



**WEAVER CONSTRUCTION MANAGEMENT, INC.**  
 3679 S. Huron St., Suite 404  
 Englewood, CO 80110  
 Phone: (303) 789-4111 FAX: (303) 789-4310

**SUBMITTAL TRANSMITTAL**

September 28, 2011  
WGC Submittal No: 04200-001.A

**PROJECT:** Harold Thompson Regional WRF  
 Birdsall Rd.  
 Fountain, CO 80817  
 Job No. 2908

**ENGINEER:** GMS, Inc.  
 611 No. Weber St., #300  
 Colorado Springs, CO 80903  
 719-475-2935 Roger Sams

**OWNER:** Lower Fountain Metropolitan  
 Sewage Disposal District  
 901 S. Santa Fe Ave.  
 Fountain, CO 80817  
 719-382-5303 James Heckman

**CONTRACTOR:** Ammex Masonry, Inc.  
 P.O. Box 1272  
 Commerce City, CO 80022  
 303-853-9008 Amy Wheeler

**SUBJECT:** Resubmittal for Unit Masonry Review Comments

**SPEC SECTION:** 04200 - Unit Masonry

**PREVIOUS SUBMISSION DATES:**

**DEVIATIONS FROM SPEC:** \_\_\_ YES X NO

**CONTRACTOR'S STAMP:** This submittal has been reviewed by Weaver General Construction and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto.

<p><b>Contractor's Stamp:</b></p> <p>Date: 9/28/11          Reviewed by: H.C. Myers  <input checked="" type="checkbox"/> Reviewed Without Comments  <input type="checkbox"/> Reviewed With Comments</p> <p><b>ENGINEER'S COMMENTS:</b></p>	<p><b>Engineer's Stamp:</b></p>
--	---------------------------------

**HAROLD D. THOMPSON REGIONAL  
RECLAMATION FACILITY  
9001 Birdsell Road  
Fountain, Colorado 80817**

**Section # 04200 – Unit Masonry (CMU's)**

Submitted by: Ammex Masonry, Inc.  
Supplier: Basalite concrete Products, LLC

Contractors Review Comments: Deviations from the Specification / Drawings,  
Engineer to verify:

1. Basalite Concrete Products Certifications:
  - Concrete masonry units will meet the requirements of
    - ASTM C90
    - ASTM C 140.
    - ASTM C 331 – Lightweight Aggregates in Basalite CMU.
  - Attached: report of Physical Properties of concrete Masonry Units in General conformance with ASTM C 140 and C 90.
    - Normal Weight, 8" CMU
    - Lightweight 8" CMU.
2. Basalite Concrete Products request's substitution that "RainBloc Integral Water Repellant (IWR) in place of "DryBlock".
  - Basalite Substitution Request;
  - "RainBloc" Water Repellency Certification
  - Product Data: "RainBloc"
    - Rain Water Penetration Resistance for Masonry Construction.
3. Related Specified Requirements submitted under other Sections, submitted by others: "Ammex Masonry"
  - CMU Reinforcement submitted Section 03200 Concrete Reinforcement.
  - Reinforcing ties, anchors and miscellaneous items submitted Section 04150 Masonry Accessories.
4. End of Review



Date: 9-27-11

Customer: Ammex Masonry

Project: Harold S Thompson

General Contractor: Weaver

Products: Concrete Masonry Units

Basalite Concrete Products hereby certifies that the concrete masonry units that will be furnished on the above referenced project will meet or exceed the minimum requirements of ASTM C 90 – 03 "Standard Specification for Loadbearing Concrete Masonry Units" which includes a net average 28-day compressive strength requirement of 1,900 psi when sampled and tested in accordance with ASTM C 140 – 03 "Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units".

Basalite Concrete Products also certifies that all architectural, colored veneer/exposed units ordered with IWR will be manufactured using RainBloc IWR admixture from ACM Chemistries. Certification of water repellency compliance is attached to this letter.

Additionally lightweight aggregates used to manufacture our CMU meet ASTM C331.

Except for the foregoing, Basalite expressly disclaims all certifications and/or warranties, express or implied, including, but not limited to, any and all implied warranties of merchantability and implied warranties of fitness for particular use.

