

## A QUAKER HOUGHTON COMPANY

## Certificate of Conformance SIFCO Process Solution

The solution identified below has been tested under controlled conditions and found to meet SIFCO Applied Surface Concepts specifications and Quality Assurance standards. This product does not contain, nor has it been contaminated with metallic mercury or mercury compounds. SIFCO ASC, LLC is a mercury free facility.

This product is free from all foreign materials that could result in foreign object damage to the equipment or process.

## Capability of Meeting Specifications

Product Code

When properly selected and applied, this solution will meet LGPS1102. This solution meets the requirements for: MIL-STD-865E, AMS2451/4E, ASTMF519-18, BAC5854M, DPS9.89P & PS 13113F.

2023

Product Code	2023
Product Description	Cadmium No-Bake
Batch Number	2302169
Test Requirement	Actual Value
Specimen Type	1a1 Notch Bars per ASTMF519  Lot # 79H Sensitivity Pass Date: 08/23/2022  Notched Specimens per BAC5144  Lot # 164439-1-1 P Sensitivity Pass Date: 11/01/2021  2a rings per ASTMF519  Lot # 93117 Sensitivity Pass Date: 01/06/2022
РH	10.87 @ 20°C
Specific Gravity	1.166 @ 20°C
Metal Content	99.61 g/l
Hydrogen Embrittlement	CONFORMS – Lab Report #23-77902
200 Hour Fracture Test	Pass AMS2451/4, PS13113 and BAC5854
168 Hour Fracture Test	Pass DPS 9.89
Solution Appearance	Clear
Solution Manufacturing Date	March 2, 2023
HE Certification Pass Date	March 15, 2023
Recommended Shelf Life	MIL-STD-865E and AMS2451/4 Expires: March 2, 2027
	BAC 5854, DPS 9.89 & PS 13113 Retest before: March 15, 2024
Quality Technician	03/16/2023 Date

F 7.5.1-2 Revision 6 7/22/2013



Phone: 940-648-5828 OmegaResearchInc.com

"Specialists in Embrittlement Testing"

Date:

March 15 2023

To:

SIFCO OH

5708 Schaaf Road

INDEPENDENCE, OH 44131

**Test Report:** 

23-77902

Reference P.O.:

PO00009524

Test:

NOTCH TENSILE HYDROGEN EMBRITTLEMENT

Sample Identification:

SAMPLES A, B, C, D:

Job / SN:

SOLUTION 2023 BATCH 2302169

**Process:** 

**BRUSH CADMIUM PLATE** 

**PO Specification:** 

MIL-STD-865E, AMS 2451/4E, PS13113F

**Test Method Scope:** 

ASTM F519-18

**Receive Date:** 

Mar 06, 2023

**Test Start Date:** 

Mar 06, 2023

Test End Date:

Mar 15, 2023

Sample Lot:

79H

Mfg.: GREEN

Notched Ultimate Tensile Load:

9245

Units: LBS

Test Load:

6934

Units LBS

Results:

Conforms

The above identified notched tensile samples were subjected to a 200-hour sustained load test at a load of 75% of the Notch Ultimate Tensile Load (NUTL). Results above are applicable to submitted purchase order specifications. Additionally, results apply to the samples as received. Variances as applicable are noted at bottom right of report:

Report Revision:

**Revision Description:** 

1

1 - Original

TEX

APPROVED

Testing performed under direct supervision of approved signatories per QM-001 ISO 17025 Quality Manual PARA 7.8.

Jeremy Riley

Deborah Smith

Clint Williams

Ops Mgr

Quality Mgr

Engr Tech

Decision Rule: Per previously communicated and agreed, data has been supplied/reported as observed without accounting for measurement uncertainty. Report invalid unless color seal present. Page 1 of 1



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Date:

March 15 2023

To:

SIFCO OH

5708 Schaaf Road

INDEPENDENCE, OH 44131

**Test Report:** 

23-77902

Reference P.O.:

PO00009524

S/N 0180P, 0181P

Test:

NOTCH TENSILE HYDROGEN EMBRITTLEMENT

Sample Identification:

SAMPLES A, B:

Job / SN:

**SOLUTION 2023 BATCH 2302169** 

Process:

**BRUSH CADMIUM PLATE 1A2** 

**PO Specification:** 

BAC 5854M, BAC 5144

**Test Method Scope:** 

Notched Ultimate Tensile Load:

ASTM F519-18

Receive Date:

Mar 06, 2023

**Test Start Date:** 

Mar 06, 2023

Test End Date:

Mar 15, 2023

Sample Lot:

P

15860

Test Load:

11895

Mfg.: ONAMAC

Units: LBS
Units LBS

\_ ----

AS 18 S 180

Results:

Conforms

The above identified notched tensile samples were subjected to a 200-hour sustained load test at a load of 75% of the Notch Ultimate Tensile Load (NUTL). Results above are applicable to submitted purchase order specifications. Additionally, results apply to the samples as received. Variances as applicable are noted at bottom right of report:

Report Revision:

**Revision Description:** 

I - Original

One sample was metallographically cross-sectioned longitudinally across the notch and evaluated at 80-100X magnification for complete plating coverage of the notch. Conforms. Photo attachedSamples Loaded on individual frames.

On

Testing performed under direct supervision of approved signatories per QM-001 ISO 17025 Quality Manual PARA 7.8.

Jeremy Riley Ops Mgr Deborah Smith Quality Mgr Clint Williams
Engr Tech

DS 3/16/27

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"Specialists in Embrittlement Testing"

Date:

March 15 2023

To:

SIFCO OH

5708 Schaaf Road

INDEPENDENCE, OH 44131

**Test Report:** 

23-77902

Reference P.O.:

PO00009524

S/N 0181P

Test:

**PHOTOMICROGRAPH** 

Sample Identification:

SAMPLE A:

**Process:** 

**BRUSH CADMIUM PLATE 1A2** 

PO Specification:

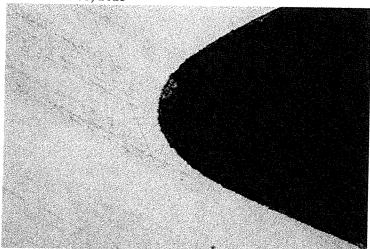
BAC 5854M, BAC 5144

**Test Method Scope:** 

ASTM E3-11(2017)

Receive Date:

Mar 06, 2023



Report Revision:

**Revision Description:** 

1 - Original

Testing performed under direct supervision of approved signatories per QM-001 ISO 17025 Quality Manual PARA 7.8.

Jeremy Riley Deborah Smith

Clint Williams

Ops Mgr

AL CARRENT CONTRACTOR

Quality Mgr

**Engr Tech** 

Decision Rule: Per previously communicated and agreed, data has been supplied/reported as observed without accounting for measurement uncertainty.

Report invalid unless color seal present. Page 1 of 1