



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

TENARIS RESEARCH & DEVELOPMENT USA (IPSCO TUBULARS INC.)

10120 Houston Oaks Drive

Houston, TX 77064

Pablo Alra Phone: 281 949 1056

MECHANICAL

Valid To: May 31, 2021

Certificate Number: 3425.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on oil and gas metal testing:

<u>Test:</u>	<u>Test Method(s):</u>
Testing Casing and Tubing Connections	API Recommended Practice 5C5; ISO 13679; ISO 12835
Collapse	API TR 5C3, Annex I
NACE HIC	NACE TM0284; API 5L
NACE SSC (Method A)	NACE TM0177, MR0175
Rockwell Hardness (B and C)	ASTM E18; API 5CT
Vickers Micro Hardness (500 gf)	ASTM E384
Jominy Hardenability	ASTM A255
Charpy Impact (-70° F to Room Temperature)	ASTM A370, E23; API 1104
Elevated Temperature Tensile (Up to 500° C)	ASTM E21
Room Temperature Tensile	ASTM A370, E8/E8M
Macro Etching	ASTM E340
Failure Analysis (SEM/EDX)	ASM Handbook, Volume 11; ASTM E1508
Grain Size	ASTM E112, E930, E1181
Microstructure	ASTM E3, E407, E1268, E562
Steel Cleanliness	ASTM E45 (Methods A and D)
Optical Emission Spectroscopy (OES) (Al, As, B, C, Ca, Cr, Cu, Mn, Mo, N, Nb, Ni, P, Pb, S, Sb, Si, Sn, Ti, V)	ASTM E415

CALIBRATION

Parameter/Equipment	Range	CMC ¹ (\pm)	Comments
Calipers	Up to 18"	0.00064"	Gage Blocks
Dial indicators	0.001" Scale	0.00010"	Dial Indicator Calibrator
	0.0005"	0.00016"	
	0.0001"	0.00013"	
Outer Micrometers	Up to 13"	0.00017"	Gagemaker Mic Trac

¹ Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs uncertainties represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC uncertainty due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

² This laboratory meets R205 – *Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above and is considered equivalent to that of a calibration.





Accredited Laboratory

A2LA has accredited

**TENARIS RESEARCH & DEVELOPMENT USA
(IPSCO TUBULARS INC.)**

Houston, TX

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 18th day of June 2019.

A blue ink signature of the Vice President, Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3425.01
Valid to May 31, 2021
Revised March 11, 2020

For the tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.