

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

When properly selected and applied, this solution will meet LGPS1102. This solution meets the requirements for: MIL-STD-865E, AMS2451/4D, ASTMB117-18, ASTM F519-18, BAC5854M, DPS9.89P & PS 13113F.

Product Code	2023
Product Description	Cadmium No-Bake
Batch Number	2202166
Test Requirement	Actual Value
Specimen Type	1a1 Notch Bars per ASTM F519 Lot # 82G Sensitivity Pass Date: 11/30/2021 Notched Specimens per BAC5144 Lot # 164439 Sensitivity Pass Date: 11/01/2021 2a rings per ASTM F519 Lot # 93115 Sensitivity Pass Date: 04/10/2021
pH	10.87 pH
Specific Gravity	1.161 Specific Gravity
Metal Content	99.79 Metal Content
Hydrogen Embrittlement	CONFORMS – Lab Reports #22-7352, 22-73523
200 Hour Fracture Test	Pass AMS2451/4, PS13113 and BAC5854
168 Hour Fracture Test	Pass DPS 9.89
250 Hour Salt Spray Test	ASTMB117 and AMS2451/4 Lab Report# 2203-02-0133
Solution Appearance	Clear
Solution Manufacturing Date	February 25, 2022
HE Certification Pass Date	March 16, 2022
Recommended Shelf Life	MIL-STD-865E and AMS2451/4 Expires: February 25, 2026 BAC 5854, DPS 9.89 & PS 13113 Retest before: March 16, 2023



Quality Technician

04/08/2022

Date

"Specialists in Embrittlement Testing"

Date: March 16 2022

To: **SIFCO OH**
5708 Schaaf Road
INDEPENDENCE, OH 44131

Test Report: 22-73522

Reference P.O.: PO00008405
S/N 1,2,3,4

Test: **NOTCH TENSILE HYDROGEN EMBRITTLEMENT**

Sample Identification: SAMPLES A, B, C, D:

Job / SN: SOLUTION CODE 2023, BATCH #2202166

Process: BRUSH CADMIUM PLATE

PO Specification: MIL-STD-865E, AMS 2451/4D, PS13113F

Test Method Scope: ASTM F519-18

Receive Date: Mar 07, 2022

Test Start Date: Mar 07, 2022

Test End Date: Mar 16, 2022

Sample Lot: 82G **Mfg.:** GREEN

Notched Ultimate Tensile Load: 9244 **Units:** LBS

Test Load: 6933 **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: 1 **Revision Description:** 1 - Original

APPROVED
OMA 3/21/2027



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

Jeremy Riley **Joshua Cox** **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

"Specialists in Embrittlement Testing"

Date: March 16 2022
To: **SIFCO OH**
5708 Schaaf Road
INDEPENDENCE, OH 44131
Test Report: 22-73523
Reference P.O.: PO00008406
S/N 0054P, 0057P
Test: **NOTCH TENSILE HYDROGEN EMBRITTLEMENT**
Sample Identification: SAMPLES A, B:
Job / SN: SOLUTION CODE 2023, BATCH 2202166
Process: BRUSH CADMIUM PLATE 1A2
PO Specification: BAC 5854M, BAC 5144
Test Method Scope: ASTM F519-18
Receive Date: Mar 07, 2022
Test Start Date: Mar 07, 2022
Test End Date: Mar 16, 2022
Sample Lot: P **Mfg.:** ONAMAC
Notched Ultimate Tensile Load: 15860 **Units: LBS**
Test Load: 11895 **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: 1 **Revision Description:** 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 attached. Samples Loaded on individual frames.

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

Jeremy Riley **Joshua Cox** **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



APPROVED
SMA 3/21/2022

"Specialists in Embrittlement Testing"

Date: March 16 2022
To: **SIFCO OH**
5708 Schaaf Road
INDEPENDENCE, OH 44131
Test Report: 22-73523
Reference P.O.: PO00008406
S/N 0057P
Test: **PHOTOMICROGRAPH**
Sample Identification: SAMPLE A:
Job / SN: SOLUTION CODE 2023, BATCH 2202166
Process: BRUSH CADMIUM PLATE 1A2
PO Specification: BAC 5854M, BAC 5144
Test Method Scope: ASTM E3-11(2017)
Receive Date: Mar 07, 2022



Report Revision:
1



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

Jeremy Riley **Joshua Cox** **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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CERTIFIED TEST REPORT

Sifeo ASC
5708 E Schaaf Rd
Independence OH 44131

Job No.: 2203-02-0133
Date: 3-17-2022
Cust. PO#: PO00008404

Description: 1 sample Solution Code: 2023 Batch# 2202166

Material: Steel with Cadmium Plating with 3002 Conversion Coating

Spec: AMS 2451/4D

TEST RESULTS

250 Hour Salt Spray (ASTM B117-19)

Cust. Reqs.: No evidence of corrosion on significant surfaces after 250 hours ±1.

