Note Tecniche/ Technical Notes: (Operator: Capelli Mauro) SOHIC evaluation performed on sscc test - Presence of microcracks on examined surface.

Note/ Remarks: LM3146-34. SOHIC #2 ON SSC.

Esito/ Conclusion: **Requisiti non specificati/ Unspecified requirements**

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19/03/2026	Antonielli Stefano	Amani Paolo		
Data Rapporto di prova/ Test Report Date: 31/07/2026				

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Test Position Legend: [1/3]-1/3 thickness; [2/3]-2/3 thickness; [B]-Specimen in Base Material; [T]-trasv.

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RAPPORTO DI PROVA/ TEST REPORT

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Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

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Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

PROVA DI TRAZIONE A TEMPERATURA AMBIENTE/ Tensile test at room temperature [Decision rule: Qn]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Dimensioni/ Dimension		Lo (mm)	Posizione di prelievo/ Test position			Temp./ Temp.	Snervamento/ Yield strength		Rottura/ Tensile strength Rm	Allungamento/ Elongation after fracture	Strizione/ Area Reduction	S/R/ Ratio Yield strength / Tensile strength	Data esecuzione/ Date of Testing
			Wth	*Ø / Width Ø Pipe*												
			mm						°C	MPa		MPa	MPa	*A (%)*	*Z (%)*	
39306 I	ASTM E8/E8M – 25 except A1	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	6,63	6,04	25,00	B	L	FT	23,0	Rp0,2%	**314**	**454**	**42,1**			17/04/2026
Note/ Remarks:LM3146-52.																
39307 I	ASTM E8/E8M – 25 except A1	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	6,45	5,98	25,00	B	L	FT	23,0	Rp0,2%	**322**	**454**	**41,6**			17/04/2026
Note/ Remarks:LM3146-76.																
39308 I	ASTM E8/E8M – 25 except A1	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	6,64	5,99	25,00	B	L	FT	23,0	Rp0,2%	**319**	**454**	**42,1**			17/04/2026
Note/ Remarks:LM3146-91.																

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

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Data Ingresso Materiale/ Date of Material Arrival: **19/03/2026**

Data Rapporto di prova/ Test Report Date: **31/07/2026**

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Responsabile di Reparto o sostituto/ Department Manager or Deputy: Morresi Davide

Responsabile Laboratorio o Sostituto/ Laboratory Manager or Deputy: Amani Paolo

Ispettori/ Inspector

Cliente/ Customer

I: Internal construction
E: External construction

DECISION RULE
- Ql → Qualitative
- Qs → Semi-quantitative
- Qn → Quantitative (Implicit Uncertainty)
- Qx → Quantitative (Non Implicit Uncertainty) - the uncertainty is reported in the test report and is used for conformity assessment.

The result can be COMPLIANT or NOT COMPLIANT

Test Position Legend: [B]-Specimen in Base Material; [FT]-full thickness; [L]-long.

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RAPPORTO DI PROVA/ TEST REPORT

SSC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

00680

Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

Prova di criccatura in tensocorrosione (SSC)/ Sulfide stress cracking (SSC) [Decision rule: QI]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Dimensioni/ Dimension	Superficie Totale Provini/ Total surface of the specimen (cm²)	Rugosità/ Roughness (µm)
39309 I	NACE TM0316-2023 + ANSI/NACE TM0177-2024 Method B	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	B L D	114.9 x 15.1 x 5	47,70	0,212

Preparazione della superficie/ Surface preparation: Machined with Ra <= 0,25 (µm)

Soluzione/ Solution: Test Solution B - Nace TM0177 : 5 wt% NaCl + 2.5 wt% glacial acetic acid + 0,41wt% Sodium acetate dissolved in distilled water

Nr. Bagno - Vol. min. soluzione (ml) - Vol. min. totale (ml)/ Bath Nr. - Min. vol. of solution (ml) - Total Min. vol. (ml): 81 /950 / 2850

Durata prova (ore)/ Test period (hours): 720

Data inizio/ Initial date	Data fine/ End date
09/06/2026 09:00:00	09/07/2026 09:00:00

Temperatura di prova/ Test temperature (°C): 24 ± 3 (Partial pressure calculated according to par 7.7.4.1.3 NACE TM0177)

Pressione di prova/ Test pressure: 1 Bar H2S - H2S>99,5%
Purging: N2 BIP > 99,9999%

Carico applicato/ Load applied (MPa) AYS: 318 (100% of 318 MPa) Loading procedure: PO 04-476 RC

Deformazione applicata/ Applied deformation (µε): 1527,9

TEST CONDITIONS PH before introduction of H2S: **3,52**

	After H2S Saturation	End (720 hrs)
PH value	3,59	3,85
Concentration of H2S (ppm)	2812	2675

Esame di danno/ Failure detection: **Provino non rotto/ Unbroken**

Il provino è stato esaminato a 10X/ The specimen has been examined at 10X

Rilevate cricche o fessure/ Cracks or fissure are detected

Assenza di pits/ Absence of pits

Method used for detecting cracks:

-Initial examination at 10X magnification -Magnetic particle inspection -Metallography

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

Note Tecniche/ Technical Notes: AYS determined from tensile test done on LM3146-52, LM3146-76 and LM3146-91 samples.

