ACL00530 (Aceros de grado)

# CERTIFIED MILL TEST REPORT

| | |
|---|---|
| DATE | 7/25/11 |
| INVOICE NO. | 424179 |
| BILL OF LADING | 32383 |
| CUSTOMER NO. | 0829 |
| CUSTOMER P.O. | 4500079733 |

**NUCOR-YAMATO STEEL CO.**
P.O. BOX 1228 ● BLYTHEVILLE,AR 72316

100% MELTED AND MANUFACTURED IN U.S.A.
All shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice.

SHIP TO
FORTACERO C/O GULF STREAM MARINE
PORT OF BROWNSVILLE

BROWNSVILLE, TX

SPECIFICATIONS
ASTM A992/A992M-[illegible] [illegible]572/A572M GR50-07
ASTM A709/A709M-0[illegible] [illegible]50 (345)
ASTM A709/A709M-09 [illegible]50S (345S)
ASTM A6/A6M-09

SOLD TO
FORTACERO S.A. DE CV
BLVD CARLOS SALINAS DE GORTARI
KM 8.8
APODACA, N.L. MEXICO 66600

| ITEM # | ITEM DESCRIPTION | QTY | HEAT # | MECHANICAL PROPERTIES: YIELD TO TENSILE RATIO | YIELD STRENGTH PSI / MPa | TENSILE STRENGTH PSI / MPa | ELONG % / % | CHARPY IMPACT TEMP °F / °C | IMPACT ENERGY FT-LBS / JOULES | | | CHEMICAL PROPERTIES: C | Mn | P | S | Si | Cu | Ni | Cr | Mo / Sn | [illegible] / Pcm | Cb | CE / CI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | W24 - 84.0 | 13 | 369537 | .77 | 54000 | 70000 | 26 | | | | | .07 | 1.01 | .017 | .028 | .24 | .28 | .10 | .11 | . | .00 | .019 | .30 |
| | 40' | | | .77 | 54000 | 70000 | 27 | | | | | | | | | | | | | [illegible] | .15 | | |
| | W610 x125.0 | | | | 372 | 483 | 26 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 372 | 483 | 27 | | | | | | | | | | | | | | | | |
| 2 | W24 - 84.0 | 5 | 369538 | .77 | 54000 | 70000 | 27 | | | | | .07 | 1.03 | .014 | .027 | .25 | .27 | .09 | .08 | .03 | .00 | .020 | .28 |
| | 40' | | | .77 | 53000 | 69000 | 26 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x125.0 | | | | 372 | 483 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 476 | 26 | | | | | | | | | | | | | | | | |
| 3 | W24 - 84.0 | 64 | 369542 | .77 | 54000 | 70000 | 27 | | | | | .07 | 1.00 | .018 | .028 | .25 | .27 | .10 | .11 | .03 | .00 | .019 | .29 |
| | 40' | | | .79 | 55000 | 70000 | 27 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x125.0 | | | | 372 | 483 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 379 | 483 | 27 | | | | | | | | | | | | | | | | |
| 4 | W24 - 84.0 | 44 | 369543 | .80 | 55000 | 69000 | 27 | | | | | .07 | 1.00 | .015 | .027 | .20 | .26 | .10 | .08 | .03 | .00 | .018 | [illegible] |
| | 40' | | | .77 | 53000 | 69000 | 26 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x125.0 | | | | 379 | 476 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 476 | 26 | | | | | | | | | | | | | | | | |
| 5 | W24 -104.0 | 4 | 369449 | .77 | 55000 | 71000 | 25 | | | | | .08 | 1.02 | .015 | .025 | .24 | .28 | .10 | .11 | .03 | .00 | .020 | .31 |
| | 40' | | | .77 | 55000 | 71000 | 26 | | | | | | | | | | | | | .01 | .16 | | |
| | W610 x155.0 | | | | 379 | 490 | 25 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 379 | 490 | 26 | | | | | | | | | | | | | | | | |
| 6 | W24 -104.0 | 1 | 369464 | .81 | 57000 | 70000 | 26 | | | | | .07 | .90 | .013 | .020 | .22 | .27 | .09 | .08 | .03 | .00 | .015 | [illegible] |
| | 40' | | | .79 | 54000 | 68000 | 28 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x155.0 | | | | 393 | 483 | 26 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 372 | 469 | 28 | | | | | | | | | | | | | | | | |
| 7 | W24 -104.0 | 6 | 369467 | .76 | 52000 | 68000 | 27 | | | | | .07 | .92 | .013 | .019 | .23 | .28 | .10 | .08 | .03 | .00 | .019 | [illegible] |
| | 40' | | | .80 | 56000 | 70000 | 27 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x155.0 | | | | 359 | 469 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 386 | 483 | 27 | | | | | | | | | | | | | | | | |
| 8 | W24 -104.0 | 14 | 369469 | .78 | 54000 | 69000 | 27 | | | | | .07 | .90 | .014 | .023 | .22 | .28 | .09 | .08 | .02 | .00 | .019 | [illegible] |
| | 40' | | | .78 | 53000 | 68000 | 26 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x155.0 | | | | 372 | 476 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 469 | 26 | | | | | | | | | | | | | | | | |
| 9 | W24 -104.0 | 19 | 369473 | .76 | 52000 | 68000 | 27 | | | | | .07 | .93 | .015 | .023 | .22 | .25 | .08 | .09 | .02 | .00 | .016 | .27 |
| | 40' | | | .77 | 53000 | 69000 | 27 | | | | | | | | | | | | | .01 | .15 | | |
| | W610 x155.0 | | | | 359 | 469 | 27 | | | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 476 | 27 | | | | | | | | | | | | | | | | |