Sincerely,

*Jacob Wipf*

Architectural Representative  
Basalite Concrete Products, LLC



**REPORT OF PHYSICAL PROPERTIES OF CONCRETE MASONRY UNITS  
IN GENERAL CONFORMANCE WITH ASTM C 140 AND C 90**

Client: Basalte  
 Project : Block Testing  
 Product: #400  
 Project No: CT14,998.003-445  
 ASTM Unit Specification:

Report Date: December 20, 2010

Normal Weight

Nominal CMU Dimensions:            Width:    8.0    in.   Height:    8.0    in.   Length:    16.0    in.

SUMMARY	REQUIRED	ACTUAL
CMU Gross Area Compressive Strength..	****	1,770 psi
CMU Net Area Compressive Strength .....	Average: 1,900 min	3,430 psi
CMU Net Area Compressive Strength .....	Individual: 1,700 min	2,910 psi
Minimum Faceshell Thickness .....	1.25 min	1.29 in.
Minimum Web Thickness .....	1.0 min	1.04 in.
Equivalent Web Thickness .....	2.25 min	2.81 in.
CMU Net Cross Sectional Area .....	****	61.9 sq.in.
CMU Gross Cross Sectional Area .....	****	119.7 sq.in.
CMU Percent Solid .....	****	51.8 %
CMU Equivalent Thickness .....	****	3.98 in.
Variation from Standard Dimensions.....	Width: +/- 0.125 inch    max	-0.036 in.
	Height: +/- 0.125 inch    max	0.034 in.
	Length: +/- 0.125 inch    max	0.019 in.
Absorption .....	****    (Avg. of 3)	7.3 pcf
Density (Oven Dry Condition) .....	> 125 pcf	132.7 pcf
Moisture Content	****	3.0 % total absorption
Shrinkage, ASTM 426 (as tested).....	0.065%	0.008%

**COMPRESSION TEST RESULTS**

Sample No.	Average Width (in.)	Average Height (in.)	Average Length (in.)	Sample Weight (lb.)	Calculated Average Net Area (sq. in.)	Total Load (lb.)	Compressive Strength	
							Gross Area (psi)	Net Area (psi)
1	7.67	7.58	15.63	36.46	61.94	180,000	1,500	2,910
2	7.67	7.62	15.61	36.23	61.94	239,770	2,000	3,870
3	7.66	7.61	15.60	36.30	61.94	216,720	1,810	3,500
<b>Average</b>	<b>7.67</b>	<b>7.60</b>	<b>15.61</b>	<b>36.33</b>	<b>61.94</b>	<b>212,163</b>	<b>1,770</b>	<b>3,430</b>

**ABSORPTION AND DENSITY RESULTS**

Sample No.	Width (in.)	Height (in.)	Length (in.)	Absorption (pcf)	Absorption %	Density (pcf)	Gross Vol (cu. ft.)	Net Volume (cu. ft.)
4	7.66	7.59	15.59	7.3	5.5	132.7	0.5238	0.2733
5	7.65	7.57	15.61	7.2	5.4	132.8	0.5230	0.2718
6	7.67	7.59	15.61	7.3	5.5	132.7	0.5250	0.2723
<b>Average</b>	<b>7.66</b>	<b>7.58</b>	<b>15.60</b>	<b>7.3</b>	<b>5.5</b>	<b>132.7</b>	<b>0.5240</b>	<b>0.2725</b>

**Statement:** These samples meet ASTM C 90 specifications for normal weight, loadbearing concrete masonry units for the properties tested.

Fig. A-2



**TABLE 1**  
**REPORT OF PHYSICAL PROPERTIES OF CONCRETE MASONRY UNITS**  
**IN GENERAL CONFORMANCE WITH ASTM C 140 AND C 90**

Client: Basalite Concrete Products, Denver, CO  
 Project : Block Testing  
 Product: 530 Block  
 Project No: CT14,998.001-445  
 ASTM Unit Specification:                   ASTM C 90                   Lightweight

Report Date: June 30, 2010  
 Date Submitted: June 18, 2010  
 Test Date: June 26, 2010

Nominal CMU Dimensions:                   Width: 8.0 in. Height: 8.0 in. Length 16.0 in.

