

## TEST REPORT

AAMA/WDMA/CSA 101/I.S.2/A440-11

REPORT No.: 1391.02-106-11

RENDERED TO: GAMCO CORPORATION  
Flushing, New York

PRODUCT TYPE: Aluminum fixed window

SERIES / MODEL: W250C

| Test                                       | Summary of Results                                   |
|--|--|
| Primary Product Designator                 | Class CW – PG30 1524 x 1524 (60 x 60)-FW             |
| Design Pressure                            | ±1440 Pa (±30.08 psf)                                |
| Air Infiltration                           | <0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> ) |
| Water Penetration Resistance Test Pressure | 220 Pa (4.60 psf)                                    |

**Test Completion Date:** 11/20/2017

Reference must be made to Report No. 1391.02-106-11, dated 1/8/2018 for complete test specimen description and detailed test results.

**CLIENT INFORMATION:** GAMCO CORPORATION  
131-10 Maple Avenue  
Flushing, New York 11355

**TEST LABORATORY:** Molimo, LLC  
1410 Eden Road  
York, Pennsylvania 17402  
717-900-6034

**PROJECT SUMMARY:**

**PRODUCT TYPE:** Aluminum fixed window

**SERIES/MODEL:** W250C

**PROJECT SUMMARY:**

Molimo, LLC was contracted to perform testing on the above referenced product. The results are tested values and were secured by using the designated test methods. A summary of the rating achieved for the specimen tested are shown in the table below.

| SPECIMEN | SPECIFICATION     | PRODUCT RATING                           |
|----------|-------------------|--|
| 1        | 101/I.S.2/A440-11 | Class CW – PG30 1524 x 1524 (60 x 60)-FW |

**PROJECT DETAILS:**

**Test Dates:** 11/20/2017 – 11/21/2017

**Test Record Retention End Date:** 11/21/2021

**Test Location:** Crystal Window and Door Systems, Ltd. test facility in Flushing, New York. In accordance with AAMA 205.01, calibration of manufacturers' test equipment is documented under Report No. 1391.01-106-11.

**Test Specimen Source:** The test specimen was provided by the client. Representative samples of the test specimen will be retained by Molimo for a minimum of four years from the test completion date.

**Drawing Reference:** The test specimen drawings were supplied by the client. The test specimen construction was verified by Molimo and was found to be representative of the product tested. Test specimen drawings are located in Appendix D of this report.

**WITNESSES:**

The following representatives witnessed all or part of the testing.

| Name           | Company                |
|----------------|------------------------|
| Qi Zhang       | Gamco Corporation      |
| Charles Ng     | Crystal Window & Doors |
| Matt Hollinger | Molimo, LLC            |

**TEST METHOD:**

AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

**TEST SPECIMEN DESCRIPTION:****PRODUCT SIZES:**

Test Specimen #1:

Overall Size: 1524 mm x 1524 mm (60" x 60")

Overall Area: 2.32 m<sup>2</sup> (25 ft<sup>2</sup>)

**FRAME CONSTRUCTION:**

Material: Thermally improved, poured and debridged, extruded aluminum

Corner Details: Miter-cut, sealed with sealant and secured with two interior aluminum corner keys with one lanced stake per key per member end

**REINFORCEMENT:** No reinforcement was utilized.

**GLAZING DETAILS:** *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen can be made.*

Glass Type: 1" IG

Glazing Construction: (exterior to interior)

1/4" thick annealed glass

1/2" spacer

1/4" thick annealed glass

Glazing Method: Set from the interior against a glazing compound and secured with snap-in aluminum glazing beads with a gasket against the glass.

