

2601 S. County Road 700 East  
Columbia City, Indiana 46725  
(260) 625-8100 (260) 625-8950 FAX

**Quality Steel 100% EAF Melted and Manufactured in the USA** Attn: Receiving  
ISO 9001:2015 and ABS Certified  
CMTR complies with EN 10204 3.1.

| GENERAL INFORMATION  | SPECIFICATIONS   | SHIPMENT DETAILS   |                |         |          |         |         |          |           |        |   |            |  |  |
|--|--|--|----------------|---------|----------|---------|---------|----------|-----------|--------|---|------------|--|--|
| <b>Product</b> Wide Flange Beam<br><b>Size</b> W12X87<br>W310X129<br><b>Heat Number</b> A219971<br><b>Condition(s)</b> As-Rolled<br>Fine Grained<br>Fully Killed<br>No Weld Repair | <b>Standards</b><br>» ASTM A992/A992M - 20<br>ASTM A6/A6M - 21<br>ASTM A572/A572M - 21<br>ASTM A709/A709M - 21<br>AASHTO M270M/M270 - 20<br>CSA G40.21-13<br>ASTM A36/A36M - 19<br><small>*SDI-MULTI meets the requirements of ASTM A992, A572-50, A709-50, A529-50, A36 and A709-36; AASHTO M270-50 and M270-36; CSA 300W, 345W and 350W.</small> | <b>Grades*</b><br>A992 / A992M<br>A572 gr50/gr345<br>A709 gr50/gr345<br>M270 gr345/gr50<br>50WM/345WM<br>A36 / A36M<br>BOL # 0000745601 - 10440.00 lbs   |                |         |          |         |         |          |           |        |   |            |  |  |
|  |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Bundle / ASN #</th> <th>Length</th> <th>pcs</th> <th>Cust PO</th> <th>Job/Ref</th> <th>Part/Ref</th> </tr> </thead> <tbody> <tr> <td>023205590</td> <td>60' 0"</td> <td>2</td> <td>4500540490</td> <td></td> <td></td> </tr> </tbody> </table> | Bundle / ASN # | Length  | pcs      | Cust PO | Job/Ref | Part/Ref | 023205590 | 60' 0" | 2 | 4500540490 |  |  |
| Bundle / ASN #   | Length   | pcs  | Cust PO        | Job/Ref | Part/Ref |         |         |          |           |        |   |            |  |  |
| 023205590  | 60' 0"   | 2  | 4500540490     |         |          |         |         |          |           |        |   |            |  |  |

**CHEMICAL ANALYSIS** (weight percent)

| C   | Mn   | P    | S    | Si  | Cu  | Ni  | Cr  | Mo  | Sn   | V    | Nb/Cb | Al   | N     | B     | *CE1 | *CE2 | *CE3 | *I   | Analysis Type |
|-----|------|------|------|-----|-----|-----|-----|-----|------|------|-------|------|-------|-------|------|------|------|------|---------------|
| .08 | 1.32 | .010 | .019 | .23 | .25 | .11 | .16 | .04 | .012 | .044 | <.001 | .003 | .0111 | .0004 | .37  | .411 | .33  | 5.39 | Heat          |

| MECHANICAL TESTING |                        |                          |                  |                       | CHARPY IMPACT TESTS (available only when specified at time of order) |       |                 |            |            |         |         |
|--------------------|------------------------|--------------------------|------------------|-----------------------|--|-------|-----------------|------------|------------|---------|---------|
| Test               | Yield (fy)<br>Strength | Tensile (fu)<br>Strength | fy / fu<br>ratio | % Elong.<br>{8" gage} | Test   | Temp  | Absorbed Energy |            |            | Average | Minimum |
|                    | ksi / MPa              | ksi / MPa                |                  |                       |  | F / C | Specimen 1      | Specimen 2 | Specimen 3 |         |         |
| 1                  | 57 / 395               | 73 / 505                 | .78              | 27                    | 1  |       |                 |            |            |         |         |
| 2                  | 58 / 400               | 75 / 515                 | .78              | 26                    | 2  |       |                 |            |            |         |         |
| 3                  |                        |                          |                  |                       | 3  |       |                 |            |            |         |         |
| 4                  |                        |                          |                  |                       | 4  |       |                 |            |            |         |         |
|                    |                        |                          |                  |                       | 5  |       |                 |            |            |         |         |
|                    |                        |                          |                  |                       | 6  |       |                 |            |            |         |         |
|                    |                        |                          |                  |                       | 7  |       |                 |            |            |         |         |

**Notes:** \*Calculated Chemistry Values: Carbon Equivalents (C1, C2, C3, PC), Corrosion Index (I) {ASTM G101}= 26.01(Cu)+3.88(Ni)+1.20(Cr)+1.49(Si)+17.29(P)-7.29(Cu)(Ni)-9.10(Ni)(P)-33.39(Cu<sup>2</sup>)  
 CE1 {IIW}=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE2 {AWS}=C+(Mn+Si)/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE3 {CET}= C + (Mn/6) + (Si/24) + (Cr/5) + (Ni/40) +(Mo/4) + (V/14)

I hereby certify that the material described herein has been made to the applicable specification by the electric arc furnace/continuous cast process and tested in accordance with the requirements of American Bureau of Shipping Rules with satisfactory results.