Note/ Remarks: LM3146-07.

I risultati presenti in questo rapporto di prova si riferiscono al solo campione così come ricevuto dal Cliente, che esegue il campionamento, salvo in caso di trattamenti termici effettuati dal Laboratorio. I campi in blu sono forniti dal cliente. La conformità ai documenti in "Specifica" riguarda solamente le prove presenti in questo rapporto di prova. Il simbolo * antecedente a "ID_Prova" indica una prova non accreditata da ACCREDIA. Dichiarazioni false, fittizie o fraudolente e modifiche del presente rapporto di prova costituiscono reato punibile secondo le norme penali vigenti. Il rapporto di prova non può essere riprodotto parzialmente, salvo nostra approvazione scritta. Il Laboratorio non è responsabile dei dati forniti dal cliente che possono influenzare la validità dei risultati. / This test report refers only to the examined sample as received from the Customer, except in case of heat treatments carried out by the Laboratory. Clients are in charge of sampling. Blue fields are supplied by the Client. Compliance with documents in "Specification" refers only to the tests described on this test report.The * symbol before "ID_Prova" indicates that the test is not accredited by ACCREDIA. Any false statement or modification of this test report is a violation of law and the Laboratory may take legal action. This test report cannot be partially reproduced without our written approval. Laboratory is not responsible for information supplied by the customer which can affect the validity of the result.

Data Ingresso Materiale/ Date of Material Arrival: 19/03/2026

Data Rapporto di prova/ Test Report Date: 31/07/2026

Responsabile di Reparto o sostituto/ Department Manager or Deputy: Antonielli Stefano

Responsabile Laboratorio o Sostituto/ Laboratory Manager or Deputy: Amani Paolo

Ispettori/ Inspector

Cliente/ Customer

I: Internal construction
E: External construction

DECISION RULE
• QI → Qualitative
• Qs → Semi-quantitative
• Qm → Quantitative (Implicit Uncertainty)
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The result can be COMPLIANT or NOT COMPLIANT

Test Position Legend: [B]-Specimen in Base Material, [D]-internal sup., [L]-long.

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RAPPORTO DI PROVA/ TEST REPORT

SSC 6315 / 26

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Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

Prova di criccatura in tensocorrosione (SSC)/ Sulfide stress cracking (SSC) [Decision rule: QI]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Dimensioni/ Dimension	Superficie Totale Provini/ Total surface of the specimen (cm²)	Rugosità/ Roughness (µm)
39310 I	NACE TM0316-2023 + ANSI/NACE TM0177-2024 Method B	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	B L D	114.9 x 15.1 x 5	47,70	0,16

Preparazione della superficie/ Surface preparation: Machined with Ra <= 0,25 (µm)

Soluzione/ Solution: Test Solution B - Nace TM0177 : 5 wt% NaCl + 2.5 wt% glacial acetic acid + 0,41wt% Sodium acetate dissolved in distilled water

Nr. Bagno - Vol. min. soluzione (ml) - Vol. min. totale (ml)/ Bath Nr. - Min. vol. of solution (ml) - Total Min. vol. (ml): 81 /950 / 2850

Durata prova (ore)/ Test period (hours): 720

Data inizio/ Initial date	Data fine/ End date
09/06/2026 09:00:00	09/07/2026 09:00:00

Temperatura di prova/ Test temperature (°C): 24 ± 3 (Partial pressure calculated according to par 7.7.4.1.3 NACE TM0177)

Pressione di prova/ Test pressure: 1 Bar H2S - H2S>99,5%
Purging: N2 BIP > 99,9999%

Carico applicato/ Load applied (MPa) AYS: 318 (100% of 318 MPa) Loading procedure: PO 04-476 RC

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TEST CONDITIONS PH before introduction of H2S: **3,52**

	After H2S Saturation	End (720 hrs)
PH value	3,59	3,85
Concentration of H2S (ppm)	2812	2675

Esame di danno/ Failure detection: **Provino non rotto/ Unbroken**

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Rilevate cricche o fessure/ Cracks or fissure are detected

Assenza di pits/ Absence of pits

Method used for detecting cracks:

-Initial examination at 10X magnification -Magnetic particle inspection -Metallography

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

Note Tecniche/ Technical Notes: AYS determined from tensile test done on LM3146-52, LM3146-76 and LM3146-91 samples.