SUMMARY	REQUIRED	ACTUAL
CMU Gross Area Compressive Strength..	****	1,080 psi
CMU Net Area Compressive Strength .....	Average: 1,900 min	2,080 psi
CMU Net Area Compressive Strength .....	Individual: 1,700 min	2,060 psi
Minimum Faceshell Thickness .....	1.25 min	1.30 in.
Minimum Web Thickness .....	1.0 min	1.05 in.
Equivalent Web Thickness .....	2.25 min	2.86 in.
CMU Net Cross Sectional Area .....	****	62.0 sq.in.
CMU Gross Cross Sectional Area .....	****	118.8 sq.in.
CMU Percent Solid .....	****	52.2 %
CMU Equivalent Thickness .....	****	3.98 in.
Variation from Standard Dimensions.....	Width: +/- 0.125 inch   max	0.009 in.
	Height: +/- 0.125 inch   max	0.008 in.
	Length: +/- 0.125 inch   max	0.033 in.
Absorption .....	18 max   (Avg. of 3)	11.8 pcf
Density (Oven Dry Condition) .....	<105 pcf	98.1 pcf
Moisture Content	****	18.7 % of total absorption
Shrinkage, ASTM 426 (as tested).....	0.065%	N/A

**COMPRESSION TEST RESULTS**

Sample No.	Average Width (in.)	Average Height (in.)	Average Length (in.)	Sample Weight (lb.)	Calculated Average Net Area (sq. in.)	Total Load (lb.)	Compressive Strength	
							Gross Area (psi)	Net Area (psi)
1	7.62	7.60	15.60	27.53	62.01	130,000	1,090	2,100
2	7.61	7.63	15.60	27.47	62.01	127,790	1,080	2,060
3	7.62	7.62	15.60	27.60	62.01	128,740	1,080	2,080
<b>Average</b>	7.62	7.62	15.60	27.53	62.01	128,843	1,080	2,080

**ABSORPTION AND DENSITY RESULTS**

Sample No.	Width (in.)	Height (in.)	Length (in.)	Absorption (pcf)	Absorption %	Density (pcf)	Gross Vol. (cu. ft.)	Net Volume (cu. ft.)
4	7.62	7.62	15.58	11.8	12.1	98.1	0.5232	0.2736
5	7.62	7.63	15.58	11.8	12.0	97.9	0.5235	0.2740
6	7.61	7.62	15.60	11.7	11.9	98.2	0.5230	0.2724
<b>Average</b>	7.62	7.62	15.59	11.8	12.0	98.1	0.5232	0.2733

Statement: These samples meet ASTM C 90 specifications for lightweight, loadbearing concrete masonry units for the properties tested.



**BASALITE®**  
CONCRETE PRODUCTS, LLC

Date: 9-27-11

Customer: Ammex Masonry

Project: Harold S Thompson

General Contractors: Weaver

RE: Substitution Request - 'DryBlok to RainBloc'

To Whom It May Concern:

Basalite Concrete Products manufacturers all CMU ordered with Integral Water Repellant with ACM Chemistries 'RainBloc'. RainBloc in combination with our local aggregates and tested in accordance with ASTM E 514 (Standard Test Method for Water Penetration and Leakage through Masonry) meets and exceeds all industry standards for CMU containing IWR. Attached is testing from an independent source showing our materials meet and exceed ASTM E 514.

We feel that we have an equal product to the specified DryBlok and we ask that you consider RainBloc as a substitute material on your project.

Sincerely,

*Jacob Wipf*

Architectural Representative  
Basalite Concrete Products, LLC

# WATER REPELLENCY CERTIFICATION

AWARDED TO  
**BASALITE CONCRETE PRODUCTS**  
**DENVER, CO**

FOR SUCCESSFULLY MEETING THE CRITERIA FOR QUALIFICATION AS AN  
ACM CHEMISTRIES

**RAINBLOC® WATER REPELLENT MASONRY UNIT PRODUCER**



THIS 24<sup>TH</sup> DAY OF SEPTEMBER, 2010

A handwritten signature in black ink, appearing to read "Craig Walloch".

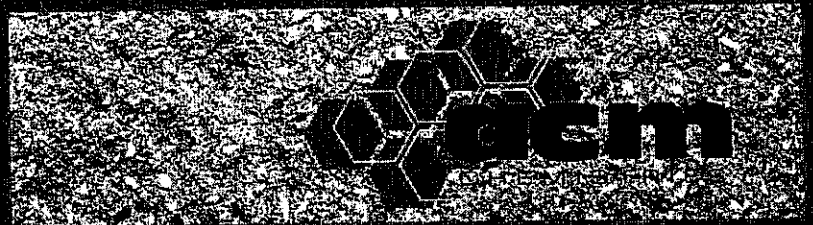
**CRAIG WALLOCH**  
VICE PRESIDENT, TECHNICAL DEVELOPMENT  
ACM CHEMISTRIES, INC.

