

Product Type: HOBART 24
 Classification: E7024, E7024-1
 Specifications: AWS A5.1/A5.1M:2004
 Diameter Tested:
 Date Tested: 02/11/08
 Date Generated: 1/27/2010

This is to certify that the product named above and supplied on the referenced order number is of the same classification, manufacturing process, and material requirements as the material which was used for the test that was concluded on the date shown, the results of which are shown below. All tests required by the specifications shown for classification were performed at that time and the material tested met all requirements. It was manufactured and supplied by the Quality System Program of Hobart Brothers, which meets the requirements of ISO9000, ANSI/AWS A5.01, and other specification and Military requirements, as applicable.

Test Settings

| Amps | Volts | Size | Polarity | Preheat | Interpass | Travel Speed |
|------|------------------|------------|----------|---------------|---------------|--------------|
| 250 | 34 | 3/16X18 in | AC | 300 F (149 C) | 350 F (177 C) | + 1 in/min |
| 240 | 30 | 3/16X18 in | DCEN | 250 F (121 C) | 350 F (177 C) | + 1 in/min |
| 330 | 37 - 36 RD38 | 1/4X18 in | DCEN | 250 F (121 C) | 350 F (177 C) | + 1 in/min |
| 340 | 37 - 36 RD38 | 1/4X18 in | AC | 350 F (177 C) | 250 F (121 C) | + 1 in/min |
| 205 | 25 | 5/32X14 in | AC | 250 F (121 C) | 325 F (163 C) | + 1 in/min |
| 200 | 31 1/2 - 30 RD38 | 5/32X14 in | DCEN | 250 F (121 C) | 300 F (149 C) | + 1 in/min |

Mechanical Properties - Tensile

| Size / Polarity | Ref. No. | Testing Conditions | Ult. Tensile Strength | Yield Strength | Elong.% in 2" |
|-------------------|----------|--------------------|-----------------------|-----------------------|---------------|
| 3/16X18 in / AC | pa7061 | Aged 48 Hrs 220F | 74,000 psi (508 Mpa) | 65,000 psi (447 Mpa) | 29 |
| 3/16X18 in / DCEN | PA7062 | Aged 48 Hrs 220F | 74,000 psi (513 Mpa) | 68,000 psi (470 Mpa) | 27 |
| 1/4X18 in / DCEN | pa7112 | Aged 48 Hrs 220F | 74,000 psi (513 Mpa) | 66,000 psi (454 Mpa) | 26 |
| 1/4X18 in / AC | pa7113 | Aged 48 Hrs 220F | 73,000 psi (505 Mpa) | 66,000 psi (459 Mpa) | 26 |
| 5/32X14 in / AC | pa7119 | Aged 48 Hrs 220F | 81,000 psi (556 Mpa) | 73,000 psi (503 Mpa) | 23 |
| 5/32X14 in / DCEN | PA7120 | Aged 48 Hrs 220F | 80,000 psi (553 Mpa) | 71,000 psi (492 Mpa) | 25 |

Mechanical Properties - Impact

| Size / Polarity | Ref. No. | Testing Conditions | Test Temp. | Individuals | Average | Type |
|-------------------|----------|--------------------|-------------|----------------|------------------|----------------|
| 3/16X18 in / AC | PA7061 | As Welded | 0 F (-18 C) | 56,53,56 ft.lb | 55 ft.lb (75 J) | Charpy-V-Notch |
| 3/16X18 in / DCEN | PA7062 | As Welded | 0 F (-18 C) | 64,70,66 ft.lb | 67 ft.lb (90 J) | Charpy-V-Notch |
| 1/4X18 in / DCEN | PA7112 | As Welded | 0 F (-18 C) | 56,57,71 ft.lb | 61 ft.lb (83 J) | Charpy-V-Notch |
| 1/4X18 in / AC | PA7113 | As Welded | 0 F (-18 C) | 60,59,54 ft.lb | 58 ft.lb (78 J) | Charpy-V-Notch |
| 5/32X14 in / AC | PA7119 | As Welded | 0 F (-18 C) | 40,44,42 ft.lb | 42 ft.lb (57 J) | Charpy-V-Notch |
| 5/32X14 in / DCEN | PA7120 | As Welded | 0 F (-18 C) | 44,42,39 ft.lb | 42 ft.lb (56 J) | Charpy-V-Notch |

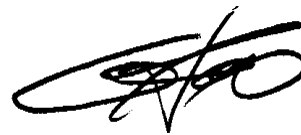
| Size / Polarity | Ref. No. | Radiograph | Fillet Weld Test | | | |
|-------------------|----------|------------|-----------------------|------------|------------|------------|
| | | | Horizontal | Vertical | Overhead | Vertical |
| 3/16X18 in / AC | PA7061 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |
| 3/16X18 in / DCEN | PA7062 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |
| 1/4X18 in / DCEN | PA7112 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |
| 1/4X18 in / AC | PA7113 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |
| 5/32X14 in / AC | PA7119 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |
| 5/32X14 in / DCEN | PA7194 | Conforms | Horizontal : Conforms | Vertical : | Overhead : | Vertical : |

Chemical Analysis

| Size / Polarity / Ref. No. | C | Mn | P | S | Si | Cu | Cr | V | Ni | Mo | Al | Ti | Nb | Co | B | W | Sn | Fe | Sb | N | Mg | Zn | Be |
|----------------------------|------|------|-------|-------|------|----|------|------|------|------|----|----|----|----|---|---|----|----|----|---|----|----|----|
| 3/16X18 in / AC / PA7061 | 0.05 | 0.78 | 0.009 | 0.014 | 0.39 | | 0.06 | 0.02 | 0.08 | 0.02 | | | | | | | | | | | | | |
| 1/4X18 in / DCEN / PA7112 | 0.04 | 0.65 | 0.008 | 0.013 | 0.33 | | 0.05 | 0.02 | 0.07 | 0.01 | | | | | | | | | | | | | |
| 5/32X14 in / AC / PA7119 | 0.06 | 0.81 | 0.008 | 0.014 | 0.44 | | 0.06 | 0.02 | 0.08 | 0.02 | | | | | | | | | | | | | |



Steve Knostman , Quality Engineer



Guo Hao , R & D Engineer

The information Certification and Limited Warranty - Data for the above supplied product are those obtained when welded and tested in accordance with the above specification. All tests for the above classification were satisfied. Other tests and procedures may produce different results. Hobart Brothers produces welding consumables under continuing quality assurance programs audited and approved by the American Bureau of Shipping ("ABS").