Note/ Remarks: LM3146-19.

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Data Ingresso Materiale/ Date of Material Arrival: **19/03/2026**

Data Rapporto di prova/ Test Report Date: **31/07/2026**

Responsabile di Reparto o sostituto/ Department Manager or Deputy: Antonielli Stefano

Responsabile Laboratorio o Sostituto/ Laboratory Manager or Deputy: Amani Paolo

Ispettori/ Inspector

Cliente/ Customer

I: Internal construction
E: External construction

DECISION RULE
• QI → Qualitative
• Qs → Semi-quantitative
• Qm → Quantitative (Implicit Uncertainty)
• Qk → Quantitative (Non Implicit Uncertainty) - the uncertainty is reported in the test report and is used for conformity assessment.
The result can be COMPLIANT or NOT COMPLIANT

Test Position Legend: [B]-Specimen in Base Material, [D]-internal sup., [L]-long.

SIDERTEST
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Verifica di Autenticità/ Authenticity Verification

RAPPORTO DI PROVA/ TEST REPORT

SSC 6315 / 26

Rif. Lab SIM (FCP) : **2017 / 26 (A / A)**

Official language: English

00680

Cliente/ Customer	Ordine/ Order	Commessa/ Job
PT South Quality sas	FOUR-POINT BEND TESTING OF MATERIAL FOR OIL AND GAS APPLICATIONS - NACE TM 0316	/

Campione fornito da cliente/ Sample supplied by customer :Parte del prodotto finito/ part of finished product

Descrizione/ Description	Qta/ Qty	Posizione/ Item	Prova Nr./ Test Nr.	Colata/ Heat	Materiale/ Material
COUPON W.T. 6.3 mm	1	/	LM3146	/	CARBON STEEL

Prova di criccatura in tensocorrosione (SSC)/ Sulfide stress cracking (SSC) [Decision rule: QI]

ID Prova/ ID Specimen	Metodo di prova/ Test method	Specifica/ Specification	Posizione di prelievo/ Test position	Dimensioni/ Dimension	Superficie Totale Provini/ Total surface of the specimen (cm²)	Rugosità/ Roughness (µm)
39311 I	NACE TM0316-2023 + ANSI/NACE TM0177-2024 Method B	BILATERAL PT SCHEME SQ-0106.V3 REV.05 - TM 0316 SSC	B L D	114.9 x 15.1 x 5	47,70	0,163

Preparazione della superficie/ Surface preparation: Machined with Ra <= 0,25 (µm)

Soluzione/ Solution: Test Solution B - Nace TM0177 : 5 wt% NaCl + 2.5 wt% glacial acetic acid + 0,41wt% Sodium acetate dissolved in distilled water

Nr. Bagno - Vol. min. soluzione (ml) - Vol. min. totale (ml)/ Bath Nr. - Min. vol. of solution (ml) - Total Min. vol. (ml): 81 /950 / 2850

Durata prova (ore)/ Test period (hours): 720

Data inizio/ Initial date	Data fine/ End date
09/06/2026 09:00:00	09/07/2026 09:00:00

Temperatura di prova/ Test temperature (°C): 24 ± 3 (Partial pressure calculated according to par 7.7.4.1.3 NACE TM0177)

Pressione di prova/ Test pressure: 1 Bar H2S - H2S>99,5%
Purging: N2 BIP > 99,9999%

Carico applicato/ Load applied (MPa) AYS: 318 (100% of 318 MPa) Loading procedure: PO 04-476 RC

Deformazione applicata/ Applied deformation (µε): 1527,9

TEST CONDITIONS PH before introduction of H2S: **3,52**

	After H2S Saturation	End (720 hrs)
PH value	3,59	3,85
Concentration of H2S (ppm)	2812	2675

Esame di danno/ Failure detection: **Provino non rotto/ Unbroken**

Il provino è stato esaminato a 10X/ The specimen has been examined at 10X

Rilevate cricche o fessure/ Cracks or fissure are detected

Assenza di pits/ Absence of pits

Method used for detecting cracks:

-Initial examination at 10X magnification -Magnetic particle inspection -Metallography

Esito/ Conclusion: Requisiti non specificati/ Unspecified requirements

Note Tecniche/ Technical Notes: AYS determined from tensile test done on LM3146-52, LM3146-76 and LM3146-91 samples.

Note/ Remarks: LM3146-34.

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----- END OF REPORT -----