VALID FROM MAY 12, 2010 UNTIL JULY 31, 2011

# RainBloc

**Rain Water  
Penetration Resistance  
for  
Masonry Construction**

Blocking Out Wind-Driven  
Rains with the **RainBloc™** Water  
Repellent Masonry Wall System





# RainBloc™

## Integral Water Repellent System for Concrete Masonry

Concrete masonry constructed with the ACM Chemistries, Inc.™ RainBloc Integral Water Repellent System resists rainwater penetration because:

- individual masonry units incorporate the RainBloc water repellent additive during their manufacture
- concrete masonry units are tested and certified for water repellency performance compliance
- masonry mortar is produced with the RainBloc for Mortar water repellent additive at the construction site

Concrete masonry produced with the RainBloc Integral Water Repellent System resists wind-driven rain while still maintaining vapor transmission, reducing the chance of mold, mildew, and musty smells from developing inside a building.

### Benefits of the RainBloc System

Masonry constructed using the RainBloc System

- resists rain water penetration
- fights against mold and mildew
- maintains masonry colors
- resists efflorescence

### RainBloc System Features

The RainBloc system improves water penetration resistance because it's

- polymeric-based
- permanent
- durable for the life of the masonry structure
- a full-wall thickness water penetration protection system

### RainBloc's "Anti-Wicking" Feature

Untreated concrete masonry units readily absorb water through a process called capillary suction or "wicking action".

The RainBloc anti-wicking feature ensures that masonry units and mortar strongly resist water absorption. If rainwater seeps past the exterior face of the wall, the RainBloc system's water repellent properties minimize the amount of water that can be absorbed into the concrete, causing any water inside the wall to flow to properly-installed wall flashing and weep holes.

### RainBloc Performance in ASTM Standards and Tests

RainBloc test data earns excellent ratings. ACM Chemistries uses the most rigorous evaluation methods of the American Standards for Testing and Materials (ASTM). Masonry produced with the RainBloc system performs exceedingly well in E 514-74, E 514-02, and ASTM E 96.

- ASTM E 514-74, "Standard Test Method for Water Permeance of Masonry." This aggressive standard exposes test walls to simulated, wind-driven rain for 72 hours, exposing them to the equivalent of 5 1/2 inches of rain per hour pushed toward the wall with a pressure equivalent to a 62 1/2 mile per hour wind, and then uses a grading system to rank wall performance, from "L" for "leakage" to "E" for "excellent".
- By comparison, the 2002 version of ASTM E-514 (E 514-02), "Standard Test Method for Water Penetration and Leakage through Masonry," requires walls to be tested only for 4 hours, since most walls indicate their performance level within that period of time.
- Good water vapor transmission prevents moisture from staying trapped within the wall system, which can cause mold and mildew problems over time. While providing excellent rainwater penetration resistance, ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials" shows that the RainBloc system also maintains good water vapor transmission properties for concrete.

### RainBloc Complements Good Design and Construction

A complete water repellent system emphasizes proper masonry design, details, and implementation. Although the RainBloc Integral Water Repellent System provides excellent rainwater penetration resistance, it should not replace proper flashing, weep holes, and control joints in masonry construction.

The designer must provide the mason contractor with detailed illustrations of adequate flashing, weep holes, and control joints.

## RainBloc for Concrete Masonry Units - CMUs

RainBloc for CMUs is a liquid admixture used in the production of concrete block to ensure water repellency. An automated dispensing system injects the RainBloc liquid admixture into each mixture of concrete during the masonry unit manufacturing process.

### Water Repellency Certification Using the RainBloc Spray Bar Test Method

The RainBloc Spray Bar Test Method subjects individual concrete masonry units to continuous water pressure from a standardized spray bar at a rate of 120 gallons of water per hour.

After four hours of continuous exposure, each unit is evaluated using standardized pass/fail criteria. This test method correlates well with ASTM E 514.

A producer's concrete masonry units must pass this rigorous test to be a certified RainBloc producer.

