



# MATERIAL CERTIFICATION

# NIAGARA

SPECIALTY METALS

12600 Clarence Center Road  
Akron, NY 14001  
716-542-5552  
716-542-5555  
Email: nsm@nsm-ny.com

**NJSB TAG NO. 585**

**Date of shipment:** 12/01/2020

**Production Order:** 129954

**Grade:** 440-C ESR

**Description:** 440-C ESR HRA DESCALED SHEARED SHEET  
.140/.156 x 22/25" RW x 36.000" Ex.  
Heat# N00952

### Chemistry Analysis

<b>NSM Heat Number:</b> N00952		<b>Hardness:</b> <input type="text"/>	
<b>Carbon:</b> <input type="text" value="1.010"/>	<b>Manganese:</b> <input type="text" value="0.800"/>	<b>Phosphorus:</b> <input type="text" value="0.017"/>	<b>Copper:</b> <input type="text"/>
<b>Silicon:</b> <input type="text" value="0.210"/>	<b>Chromium:</b> <input type="text" value="16.600"/>	<b>Vanadium:</b> <input type="text"/>	<b>Niobium:</b> <input type="text"/>
<b>Cobalt:</b> <input type="text"/>	<b>Molybdenum:</b> <input type="text" value="0.530"/>	<b>Nickel:</b> <input type="text"/>	<b>Nitrogen:</b> <input type="text"/>
<b>Sulphur:</b> <input type="text"/>	<b>Tungsten:</b> <input type="text"/>	<b>Titanium:</b> <input type="text"/>	<b>Aluminum:</b> <input type="text"/>
<b>Carbon:</b> <input type="text" value="1.010"/>	<b>Manganese:</b> <input type="text" value="0.800"/>	<b>Phosphorus:</b> <input type="text" value="0.017"/>	<b>Copper:</b> <input type="text" value="0.080"/>
<b>Silicon:</b> <input type="text" value="0.210"/>	<b>Chromium:</b> <input type="text" value="16.600"/>	<b>Vanadium:</b> <input type="text" value="0.070"/>	<b>Niobium:</b> <input type="text" value="0.010"/>
<b>Cobalt:</b> <input type="text"/>	<b>Molybdenum:</b> <input type="text" value="0.530"/>	<b>Nickel:</b> <input type="text" value="0.180"/>	<b>Nitrogen:</b> <input type="text" value="0.038"/>
<b>Sulphur:</b> <input type="text"/>	<b>Tungsten:</b> <input type="text"/>	<b>Titanium:</b> <input type="text"/>	<b>Aluminum:</b> <input type="text"/>

### Remarks

Chemistry as per ASTM A-276, ASTM F899-12b  
BHN HARDNESS = 179  
Country of origin: USA  
Material received date: October 22, 2020  
Original mill heat no: G27779

Federal ID #: 16-1179936

Robert Shabala

We provide material that is free from mercury contamination and radiation at the time of shipment. No weld repair is done. We are compliant with EU directive 2002/95/EC (ROHS), REACH, EN 10204 2004 3.1 and DFARS 252.225.7001,7002,7008,7009. Material is melted and manufactured in North America.