Glazing Bite: 1/2"

Daylight Opening:

Exterior Sash: 1407 mm x 1407 mm (55-3/8" x 55-3/8")

**TEST SPECIMEN DESCRIPTION:** (Continued)

**WEATHERSTRIPPING:** No weatherstripping was utilized.

**DRAINAGE:** Exterior weeps

| Description                                   | Quantity | Location                    |
|---|----------|-----------------------------|
| 1-1/4" wide by 5/16" high weepslot with cover | 2        | Sill face, 5" from each end |

**INSTALLATION:** The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/2" shim space. The exterior perimeter of the specimen was sealed with sealant.

| Location              | Anchor Description          | Anchor Spacing   |
|-----------------------|-----------------------------|--|
| Head, sill, and jambs | #8 x 2-1/2" pan head screws | 5" from corners and spaced 16" on center, through the frame into the wood buck |

**TEST RESULTS:** The temperature during testing was 9 °C (48 °F).

**AIR LEAKAGE TESTING:** (per ASTM E 283)

| Test                            | Results   | Allowable   |
|---------------------------------|---|---|
| Infiltration @ 75 Pa (1.57 psf) | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 1.5 L/s/m <sup>2</sup><br>(0.30 cfm/ft <sup>2</sup> ) |

*Note 2: The specimen tested meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

**WATER PENETRATION TESTING:** (per ASTM E 547)

| Test                 | Results | Allowable  |
|----------------------|---------|------------|
| 220 Pa<br>(4.60 psf) | Pass    | No Leakage |

*Note 3: Water Penetration testing was performed without an insect screen.*

**TEST RESULTS:** (Continued)

**UNIFORM LOAD TESTING:** (per ASTM E 330)

| Design Pressure Test  | Results                              | Allowable                        |
|---|--------------------------------------|----------------------------------|
| Deflection measured<br>at the left jamb between anchors<br>+1440 Pa (+30.08 psf)<br>-1440 Pa (-30.08 psf) | <0.3 mm (<0.01")<br><0.3 mm (<0.01") | 2.5 mm (0.10")<br>2.5 mm (0.10") |

| Structural Test  | Results                              | Allowable                        |
|--|--------------------------------------|----------------------------------|
| Permanent Set measured<br>at the left jamb between anchors<br>+2160 Pa (+45.11 psf)<br>-2160 Pa (-45.11 psf) | <0.3 mm (<0.01")<br><0.3 mm (<0.01") | 1.3 mm (0.05")<br>1.3 mm (0.05") |

*Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation and is recorded for information purposes only.*

*Note 5: All loads were held for 10 seconds.*

*Note 6: Tape and film were not used to seal against air leakage.*

**SECONDARY TESTING:**

| Test  | Results | Allowable |
|---|---------|-----------|
| FORCED ENTRY RESISTANCE<br>per ASTM F 588<br>Type: D<br>Grade: 10 | Pass    | No Entry  |

**General Note:** All testing was performed in accordance with reference test methods.

A copy of this report, detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. This test report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written permission of Molimo, LLC.

For MOLIMO, LLC:



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Matthew Hollinger  
Senior Project Engineer



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Michael D. Stremmel, P.E.  
Senior Project Engineer

MDS:jld

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Alteration Addendum (1)
- Appendix-B: Air Seal Location (1)
- Appendix-C: Photograph (1)
- Appendix-D: Drawings (4)