### Testing Procedure

1. Masonry units are manufactured with RainBloc admixture with assistance from an ACM Chemistries technical service representative.
2. Masonry units are shipped to ACM Chemistries for evaluation using the RainBloc Spray Bar Test Method.
3. Units are tested for compliance with the ASTM Unit Specification designated for the type of unit manufactured (ASTM C 55, C 90, C 129, or C 744).

### Performance Report

The CMU producer receives a RainBloc Certification Report upon successful compliance with the water repellency performance criteria established by ACM Chemistries, Inc. This report provides evidence to specifiers about the performance and certification of compliance for the water repellent units made by the manufacturer.

Each certified RainBloc producer receives a performance report that includes

- RainBloc Spray Bar Test Method results
- masonry unit physical properties
- certificate of performance

### Daily Quality Assurance Testing

A selection of the daily production of water repellent masonry units must be tested for water repellency within 48 hours of manufacture, before they are exposed to dust and dirt. Concrete masonry units stored outdoors may become coated by dust and dirt, which prevents water from beading on the surface.

Note: Even when coated with dust and dirt, the concrete masonry units still should resist water absorption although water may not bead on the surface. In other words, the units are still highly water repellent.

An ACM Chemistries technical service representative is always available for assistance with setting up the testing program.

## Maintaining Certification

Upon certification, a masonry unit producer must continue to meet the following conditions:

- Masonry unit producer certification is valid for one year from the date of certification.
- Should be certified every twelve months for each concrete mix design (excluding a change of pigmentation) used with RainBloc in manufacturing water-repellent, concrete masonry units.
- Must be certified again for changes to the concrete mixture proportions or raw materials to stay in compliance.
- Simple, quality control procedures recommended by ACM Chemistries, Inc., must also be used by the RainBloc certified producers to ensure that water repellency parameters are being met on a consistent basis. The producer, purchaser, and specifier can be confident that the water repellent units will effectively resist water penetration.

## RainBloc for Mortar

RainBloc for Mortar is a liquid admixture used at the masonry construction site to make mortar. RainBloc for Mortar should be used with all concrete or clay masonry units in exterior masonry wall construction.

### RainBloc for Mortar Performance in ASTM Standards and Tests

RainBloc for Mortar meets or exceeds the performance requirements for high quality masonry mortar water repellents when tested and evaluated according to ASTM C 1384, "Standard Specification for Admixtures for Masonry Mortars".

When measured by ASTM C 1072, "Standard Test Method for Measurement of Masonry Flexural Bond Strength", the RainBloc Integral Water Repellent System does not adversely affect mortar bond.

### Testing RainBloc for Mortar Selections for Quality Assurance

RainBloc for Mortar's pre-measured containers make addition by the masonry contractor easy.

Directions appear on the side of each container and include the required amounts for each batch of mortar.

To verify the proper dosage for water repellency, the amount of RainBloc for Mortar used per day should correlate with the number of mortar batches produced per day. This can be accomplished by counting the number of RainBloc for Mortar containers used as well as the number of mortar batches produced each day. Your ACM Chemistries technical service representative is always available for assistance.

## Technical Service and Support

ACM Chemistries employs the most knowledgeable and competent technical sales and support staff in the industry today.

Our knowledge of machine-made concrete products, including the material science and technology used to manufacture those products, helps us optimize quality and performance, while reducing manufacturing costs for our customers.

We make sure that our staff retains expertise in concrete and masonry technology and best practices for providing technical services to our customers and the industry.

Full-time, trained ACM Chemistries technical sales representatives are located in several regions to serve you.

We share your challenges, and, together, we will meet them with the best solutions.