Test panel showed no corrosion products on significant surface.

Note: Panels exposed at 15 to 30° from vertical.

(See attached photo)

The above **conforms** to requirements listed.

APPROVED

SMA yls/2022

Authorized Agent



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This report represents Tensile Testing interpretation of the results obtained from the test and is not to be construed as a guarantee or warranty of the condition of the materials tested. The results reported relate only to the items tested. Tensile Testing shall not be held liable for misinterpretation of conditions, loss, damage, injury, or death arising from or attributable to delay preceding a test or subsequent to performance of a test. Unless otherwise noted, all testing reported herein was performed at room temperature. All work was performed in accordance with TTML QA Manual Rev E, dated 01/01/2019.



CERTIFIED TEST REPORT

Job No.: 2203-02-0133

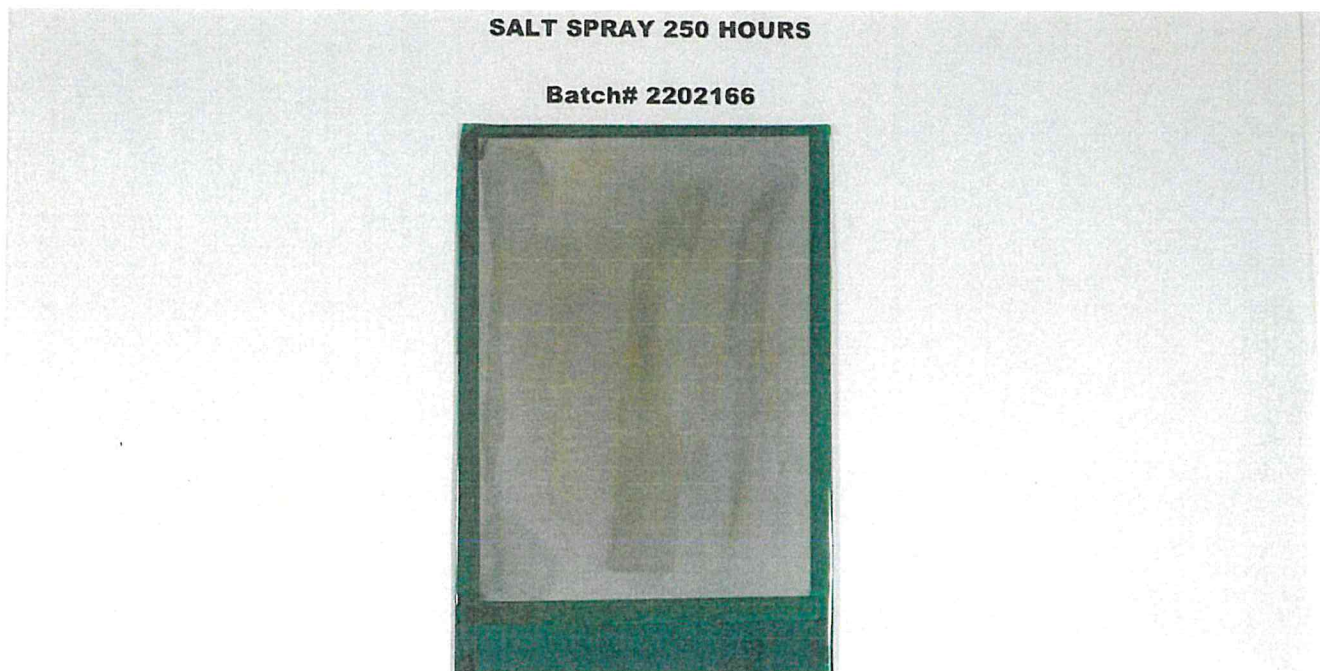


Figure No.: 1

CERTIFIED TEST REPORT

Job No.: 2203-02-0133



Figure No.: 2