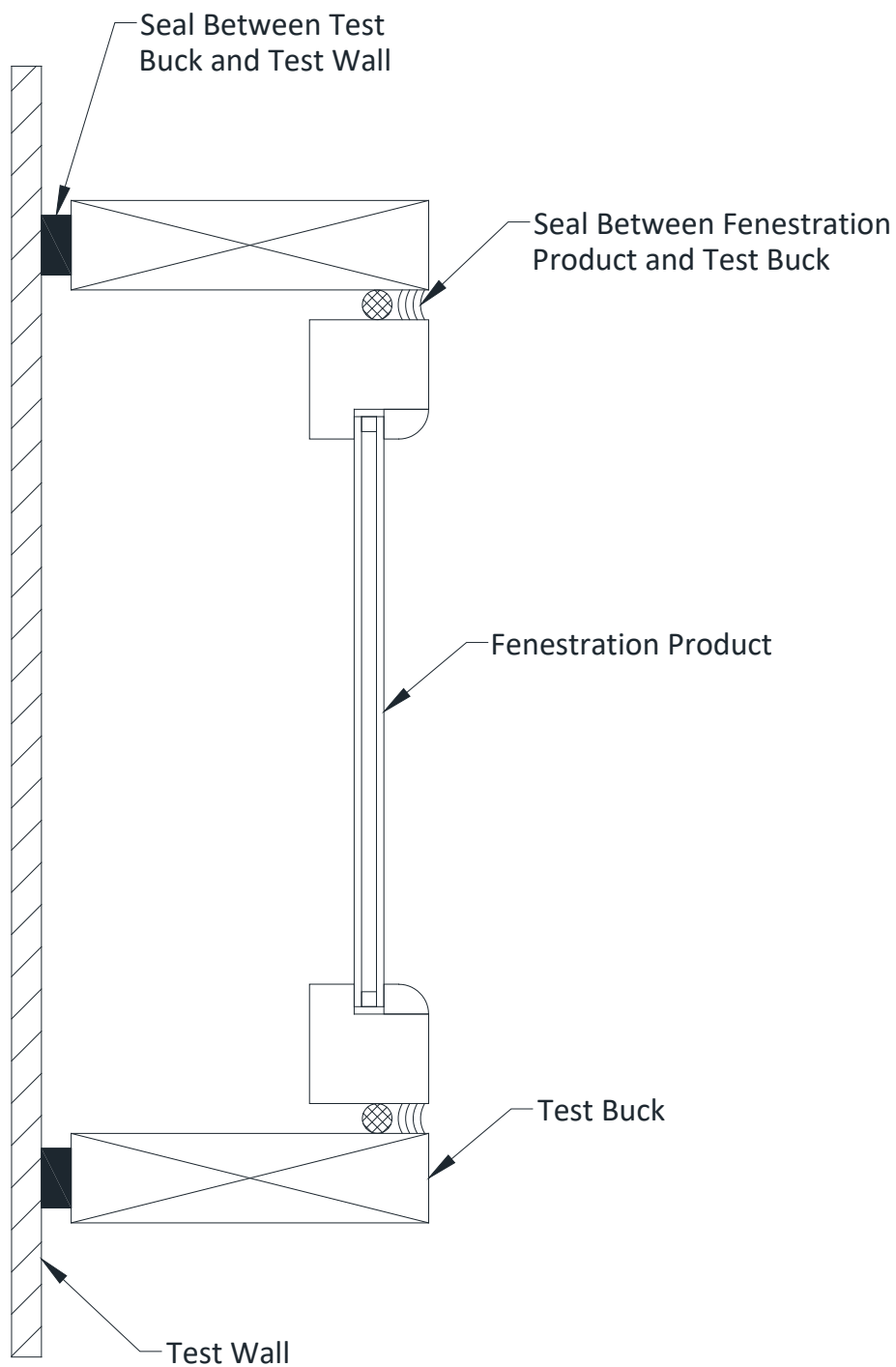
## **Appendix A**

### **Alteration Addendum**

No alterations were performed.

