



# CERTIFICATE OF TESTING

## IPSCO TUBULARS INC

Page 1

Certificate Number:	336038-2
Friday, August 24, 2018, 6:52:31 AM	

Diameter: 4.500 in		Gage: 0.237 in		Grade: X52M		Mill Order No: 087174-01		Customer PO: s032188121											
Specification: API Specification 5L Forty-Fifth Edition PSL - 2				Customer: MCJUNKIN CORPORATION															
Grade X52																			
PCM Criteria is 0.25 Max.																			
NACE MR0175 hardness only, 22HRC maximum																			
Heat	Product ID	Test Type			Orientation				Width (in)		YS (psi)		TS (psi)		Elong%(2 in)		Y/T		
		Wgt (%)	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V	Cb	Ti	B	PCM	
1184780	BV-564C	1	MILL CONTROL			PIPE LPA				1.505		63900		73100		38.0		0.87	
	BV-564C	8	MILL CONTROL			PIPE LPA				1.510		70400		76700		34.0		0.92	
		Heat:	0.05	1.10	0.009	0.000	0.19	0.08	0.03	0.04	0.010	0.003	0.030	0.005	0.032	0.013	0.0000	0.12	
	BV-564C	1	Product:	0.04	1.14	0.009	0.001	0.18	0.10	0.03	0.04	0.008	0.004	0.033	0.002	0.028	0.011	0.0003	0.11
	BV-564C	5	Product:	0.04	1.15	0.009	0.001	0.18	0.10	0.03	0.04	0.008	0.004	0.033	0.003	0.028	0.011	0.0002	0.11
1184781	BV-564C	17	MILL CONTROL			PIPE LPA				1.503		63500		73200		33.0		0.87	
	BV-564C	25	MILL CONTROL			PIPE LPA				1.020		65400		71500		34.0		0.91	
	BV-564C	29	MILL CONTROL			PIPE LPA				1.495		66100		72000		38.0		0.92	
		Heat:	0.04	1.08	0.009	0.000	0.20	0.08	0.03	0.04	0.010	0.003	0.030	0.005	0.032	0.013	0.0000	0.11	
	BV-564C	17	Product:	0.03	1.11	0.010	0.002	0.19	0.09	0.03	0.04	0.008	0.004	0.030	0.002	0.027	0.011	0.0002	0.10
1184782	BV-564C	25	Product:	0.03	1.11	0.010	0.002	0.19	0.09	0.03	0.04	0.008	0.004	0.030	0.002	0.027	0.011	0.0002	0.10
	BV-564C	57	MILL CONTROL			PIPE LPA				1.537		66800		72500		39.0		0.92	
		Heat:	0.04	1.06	0.008	0.000	0.20	0.08	0.03	0.04	0.010	0.003	0.040	0.005	0.031	0.013	0.0000	0.11	
	BV-564C	57	Product:	0.03	1.09	0.012	0.004	0.19	0.09	0.04	0.04	0.009	0.004	0.034	0.002	0.028	0.011	0.0001	0.10
	BV-564C	65	Product:	0.03	1.11	0.012	0.004	0.19	0.09	0.03	0.04	0.009	0.004	0.030	0.002	0.028	0.011	0.0003	0.11
1184783	BV-564C	37	MILL CONTROL			PIPE LPA				1.512		65800		71300		38.0		0.92	
	BV-564C	45	MILL CONTROL			PIPE LPA				1.524		64400		70700		32.0		0.91	
	BV-564C	49	MILL CONTROL			PIPE LPA				1.526		64200		70500		41.0		0.91	
		Heat:	0.04	1.07	0.009	0.000	0.19	0.08	0.03	0.05	0.010	0.003	0.030	0.005	0.032	0.013	0.0000	0.11	
	BV-564C	37	Product:	0.02	1.09	0.012	0.003	0.18	0.09	0.04	0.05	0.008	0.004	0.026	0.002	0.026	0.010	0.0001	0.09
	BV-564C	45	Product:	0.03	1.11	0.011	0.002	0.19	0.10	0.04	0.05	0.008	0.004	0.029	0.002	0.028	0.011	0.0001	0.10

Steel Supplier: Nucor Hickman - P.O. Box 30 Armorel, AR 72310

TPA - Transverse Pipe Axis  
180° of Weld  
LPA - Longitudinal Pipe Axis  
90° of Weld  
TWA - Transverse Weld Axis  
FST - Full Section Testing  
FBN - Full Body Normalized  
Q&T - Quenched and Tempered  
SR - Stress Relieved  
form CRTR3001

Hydrostatic Test Pressure: 4130 PSI for 5 secs  
Minimum Weld Seam Heat Treatment Temperature: 1600 (F)

Melted and Manufactured in the USA  
Flattening Test Acceptable  
Ultrasonic Weld Line Inspection Acceptable  
UT Cal. to N10 ID/OD Notches  
TYPE: HFW

We certify that the product described above has been manufactured, sampled, inspected, and tested in accordance to the referenced specification. The product has been found to be in compliance with all requirements.

Richard Hamstra  
QA Coordinator

Friday, August 24, 2018, 6:52:48 AM

MILL ADDRESS - 5460 N. STATE HWY 137 | BLYTHEVILLE, AR 72315 | PHONE: (870) 763-7700



# CERTIFICATE OF TESTING

## IPSCO TUBULARS INC

### Macro Hardness

Page 1

Certificate Number:	336038-1
Friday, August 24, 2018, 6:52:31 AM	

Diameter: 4.500 in	Gage: 0.237 in	Grade: X52M	Mill Order No: 087174-01	Customer PO: s032188121
Specification: API Specification 5L Forty-Fifth Edition PSL - 2		Customer: MCJUNKIN CORPORATION		
Grade X52				
PCM Criteria is 0.25 Max.				
NACE MR0175 hardness only, 22HRC maximum				

Heat	Product ID	Test Type	Scale	MS	Location	PM	HAZ	WMZ	HAZ	PM
1184780	BV-564C 1	MILL CONTROL	Rockwell		MID	85.0	87.0	88.0	88.0	86.0
1184781	BV-564C 25	MILL CONTROL	Rockwell		MID	83.0	87.0	88.0	87.0	84.0
1184782	BV-564C 63	MILL CONTROL	Rockwell		MID	87.0	89.0	91.0	92.0	91.0
	BV-564C 73	MILL CONTROL	Rockwell		MID	89.0	91.0	92.0	90.0	89.0
1184783	BV-564C 37	MILL CONTROL	Rockwell		MID	87.0	91.0	91.0	92.0	87.0

Steel Supplier: Nucor Hickman - P.O. Box 30 Armored, AR 72310

MS = Micro Structure

☐ - Measurement Taken In Rc☐ - Measurement Taken In Rb

Melted and Manufactured in the USA

Flattening Test Acceptable

Ultrasonic Weld Line Inspection Acceptable

UT Cal. to N10 ID/OD Notches

TYPE: HFW

We certify that the product described above has been manufactured, sampled, inspected, and tested in accordance to the referenced specification. The product has been found to be in compliance with all requirements.

Richard Hamstra

QA Coordinator

Friday, August 24, 2018, 6:52:45 AM