Signed: Valoree Varick

I hereby certify that the content of this report are accurate and correct. All tests and operations performed by this material manufacturer are in compliance with the requirements of the material specifications and applicable purchaser designated requirements.

Signed: Valoree Varick 

Quality Manager

**ABS CERTIFICATION**

State of Indiana, County of Whitley Sworn to and subscribed before me

this \_\_\_\_\_ day of \_\_\_\_\_

Signed: \_\_\_\_\_ My commission expires: \_\_\_\_\_

Notary Public

|                |            |
|----------------|------------|
| Bill of Lading | 573603     |
| Customer No.   | 1377       |
| Customer P.O.  | 4500544749 |

**NUCOR - YAMATO STEEL COMPANY**  
P.O. Box 1228; Blytheville AR 72316

**CERTIFIED MILL TEST REPORT**  
**100% Melted and Manufactured in the U.S.A.**  
All Shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice

Date: 2023-02-05 10:49 AM

ASTM A992/A992M-20 A572/A572M GR50-18  
ASTM A709/A709M-18 GR50 (345)  
ASTM A709/A709M-18 GR50S (345S)  
CSA G40.21-13 50WM (345WM)  
ASTM A6/A6M-19

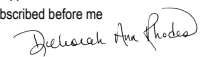
| Item | Item Description                               | QTY | Heat   | Mechanical Properties  |                              |                                |                 |                    |                              |     |   |    | Chemical Properties |     |      |      |      |     |     |     |     |     |     |      |     |     |     |  |
|------|--|-----|--------|------------------------|------------------------------|--------------------------------|-----------------|--------------------|------------------------------|-----|---|----|---------------------|-----|------|------|------|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|--|
|      |  |     |        | Yield to Tensile Ratio | Yield Strength<br>KSI<br>MPA | Tensile Strength<br>KSI<br>MPA | ELONG<br>%<br>% | Charpy Impact      |                              |     | C | Mn | P                   | S   | Si   | Cu   | Ni   | Cr  | Mo  | V   | Cb  | CE  | Sn  | Pcm  | Cl  |     |     |  |
|      |  |     |        |                        |                              |                                |                 | Temp<br>° F<br>° C | Impact Energy<br>Ft-Lbf<br>J | Loc |   |    |                     |     |      |      |      |     |     |     |     |     |     |      |     |     |     |  |
| 1    | W12X087.0<br>60 ft 0 in<br>W310X129<br>( 18 m) | 3   | 571993 | 0.79<br>0.79           | 56<br>55<br>385<br>381       | 71<br>70<br>490<br>485         | 27<br>28        |                    |                              |     |   |    |                     | .07 | 1.00 | .017 | .017 | .20 | .29 | .22 | .16 | .05 | .00 | .018 | .31 | .01 | .16 |  |

**ELONGATION BASED ON 8.00 INCH GAUGE LENGTH**  
**Pcm=**  $C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B(B=Approx .0005)$   
**Corrosion Index**  $26.01(\%Cu)+3.88(\%Ni)+1.2(\%Cr)+1.49(\%Si)+17.28(\%P)-7.29(\%Cu)(\%Ni)-9.10(\%Ni)(\%P)-33.39(\%Cu)^2$   
ISO 9001-2015 certified (Registration # 0985-07).  
Meets mechanical lab independence requirements of EN10204 type 3.1.  
The Charpy machine striker geometry used by Nucor-Yamato Steel is the 8 mm (0.315")striker (KV) per ASTM A370 Section 22.1.2 and ISO 148-1 Section 7.3.

**CARBON EQUIVALENT CE**  $=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$   
Mercury has not been used in the direct manufacturing of this material  
Boron has not been intentionally added and will not exceed 0.0008%  
This material was produced in accordance with the Nucor-Yamato Steel Quality Manual.

I hereby certify that the contents of this report are accurate and correct. All test results and operations performed by this material manufacturer are in compliance with the requirements of the material specifications, and when designated by the purchaser, meet the applicable specifications.

  
Gary Pennell  
Chief Metallurgist

State of Arkansas  
County of Mississippi  
Sworn to and subscribed before me  
  
On 2023-02-05  
My commission expires on 07 / 17 / 2023