## Appendix B

### Air Seal Location





## Appendix C

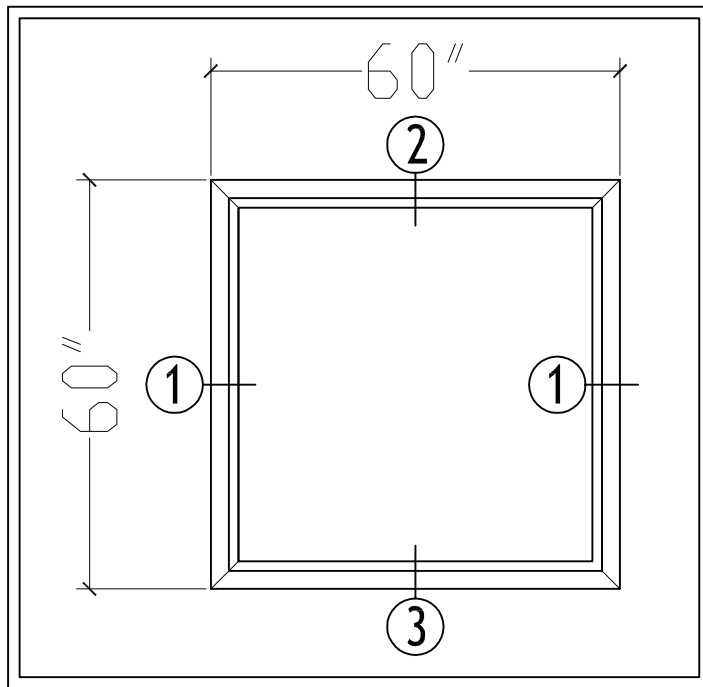
### Photograph



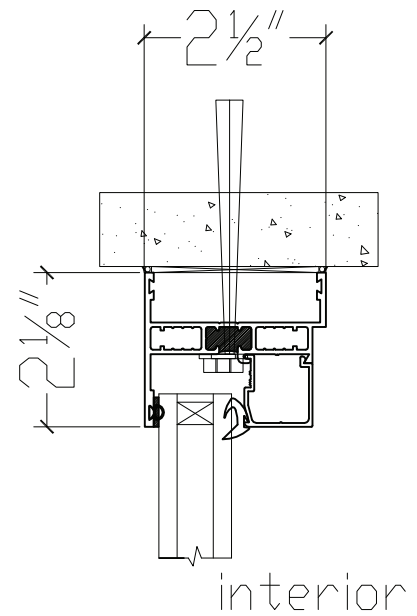
Photo 1  
Series W250C Fixed Window

## **Appendix D**

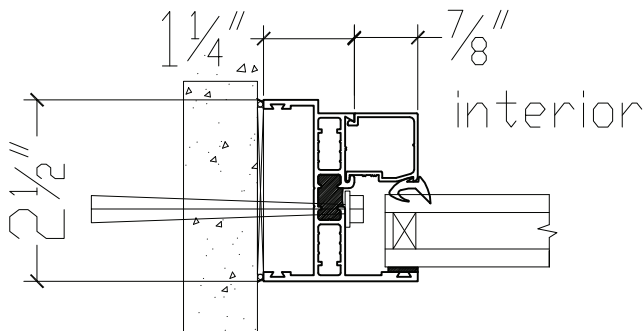
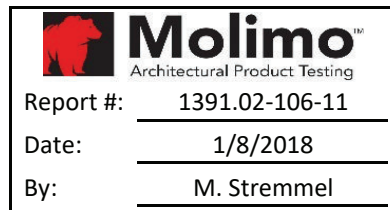
### **Drawings**



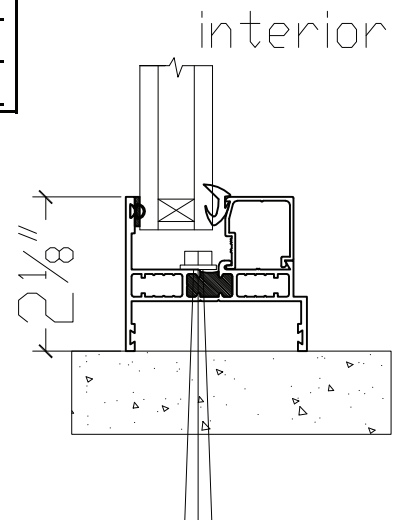
## W250C FIXED LITE




**2 HEAD**



**1 JAMB**



**3 SILL**

|                      |                          |   |           |         |                    |   |
|----------------------|--------------------------|---|-----------|---------|--------------------|---|
| SHEET #<br><b>1E</b> | Drawn by: <b>C. CHAN</b> | Customer<br><br>Project : <b>W250C<br/>FIXED WINDOW</b> | Revisions |         |                    |  <b>GAMCO CORPORATION</b><br>MANUFACTURERS OF FENESTRATION PRODUCTS<br>131-10 MAPLE AVE. FLUSHING, N.Y. 11355<br>TEL: (718)359-8833 FAX: (718)359-8661<br>info@gamcocorp.com www.gamcocorp.com |
|                      | Checked by:              |   | No.       | Date    | Description        |   |
|                      | Date: <b>4-7-16</b>      |   | 01        | 5-20-16 | UPDATED DIMENSIONS |   |
|                      | Scale: <b>3/4"=1'-0"</b> |   |           |         |                    |   |





