

# CALCOAST ANALYTICAL

## Materials Chemistry

Accredited by  
*National Institute of Standards & Technology*



Certified by  
*California Department of Health Services  
City of Los Angeles, Dept. of Building & Safety*

Mission Rubber Company  
P.O. Box 2349  
Corona, CA 91718-2349

Attn: Mr. Don Bowker

Ref: Lab File No. 0803-2A/O-95

### 1. SAMPLES:

Total of nine (9) sealing sleeves with clamps.

- A. Three (3) sets of 2" HeavyWeight No Hub Pipe Couplings. (C200HW)  
Sleeve Markings: MISSION ASTM C564 CSAB602 UPC® SBCCI 2" CAST IRON MADE IN U.S.A. Clamp Markings: UPC® CSAB70 MISSION U.S.A. ALL S.S 2" SBCCI BOCA
- B. Three (3) sets of 3" HeavyWeight No Hub Pipe Couplings. (C300HW)  
Sleeve Markings: MISSION ASTM C564 CSAB602 UPC® SBCCI 3" CAST IRON MADE IN U.S.A. Clamp Markings: UPC® CSAB70 MISSION U.S.A. ALL S.S. 3" SBCCI BOCA
- C. Three (3) sets of 4" HeavyWeight No Hub Pipe Couplings. (C400HW)  
Sleeve Markings: MISSION ASTM C564 CSAB602 UPC® SBCCI 4" CAST IRON MADE IN U.S.A. Clamp Markings: UPC® CSAB70 MISSION U.S.A. ALL S.S. 4" SBCCI BOCA

### 2. TESTS PERFORMED:

High and Low Temperature Exposure and Vibration Testing of Sealing Sleeves per paragraphs A-D of 5.5 Specifications of Factory Mutual Research Test 1680, January 1989.

---

COATINGS • BUILDING MATERIALS • HAZARDOUS WASTE  
SPECTROSCOPY • CHROMATOGRAPHY • MICROSCOPY

---

TELEPHONE (510) 652-2979  
FAX (510) 652-3085

P.O. BOX 8702 • EMERYVILLE, CA 94662  
4072 WATTS STREET • EMERYVILLE, CA 94608

**3. METHODS / PROCEDURES USED FOR TESTING:**

Sealing Sleeves per paragraphs A-D of 5.5 Specifications of Factory Mutual Research Test 1680, January 1989.

**A. High Temperature Exposure**

A nominal 3 inch coupling was installed between two (2) pieces of 11 inch long test pipe. The high temperature exposure consisted of 180°F oven-air exposure for a period of 45 days. After exposure, the assembly was allowed to cool to ambient air temperature. It was pneumatically pressurized to 15 psi, submerged in water and checked for leakage. The sealing sleeves that were removed from the housing assembly were squeezed together from two (2) opposite points and checked for cracking.

**B. Low Temperature Exposure**

A nominal 2 inch coupling was installed between two (2) pieces of 11 inch long test pipe. The low temperature exposure consisted of 0°F air exposure for 4 days. After the exposure, the assembly was submerged in a pail of antifreeze at 0°F and pneumatically pressurized to 15 psi and checked for leakage. The assembly was then allowed to come to ambient temperature and was then disassembled. The sealing sleeve was squeezed together from two (2) opposite points and checked for cracking.

**C. Vibration Test**

A nominal 4 inch coupling was assembled connecting two (2) 11 inch long test pipes with closed outer ends. The assembly was filled half-full with water, pressurized to 15 psi and subjected to 0.020 inch full stroke vibration at a frequency constantly varying between 18 and 37 Hertz for five (5) hours. At the end of the vibration test, the assembly was hydrostatistically pressurized to 15 psi for five (5) minutes and checked for leakage.

4. RESULTS:

A. High Temperature Exposure

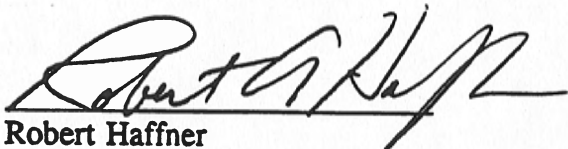
The 3 inch coupling exhibited no leakage when pneumatically pressurized to 15 psi and submerged in water. After the high temperature exposure test, the sealing sleeve was squeezed together from two (2) opposite points and exhibited no cracking.

