CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

February 20, 2012

The Owners, Strata Plan No. LMS280
Chateau Comox
1272 Comox Street
Vancouver, BC V6E 1K7

Dear Strata Plan No. LMS280,

RE: CURAFLO LINING SYSTEM
CHATEAU COMOX – 1272 COMOX STREET, VANCOUVER, BC

Please find enclosed the following for the CuraFlo Lining System at the Chateau Comox located at 1272 Comox Street, Vancouver, BC.

1. Two (2) Operation and Maintenance Manuals to be distributed as follows:

    - The Owners, Strata Plan No. LMS280 (includes electronic version on CD).
    - Mechanical Room (1272 Comox Street)

Thank you for your prompt attention to the above.

Yours truly,

Sanjiv Gupta
General Manager
CURAFLO OF BC LTD.

SJ/br
c.w.CuraFlo.Invoices.6188 Patterson Avenue.O&M Manuals.

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

OPERATION AND MAINTENANCE MANUAL

FOR

Chateau Comox
The Owners, Strata Plan No. LMS280
1272 Comox Street
Vancouver, BC

DATE: December 2011

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Chateau Comox
The Owners, Strata Plan No. LMS 280
1272 Comox Street, Vancouver, BC

CuraFlo Lining System

INDEX

1.

CuraFlow Lining System

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Maintenance Data

Chateau Comox
1272 Comox Street
Vancouver, BC

The description of work performed at 1272 Comox Street, Vancouver, BC, consists of lining the domestic water system (cold, hot and recirculation lines) with NSF 61 approved epoxy.

1. The hot and cold mains and recirculation lines were isolated with new Kitz ball valves, which now provide better and specific isolation.

2. New Dahl mini-ball valves were installed inside suites.

3. Water hammer arrestors were installed on each riser with automatic valves.

4. New braided supply tubes were installed inside suites.

5. Fiberglass insulation was installed as per specifications.

The technical specification sheets for the above are attached for ready reference as and when needed.

At any time in the future if maintenance is required, it is to be informed to the technician that the hot and, cold and recirculation pipes are epoxy lined and should not be subject to any kind of heating / soldering. All pipe repairs to the domestic hot, cold and recirculation water system are to be performed using only compression / Victaulic fittings.

NO SOLDERING IS PERMITTED UNDER ANY CIRCUMSTANCES.

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

EMERGENCY CALL-OUT PROCEDURES

RELEVANT PORTION RE-PRODUCED FROM THE LIMITED WARRANTY (TAB #3)

- CuraFlo of BC Ltd. or its authorized agent will provide 24-hour daily call out service that will respond to all requests for emergency service. This service is provided free in response to all leaks resulting from a failure of the CuraFlo Lining System and/or any other component parts of the system under the terms of the warranty. All other calls will be billed out at regular hourly and/or after hour rates.

CuraFlo of BC Ltd.
7436 Fraser Park Drive
Burnaby, BC
Canada V5J 5B9
Tel.: (604) 298-7278
Fax: (604) 294-5673

FOR OTHER DETAILS, PLEASE REFER TO THE LIMITED WARRANTY.

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

PROCEDURES FOR SERVICE TECHNICIANS ATTENDING TO CALLS FOR EPOXY LINING PROJECTS

The following recommendations are made for joining two epoxy lined pipes and/or for joining an epoxy lined pipe to an unlined pipe.

For copper pipes 1/2" to 1" in diameter, use "Sharkbite" couplings only. PHILMAC and QUEST are **NOT** to be used. A full product catalogue of "Sharkbite" couplings is available at.:

- http://www.cashacme.com/_images/pdf_downloads/products/sharkbite/SB Brochure.pdf

This includes product and installation instructions.

For coupling pipes larger than 1" diameter and up to 2" diameter use Cambridge brass coupling series 118 or 119 (full bore).

1 ¼" 118-H5H5 or 119-H5H5

1 ½" 118-H6H6 or 119-H6H6

2" 118-H7H7 or 119-H7H7

Another product for these pipe sizes that is beginning to become available is PermaLynx, a Victaulic product, more information on this is available at:

- http://www.victaulic.com/Docs/lit/I-PermaLynx.pdf.

This includes product and installation instructions.

For pipe sizes higher than 2", use the mechanical pipe joining system from *Victaulic*, this includes valves, couplings, and fittings for copper, ductile iron, stainless and carbon steel etc. pipes. More information including installation instructions on these products is available at:

- http://www.victaulic.com/content/default.htm.

After installing the coupling, tape pipe on both sides of the coupling and install copper strapping with gear clamps on the tape close to the coupling so that the two pipes are pulled towards each other. The pipes must then be secured to something structural so movement of the coupling is restricted on both sides. This will work for rigid pipe; both horizontal and vertical.

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

PROCEDURES FOR SERVICE TECHNICIANS ATTENDING TO CALLS FOR EPOXY LINING PROJECTS

For existing pipe which is not secure or rigid, use the same procedure and also make the pipe secure by either strapping it or using pipe clamps and ready rod fixed to the nearest structural member.