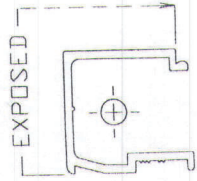
STRUCTURAL STRECKING IS EXPECTED

UNIFORM PAINT COVERAGE NOT EXPECTED IN THIS AREA

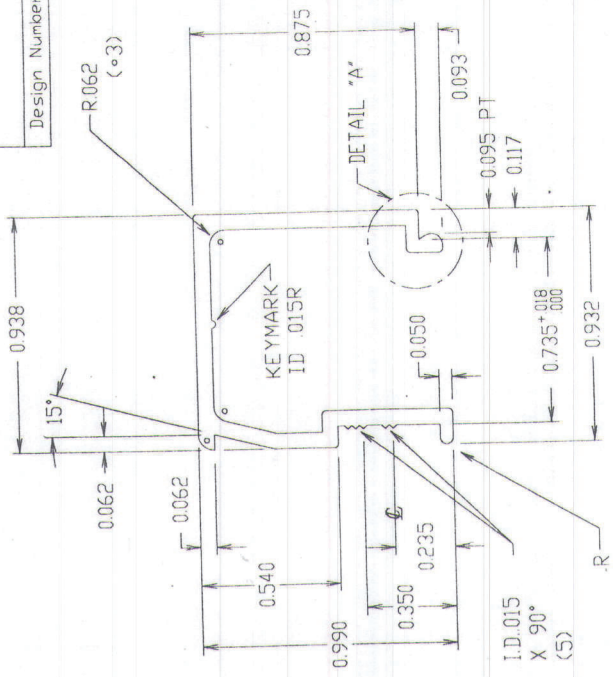
ACTUAL SIZE

- MATES WITH:
- H-02649 925001
  - H-02650 925006
  - H-02651 925005
  - H-02652 925007
  - H-02653 925003
  - H-02654 925004
  - H-02655 925002

DETAIL "A"  
SCALE 8:1



REFER FOR ASSEMBLY TO H-02650






**Molimo**  
Architectural Product Testing

Report #: 1391.02-106-11

Date: 1/8/2018

By: M. Stremmel



**KEYMARK CORPORATION**  
FONDA, NY TEL. (518) 853-3421  
LAKELAND, FL TEL. (863) 858-5500  
WWW.KEYMARKCORP.COM

Revisions

| Syn. | Date     |
|------|----------|
| A    | 09-26-88 |

|                                      |                               |  |                   |
|--------------------------------------|-------------------------------|--|-------------------|
| Unspecified Wall Thickness: .062     |                               | Break Ext. Corners .015 Radius or as Noted |                   |
| Customer KEYMARK CORPORATION         |                               | Customer's Part Number 925003              |                   |
| Job Name 925/930 PROJECTED WINDOW    |                               | Scale 2:1                                  |                   |
| Part Title GLAZING BEAD FOR 1" GLASS |                               | Date 07-08-88                              |                   |
| Alloy 6063                           | Area (in <sup>2</sup> ) 0.188 | Finish Perimeter (in) 1.851                | Drawn F.A.S.      |
| Temper T-5                           | Wt (lbs) 0.226                | Total Perimeter (in) 6.179                 | Checked S.J.S. 05 |
| Cavity Size                          | Circle Size (in) 1.3          | Exterior Perimeter (in) 6.179              |                   |

|                              |                        |                        |          |           |
|------------------------------|------------------------|------------------------|----------|-----------|
| Estimated For Reference Only | I <sub>x</sub> = 0.020 | I <sub>y</sub> = 0.026 | Alotline | Type 00   |
|                              | S <sub>x</sub> = 0.033 | S <sub>y</sub> = 0.055 | Crimp    | Factor 27 |