B. Low Temperature Exposure

The 2 inch coupling exhibited no leakage when pneumatically pressurized to 15 psi and submerged in a pail of antifreeze at 0°F. After the low temperature exposure test, the sealing sleeve was squeezed together from two (2) opposite points and exhibited no cracking.

C. Vibration Test

The 4 inch coupling exhibited no leakage when hydrostatically pressurized to 15 psi after the termination of the vibration test.



Robert Haffner  
Chief Analytical Chemist

RH:as

ALL SAMPLES SUBMITTED FOR TESTING WILL BE HELD 30 DAYS FROM REPORT DATE AT WHICH TIME THEY WILL BE RETURNED TO CLIENT. CLIENT WILL BE RESPONSIBLE FOR ALL SHIPPING AND HANDLING CHARGES. SAMPLES WILL BE STORED UPON WRITTEN INSTRUCTIONS AND FEE ARRANGEMENTS.

This report was made at the request of and for the use only of the purchaser of said report. Any use of or dissemination of information contained herein or reference to Calcoast Labs Inc without prior written consent of Calcoast Labs Inc is strictly prohibited.

# CALCOAST ANALYTICAL-ITL

## Materials Chemistry and Lighting Science



Mission Rubber Company  
P.O. Box 1839  
Corona, CA 91718-1839

Attn: Mr. Don R. Bowker

Ref: Lab File # 1028-2A/D-93

Re: Salt Spray Test per Factory Mutual Corp.  
Requirements of Class Number 1680 Jan.  
1989

**1. SAMPLES:**

Two (2) sections of a cast iron pipe with three (3) C400 H.W., four (4) inch diameter couplings with each coupling containing four (4) hose clamps.

**2. TEST PERFORMED:**

A. Salt Spray Resistance - ASTM B117

B. Hydrostatic Pressure Resistance

**3. METHODS/PROCEDURES USED FOR TESTS PERFORMED:**

A. Salt Spray Resistance - ASTM B117-85

One (1) C400 H.W. coupling was used to join the two (2) sections of cast iron pipe. The coupling was connected using four (4) hose clamps. All hose clamps were torqued to 80 inch/lbs. The entire assembly was then exposed to a salt fog under the parameters listed below:

1. Solution: 5% (w/w) NaCl
2. Chamber Temperature: 35°C
3. Duration of Exposure: 10 days

---

COATINGS • BUILDING MATERIALS • LIGHTING DEVICES • HAZARDOUS WASTE  
SPECTROSCOPY • CHROMATOGRAPHY • MICROSCOPY • PHOTOMETRICS • FIELD INSPECTION

FAX (510) 652-3085  
TELEPHONE (510) 652-2979

P.O. BOX 8702 • EMERYVILLE, CA 94662  
4072 WATTS STREET • EMERYVILLE, CA 94608



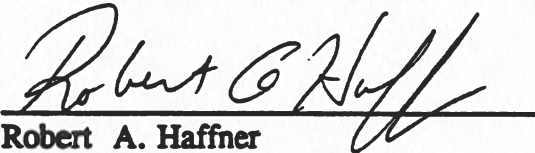
**3. METHODS/PROCEDURES USED FOR TESTS PERFORMED: -CONT.**

**B. Hydrostatic Pressure Resistance**

Following the salt spray exposure, the assembly was allowed to air dry for two (2) days. The assembly was washed with the tap water and dried with the compressed air. The coupling and sealing sleeve was removed from the pipe and examined. The coupling and sealing sleeve was then reassembled on the pipe and all hose clamps torqued to 80 inch/lbs. The assembly was then hydrostatically tested at 22.5 psig for five (5) minutes.

**4. RESULTS:**

The assembly exhibited no indications of failure such as leaks after the hydrostatic pressure test. The rust stains visible on the bands of the hose clamps after the salt spray exposure are corrosion products of the cast iron pipe and not those of the coupling or hose clamp assemblies. The assembly will be returned via UPS for your observations.



**Robert A. Haffner  
Chief Analytical Chemist**

RH/cp

RECEIVED  
FEDERAL BUREAU OF INVESTIGATION  
U.S. DEPARTMENT OF JUSTICE  
WASHINGTON, D.C. 20535  
MAY 19 1988  
MAIL ROOM

This report was made at the request of and for the use only of the Director of FBI and is not to be disseminated or otherwise used without the written consent of Criminal Labs Inc. in strict prohibition.