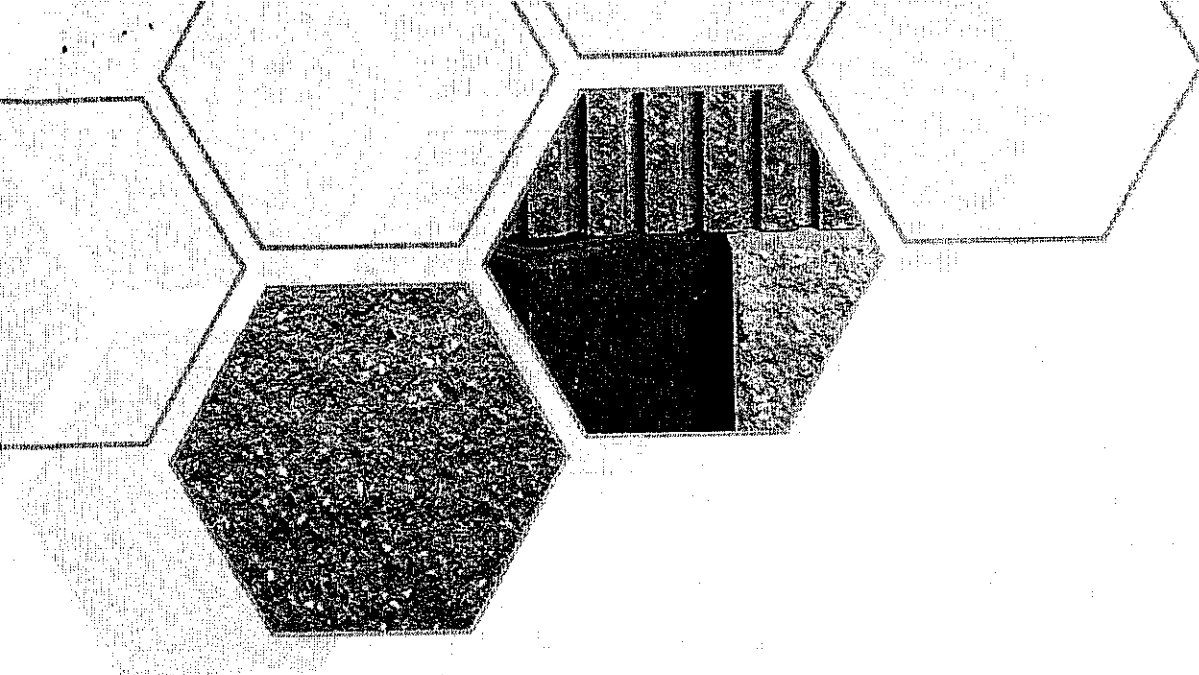
### Technical Service in CMU Production

ACM Chemistries technical service representatives work with each potential RainBloc certified producer to determine the dosage of RainBloc required for the specific manufacturing facility according to the following process:

1. ACM Chemistries technical service representatives work with the manufacturer's quality control and manufacturing staff to inspect and analyze the raw materials used by the manufacturer, including
  - cementitious material(s)
  - aggregates
  - equipment
2. An ACM Chemistries technical service representative recommends any necessary changes in raw materials or processes, as well as a range of RainBloc dosage levels to be tried at the facility for RainBloc Certification Compliance.
3. An ACM Chemistries technical service representative oversees and manages the process of concrete masonry unit manufacturing with the recommended dosage levels of RainBloc.

The RainBloc technical service representative selects and marks CMU's for water repellency testing to certify performance and ASTM masonry unit specification compliance. (See Water Repellency Certification Using the RainBloc Spray Bar Test Method.)





## **Our Company**

ACM Chemistries, Inc. was founded by Dr. Marshall L. Brown and Mr. Theodore (Ted) G. Light. They have been involved in applied masonry research since 1981 when they studied water repellency of masonry wall systems using ASTM E 514, "Standard Test Method for Water Permeance of Masonry" under the guidance and direction of one of the most prominent masonry researchers in North America.

Dr. Brown chairs the American Concrete Institute's Committee on Chemical Admixtures. He also serves on several National Concrete Masonry Association committees and sub-committees, including its Technical Committee and its Associate Member Division Board.

ACM Chemistries is an Atlanta-based organization dedicated to providing the best technical services and chemical additives to the concrete masonry industry.

We provide concrete technology training programs for our customers because we believe that beneficial knowledge should be shared.

We believe that knowledgeable customers, specifiers, and trade associations not only benefit from having such knowledge, but also help grow the concrete products market, enabling the production of the best products for customers.

## **Contact Us**

Let ACM Chemistries, Inc. and RainBloc work for you. Please call us (toll-free) at 1-877-226-1766.

ACM Chemistries, Inc.  
P.O. Box 920430  
Norcross, GA 30010  
[www.acmchem.com](http://www.acmchem.com)

\*ACM Chemistries, Inc. and RainBloc are trademarks of ACM Chemistries, Inc.