Solid ☐ Semi-hollow ☐ Class: Hollow ☐ Class:

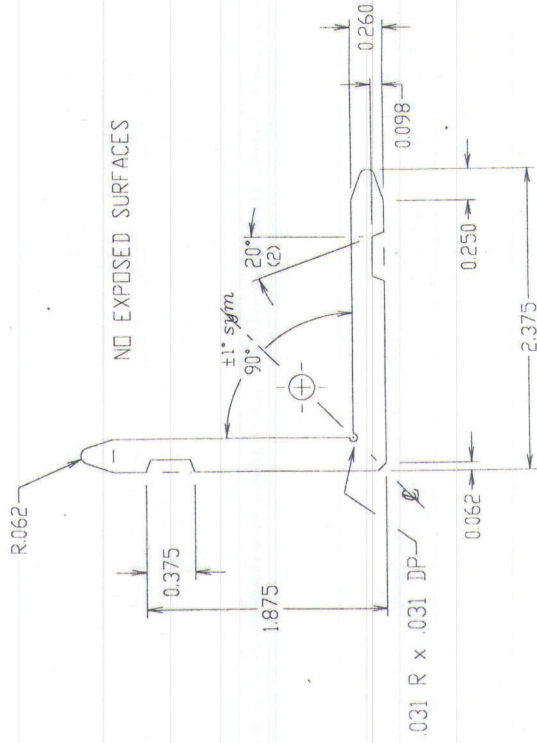
Dr-cr ☐ Dr-r ☐ An ☐ Mill ☐ Pc ☐

This drawing is the property of Keymark Corporation and may not be redistributed without written consent. Customer signature on this print indicates approval of design and dimensions as shown, and customer agrees to accept all legal responsibilities for patent and or trade mark infringement related to this shape and hold (save) Keymark harmless from any claims, suits, actions or demands arising there from.

STRUCTURAL STREAKING  
IS EXPECTED

S-13020  
Die Number  
Temp. Number  
Design Number

STANDARD COMMERCIAL TOLERANCES FOR EXTRUDED  
PRODUCTS APPLY UNLESS SPECIFIED OTHERWISE

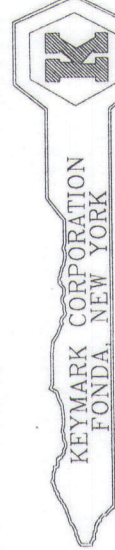


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KEYMARK CORPORATION  
FONDA, NEW YORK

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|             |                                      |      |     |                    |                       |
|-------------|--------------------------------------|------|-----|--------------------|-----------------------|
| Unspecified | Mail Thickness                       | .260 | 015 | Break Ext. Corners | Radius or as Noted    |
| Customer    | KEYMARK CORPORATION                  |      |     | Customer's         | Part Number           |
| Job Name    | 915/922/923/925/930 PROJECTED WINDOW |      |     | 925000             |                       |
| Part Title  | CORNER KEY                           |      |     | Scale              | 1:1                   |
| Revisions   |                                      |      |     | Date               | 07-28-88              |
| Syn.        |                                      |      |     | Est. Area          | 1.052 in <sup>2</sup> |
|             |                                      |      |     | Est. Wt./ft.       | 1.262 Lbs             |
|             |                                      |      |     | Est. Perimeter     | 9.490 in              |
|             |                                      |      |     | Cavity Size        | Circle Size 3.2 in    |
|             |                                      |      |     | Exterior Perimeter | 9.490 in              |
|             |                                      |      |     | Checked            | S.J.S. 03             |

|           |                        |                        |         |        |    |
|-----------|------------------------|------------------------|---------|--------|----|
| Estimated | I <sub>x</sub> = 0.505 | I <sub>y</sub> = 0.505 | Alodine | Type   | 00 |
| Reference | S <sub>x</sub> = 0.294 | S <sub>y</sub> = 0.294 | Crimp   | Factor | 8  |
| Unit      |                        |                        |         |        |    |

Syn. ☐ Solid ☐ Semi-hollow ☐ Class ☐ Hollow ☐ Class