Pcm = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5 B B=Appm x .0005

CARBON EQUIVALENT: CE = CE(IIW) = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15

Mercury has not been used in the direct manufacturing of this material.

Corrosion Index: CI=26.01(%Cu)+3.88(%Ni)+1.20(%Cr)+1.49(%Si)+17.28(%P)-7.29(%Cu)(%Ni)-9.10(%Ni)(%P)-33.39(%Cu)$^2$

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

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 listed in the Specifications Block above.

Guy Lemmell

QUALITY ASSURANCE

**CUSTOMER COPY**

STATE OF ARKANSAS COUNTY OF MISSISSIPPI
SWORN TO AND SUBSCRIBED BEFORE ME THIS 25 Day of 07/11

Charlene Wallis NOTARY PUBLIC

MY COMMISSION EXPIRES 10/21/2013

CHARLENE WALLIS MY Comm. Exp. NOTARY PUBLIC 10-21-2013 MISSISSIPPI CO. ARKANSAS

ACL009707

# CERTIFIED MILL TEST REPORT

| | |
|---|---|
| DATE | 7/30/11 |
| INVOICE NO. | 425638 |
| BILL OF LADING | 33164 |
| CUSTOMER NO. | 0829 |
| CUSTOMER P.O. | 4500079733 |

## NUCOR-YAMATO STEEL CO.

P.O. BOX 1228 ● BLYTHEVILLE,AR 72316

100% MELTED AND MANUFACTURED IN U.S.A.
All shapes produced by Nucor-Yamato Steel are cast and rolled to a fully killed and fine grain practice.

SHIP TO
FORTACERO C/O GULF STREAM MARINE
PORT OF BROWNSVILLE

BROWNSVILLE, TX

SPECIFICATIONS
ASTM A992/A992M-06a A572/A572M GR50-0
ASTM A709/A709M-09 GR50 (345)
ASTM A709/A709M-09 GR50S (345S)
ASTM A6/A6M-09

