

# MATERIAL TEST CERTIFICATE

**Dimension Standard:** ASME B16.9-01

**Material Standard:** ASTM A234-02a WPB NACE MR 0175-03

ITEM	DESCRIPTION	SIZE	QTY (PCS)	HEAT NO.	CHEMICAL COMPOSITION (%)											
					C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Nb	CE
1	LR 90 ELBOW SCHSTD WPB	14	30	8P48571K	0.210	0.280	0.400	0.013	0.014	0.020	0.090	0.050	0.050	0.004	0.001	0.30
2	LR 90 ELBOW SCHSTD WPB	16	20	8P32167R	0.230	0.250	0.380	0.009	0.016	0.030	0.050	0.030	0.080	0.003	0.005	0.31
3	LR 90 ELBOW SCHSTD WPB	18	10	8P35624A	0.190	0.240	0.460	0.007	0.013	0.050	0.070	0.040	0.070	0.006	0.004	0.30
4	LR 90 ELBOW SCHSTD WPB	20	10	46508	0.210	0.260	0.420	0.008	0.011	0.040	0.080	0.050	0.050	0.007	0.002	0.31
5	LR 90 ELBOW SCHSTD WPB	24	20	8P39508G	0.220	0.260	0.410	0.011	0.030	0.030	0.080	0.070	0.040	0.009	0.003	0.32
6	LR 45 ELBOW SCHSTD WPB	14	15	O215486	0.230	0.280	0.450	0.011	0.013	0.050	0.030	0.050	0.050	0.010	0.004	0.33
7	LR 45 ELBOW SCHSTD WPB	16	15	O023108	0.200	0.260	0.420	0.008	0.011	0.040	0.080	0.050	0.050	0.007	0.002	0.30
8	LR 45 ELBOW SCHSTD WPB	18	10	O124530	0.230	0.250	0.430	0.009	0.015	0.040	0.060	0.040	0.080	0.004	0.003	0.33
9	LR 45 ELBOW SCHSTD WPB	20	10	8P41016G	0.240	0.250	0.410	0.011	0.030	0.030	0.080	0.070	0.040	0.009	0.003	0.34
10	LR 45 ELBOW SCHSTD WPB	24	15	8P41724	0.220	0.230	0.450	0.011	0.013	0.050	0.030	0.050	0.050	0.010	0.004	0.32

## MECHANICAL PROPERTIES

ITEM	DESCRIPTION	SIZE	QTY (PCS)	HEAT NO.	TENSILE STRENGTH Min. 415 Mpa	YIELD STRENGTH Min. 240 Mpa	EL2IN (%) Min. 30%	HARDNESS (HB) 197 Max.	NOTES
2	LR 90 ELBOW SCHSTD WPB	16	20	8P32167R	489	376	35	< OR =197	
3	LR 90 ELBOW SCHSTD WPB	18	10	8P35624A	475	378	39	< OR =197	Cu+Ni+Cr+Mo = <OR =1.00%
4	LR 90 ELBOW SCHSTD WPB	20	10	46508	486	375	38	< OR =197	
5	LR 90 ELBOW SCHSTD WPB	24	20	8P39508G	462	376	35	< OR =197	Cr+Mo = < OR =0.32%
6	LR 45 ELBOW SCHSTD WPB	14	15	O215486	489	380	34	< OR =197	
7	LR 45 ELBOW SCHSTD WPB	16	15	O023108	459	363	33	< OR =197	
8	LR 45 ELBOW SCHSTD WPB	18	10	O124530	475	374	35	< OR =197	
9	LR 45 ELBOW SCHSTD WPB	20	10	8P41016G	450	378	36	< OR =197	
10	LR 45 ELBOW SCHSTD WPB	24	15	8P41724	486	372	31	< OR =197	

We hereby certify that the products described herein has been manufactured in compliance with ASTM A234 WPB and ANSI B16.9 and that the test results shown herein are correct.

