



Test Certificate

Form TC1: Revision 3: Date 7 Feb 2018

12400 Highway 43 North, Axis, Alabama 36505, US

Customer: NORTH SHORE STEEL CO, INC 1566 MILES STREET VENDOR 52155 HOUSTON TX 77015	Customer P.O.No.: 303965	Mill Order No. 41-544068-07	Shipping Manifest: AT267201	
	Product Description: ASTM A36(14)/A709(17)36/ASME SA36(17) AASHTO M270(15)36, 0.80-1.20 MN		Ship Date: 19 Jun 18 Cert Date: 19 Jun18	Cert No: 081668301 (Page 1 of 1)
	Size: 0.750 X 96.00 X 480.0 (IN)			

Tested Pieces:				Tensiles:					Charpy Impact Tests													
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB)				% Shear				Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr	
										1	2	3	Avg	1	2	3	Avg					
E8F160	C23	0.624 (DISCRT)	L	46	62		30	T														
E8F160	C25	0.747 (DISCRT)	L	47	62		33	T														
M8F160	C29	0.746 (DISCRT)	L	47	63		32	T														

Heat Id	Chemical Analysis																	ORGN
	C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	IIW		
E8F160	.05	1.15	.013	.002	.29	.026	.32	.12	.21	.04	.002	.005	.008	.0001	.0071	.32	USA	
M8F160-C29	.05	1.09	.013	.002	.29	.024	.31	.12	.19	.04	.004	.003	.008	.0001	.0073	.31	USA	

KILLED STEEL
 MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.
 $CEV (IIW) = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15$
 MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT
 100% MELTED AND MANUFACTURED IN THE USA.
 PRODUCTS SHIPPED:
 M8F160 C29 PCES: 2, LBS: 19602 E8F160 C27 PCES: 1, LBS: 9801
 E8F160 C26 PCES: 1, LBS: 9801

(P) Cust Part #:	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION	<u>Justin Ward</u> SENIOR METALLURGIST - PRODUCT
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