SOLD TO
FORTACERO S.A. DE CV
BLVD CARLOS SALINAS DE GORTARI
KM 8.8
APODACA, N.L. MEXICO 66600

| ITEM # | ITEM DESCRIPTION | QTY | HEAT # | MECHANICAL PROPERTIES: YIELD TO TENSILE RATIO | YIELD STRENGTH PSI / MPa | TENSILE STRENGTH PSI / MPa | ELONG % / % | CHARPY IMPACT TEMP °F / °C | IMPACT ENERGY FT-LBS / JOULES | CHEMICAL PROPERTIES: C | Mn | P | S | Si | Cu | Ni | Cr | Mo / Sn | V / Pcm | Cb | CE / CI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | W16 - 31.0 | 5 | 369939 | .81 | 55000 | 68000 | 26 | | | .08 | .75 | .014 | .028 | .21 | .28 | .11 | .10 | .03 | .00 | .008 | .27 |
| | 40' | | | .79 | 53000 | 67000 | 25 | | | | | | | | | | | .01 | .15 | | |
| | W410 x 46.1 | | | | 379 | 469 | 26 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 462 | 25 | | | | | | | | | | | | | | |
| 2 | W21 -101.0 | 1 | 363590 | .79 | 58000 | 73000 | 28 | | | .08 | 1.11 | .012 | .027 | .23 | .30 | .10 | .09 | .03 | .00 | .019 | .32 |
| | 40' | | | .81 | 59000 | 73000 | 29 | | | | | | | | | | | .01 | .17 | | |
| | W530 x150.0 | | | | 400 | 503 | 28 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 407 | 503 | 29 | | | | | | | | | | | | | | |
| 3 | W21 -101.0 | 25 | 369863 | .78 | 58000 | 74000 | 30 | | | .08 | 1.10 | .020 | .024 | .25 | .28 | .09 | .12 | .03 | .00 | .021 | .31 |
| | 40' | | | .78 | 57000 | 73000 | 28 | | | | | | | | | | | .01 | .17 | | |
| | W530 x150.0 | | | | 400 | 510 | 30 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 393 | 503 | 28 | | | | | | | | | | | | | | |
| 4 | W21 -101.0 | 8 | 369874 | .81 | 60000 | 74000 | 28 | | | .08 | 1.25 | .022 | .023 | .25 | .31 | .12 | .13 | .03 | .02 | [illegible] | [illegible] |
| | 40' | | | .78 | 57000 | 73000 | 26 | | | | | | | | | | | .01 | .18 | | |
| | W530 x150.0 | | | | 414 | 510 | 28 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 393 | 503 | 26 | | | | | | | | | | | | | | |
| 5 | W21 -101.0 | 49 | 369877 | .78 | 58000 | 74000 | 27 | | | .08 | 1.25 | .015 | .022 | .29 | .30 | .09 | .11 | .03 | .02 | .008 | [illegible] |
| | 40' | | | .77 | 57000 | 74000 | 27 | | | | | | | | | | | .01 | .18 | | |
| | W530 x150.0 | | | | 400 | 510 | 27 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 393 | 510 | 27 | | | | | | | | | | | | | | |
| 6 | W21 -101.0 | 7 | 369879 | .80 | 55000 | 69000 | 29 | | | .07 | 1.10 | .015 | .025 | .23 | .29 | .10 | .09 | .03 | .00 | .019 | [illegible] |
| | 40' | | | .79 | 54000 | 68000 | 29 | | | | | | | | | | | .01 | .16 | | |
| | W530 x150.0 | | | | 379 | 476 | 29 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 372 | 469 | 29 | | | | | | | | | | | | | | |
| 7 | W21 -101.0 | 3 | 369881 | .79 | 55000 | 70000 | 28 | | | .08 | 1.10 | .017 | .022 | .24 | .31 | .09 | .10 | .03 | .00 | .019 | [illegible] |
| | 40' | | | .77 | 55000 | 71000 | 28 | | | | | | | | | | | .02 | .17 | | |
| | W530 x150.0 | | | | 379 | 483 | 28 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 379 | 490 | 28 | | | | | | | | | | | | | | |
| 8 | W24 - 55.0 | 1 | 370225 | .74 | 52000 | 70000 | 26 | | | .07 | 1.00 | .015 | .024 | .23 | .29 | .11 | .10 | .04 | .03 | .001 | [illegible] |
| | 40' | | | .76 | 53000 | 70000 | 26 | | | | | | | | | | | .01 | .16 | | |
| | W610 x 82.0 | | | | 359 | 483 | 26 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 365 | 483 | 26 | | | | | | | | | | | | | | |
| 9 | W24 - 55.0 | 6 | 370229 | .76 | 55000 | 72000 | 26 | | | .08 | 1.00 | .019 | .021 | .23 | .31 | .11 | .11 | .03 | .03 | .001 | .31 |
| | 40' | | | .76 | 54000 | 71000 | 27 | | | | | | | | | | | .01 | .17 | | |
| | W610 x 82.0 | | | | 379 | 496 | 26 | | | | | | | | | | | | | | |
| | 12.192 M | | | | 372 | 490 | 27 | | | | | | | | | | | | | | |

$Pcm = C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{60} + \frac{Cr}{20} + \frac{Mo}{15} + \frac{V}{10} + 5B$ B=Approx.0005

CARBON EQUIVALENT: $CE = CE(IIW) = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$

Mercury has not been used in the direct manufacturing of this material.

Corrosion Index: $CI = 26.01(\%Cu) + 3.88(\%Ni) + 1.20(\%Cr) + 1.49(\%Si) + 17.28(\%P) - 7.29(\%Cu)(\%Ni) - 9.10(\%Ni)(\%P) - 33.39(\%Cu)^2$

ELONGATION BASED ON 8.00 INCH GAUGE LENGTH

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 listed in the Specifications Block above.

Gary Lennell

QUALITY ASSURANCE

**CUSTOMER COPY**

STATE OF ARKANSAS COUNTY OF MISSISSIPPI
SWORN TO AND SUBSCRIBED BEFORE ME THIS 1 Day of 08/11

Charlene Wallis NOTARY PUBLIC

MY COMMISSION EXPIRES 10/21/2013

CHARLENE WALLIS MY Comm. Exp. NOTARY PUBLIC 10-21-2013 MISSISSIPPI CO. ARKANSAS