

## 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

This solution meets the requirements for: MIL-STD-865E, AMS2451/4D, ASTM F519-18, ASTM B117-18, BAC5854L, DPS9.89P, DPM5815-3 & PS13113F.

Product Code	<b>5070</b>
Product Description	<b>Cadmium LHE®</b>
Batch Number	<b>2001090</b>
Test Requirement	Actual Value
Specimen Type	1a1 Notch Bars per ASTM F519 Lot # 92606 Sensitivity Pass Date: 10/28/2019 1a2 Notch Bars per ASTM F519 Lot # 89988T Sensitivity Pass Date: 12/28/2018 2a rings per ASTM F519 Lot # 88224 Sensitivity Pass Date: 07/19/2018
pH	7.57 @ 20°C
Specific Gravity	1.256 @ 20°C
Metal Content	101.17 g/l
Hydrogen Embrittlement	CONFORMS
200 Hour Fracture Test	Pass AMS2451/4, MIL-STD-865, PS13113 and BAC5854 Report Number 20-64243
168 Hour Fracture Test	Pass DPS 9.89
250 Hour Corrosion Test	AMS 2451/4 and ASTM B117 / Lab Report #2001-14-0727
Solution Appearance	Yellow
Solution Manufacturing Date	January 9, 2020
HE Certification Pass Date	January 22, 2020
Date of Expiration	MIL-STD-865 and AMS2451/4 January 9, 2030 BAC 5854, DPS 9.89 and PS 13113 Expires: January 22, 2021



Quality Systems Engineer

02/10/2020

Date

"Specialists in Embrittlement Testing"

**Date:** January 22 2020  
**To:** **SIFCO OH**  
5708 Schaaf Road  
INDEPENDENCE, OH 44131

**Test Report:** 20-64243  
**Reference P.O.:** PO00006069  
*S/N 1,2,3,4*  
**Test:** **NOTCH TENSILE HYDROGEN EMBRITTLEMENT**  
**Sample Identification:** SAMPLES A, B, C, D:  
**Job / SN:** BATCH 2001090 SOLUTION CODE 5070  
**Process:** BRUSH CADMIUM PLATE  
**PO Specification:** MIL-STD-865E, AMS 2451/4D, PS13113F

**Test Method Scope:** ASTM F519-18  
**Receive Date:** Jan 13, 2020  
**Test Start Date:** Jan 13, 2020  
**Test End Date:** Jan 22, 2020

**Sample Lot:** 17F **Mfg.:** GREEN  
**Notched Ultimate Tensile Load:** 8913 **Units:** LBS  
**Test Load:** 6685 **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



Testing performed under direct supervision of approved signatories per QM-001 ISO 17025 Quality Manual PARA 7.8.2

**Joshua Cox** **Jeremy Riley** **Craig Willan**  
**Lab Mgr** **Ops Mgr** **Chief Engr**

Report invalid unless color seal present. Page 1 of 1

**APPROVED**

*8MB 1/24/2020*

"Specialists in Embrittlement Testing"

**Date:** January 22 2020  
**To:** **SIFCO OH**  
5708 Schaaf Road  
INDEPENDENCE, OH 44131

**Test Report:** 20-64243  
**Reference P.O.:** PO00006069  
S/N 659-660  
**Test:** **NOTCH TENSILE HYDROGEN EMBRITTLEMENT**  
**Sample Identification:** SAMPLES A, B:  
**Job / SN:** BATCH 2001090 SOLUTION CODE 5070  
**Process:** BRUSH CADMIUM PLATE 1A2  
**PO Specification:** BAC 5854L

**Test Method Scope:** ASTM F519-18  
**Receive Date:** Jan 13, 2020  
**Test Start Date:** Jan 13, 2020  
**Test End Date:** Jan 22, 2020

**Sample Lot:** 91E **Mfg.:** GREEN  
**Notched Ultimate Tensile Load:** 15273 **Units:** LBS  
**Test Load:** 11455 **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



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SMB 1/24/2020



A DIVISION OF J.T. ADAMS CO., INC.

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CLEVELAND, OHIO 44125  
PHONE (216) 641-3290  
FAX (216) 641-1223  
www.tensile.com

CERTIFIED TEST REPORT

Sifco ASC  
5708 E Schaaf Rd  
Independence OH 44131

Job No.: 2001-14-0727  
Date: 1-29-2020  
Cust. PO#: PO00006068

Description: 1 sample Solution Code: 5070 Batch# 2001090

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.

The above **Conforms** to requirements listed.

  
Authorized Agent

**APPROVED**

8MB 02/10/2020



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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.