If galvanized pipes need alteration after lining, the nearest threaded or grooved joint should be located and disassembled carefully so as not to disturb the coating. If this is not possible the pipe can be cut with a sharp blade slowly using water to cool the pipe as its being cut. Failure to cool the cut may let the pipe get hot enough to delaminate the epoxy coating. Once cut, re-connection can be made with mechanical couplings. Securing the pipe after coupling with mechanical fittings shall be done the same way as copper pipe as described above.

2.

Contact Information

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CONSULTANT LIST

MECHANICAL CONSULTANT
McCUAIG & ASSOCIATES ENGINEERING LTD.
Suite 201 – 33 East 8th Avenue
Vancouver, BC
V5T 1R5

TELEPHONE: 604-255-0992
FAX: 604-255-1054

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CONTRACTOR LIST

CONTRACTOR
CURAFLO OF BC LTD.

7436 FRASER PARK DRIVE
BURNABY, BC
V5J 5B9

TELEPHONE: 604-298-7278
FAX: 604-294-5673

3.

Valve Schedule

CURAFLO OF BC LTD · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604 298 7278 FAX 604 294 5673 WEBSITE CURAFLO.COM/BC

Valve Schedule

Chateau Comox – Strata Plan LMS 280
1272 Comox Street, Vancouver, BC

TAG #		DESCRIPTION	LOCATION
1	DCW	MAIN BUILDING FEED	WATER METER ROOM
2	DHW	MAIN BUILDING FEED	BOILER ROOM
3	DHWR	MAIN BUILDING RETURN	BOILER ROOM
4	DCW	BOILER FEED	BOILER ROOM
5	DCW	#801 MAIN BATHROOM #202, #302, #402, #501, #601, #701 MAIN AND ENSUITE BATHROOMS	CEILING OF 8TH FLOOR SOUTH STAIRWELL
6	DHW	#801 MAIN BATHROOM #202, #302, #402, #501, #601, #701 MAIN AND ENSUITE BATHROOMS	CEILING OF 8TH FLOOR SOUTH STAIRWELL
7A	DHWR	#801 MAIN BATHROOM #202, #302, #402, #501, #601, #701 MAIN AND ENSUITE BATHROOMS	CEILING OF EXERCISE ROOM
7B	DHWR	#801 MAIN BATHROOM #202, #302, #402, #501, #601, #701 MAIN AND ENSUITE BATHROOMS	CEILING OF EXERCISE ROOM
8	DCW	#202, #302, #402, #501, #601, #701, #801 KITCHENS MEN'S AND WOMEN'S BATHROOMS IN EXERCISE ROOM	CEILING OF 8TH FLOOR HALLWAY
9	DHW	#202, #302, #402, #501, #601, #701, #801 KITCHENS MEN'S AND WOMEN'S BATHROOMS IN EXERCISE ROOM	CEILING OF 8TH FLOOR HALLWAY
10	DHWR	#202, #302, #402, #501, #601, #701, #801 KITCHENS MEN'S AND WOMEN'S BATHROOMS IN EXERCISE ROOM	CEILING OF WOMEN'S BATHROOM IN EXERCISE ROOM
11	DCW	#202, #302, #402, #501, #601, #701, #801 LAUNDRIES	CEILING OF 8TH FLOOR HALLWAY
12	DHW	#202, #302, #402, #501, #601, #701, #801 LAUNDRIES	CEILING OF 8TH FLOOR HALLWAY
13	DHWR	#202, #302, #402, #501, #601, #701, #801 LAUNDRIES	CEILING OF MEN'S BATHROOM IN EXERCISE ROOM
14	DCW	#201, #301, #401 ENTIRE SUITES #501, #601, #701, #801 MASTER BATHROOMS	CEILING OF 8TH FLOOR HALLWAY
15	DHW	#201, #301, #401 ENTIRE SUITES #501, #601, #701, #801 MASTER BATHROOMS	CEILING OF 8TH FLOOR
16A	DHWR	#201, #301, #401 ENTIRE SUITES #501, #601, #701, #801 MASTER BATHROOMS	CEILING OF MEETING ROOM
16B	DHWR	#201, #301, #401 ENTIRE SUITES #501, #601, #701, #801 MASTER BATHROOMS	CEILING OF MEETING ROOM
16C	DHWR	#201, #301, #401 ENTIRE SUITES #501, #601, #701, #801 MASTER BATHROOMS	CEILING OF MEETING ROOM
17	DCW	#203, #303, #403, #502, #602, #702, #802 KITCHENS	CEILING OF 8TH FLOOR HALLWAY
18	DHW	#203, #303, #403, #502, #602, #702, #802 KITCHENS	CEILING OF 8TH FLOOR HALLWAY
19	DHWR	#203, #303, #403, #502, #602, #702, #802 KITCHENS	CEILING OF 2ND FLOOR HALLWAY
20	DCW	#203, #303, #403, #502, #602, #702, #802 LAUNDRIES	CEILING OF 8TH FLOOR HALLWAY

DO NOT SOLDER

DOMESTIC PIPING IS EPOXY LINED

HOT WATER TEMPERATURE MUST NOT EXCEED 140°F

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Valve Schedule

Chateau Comox – Strata Plan LMS 280

1272 Comox Street, Vancouver, BC

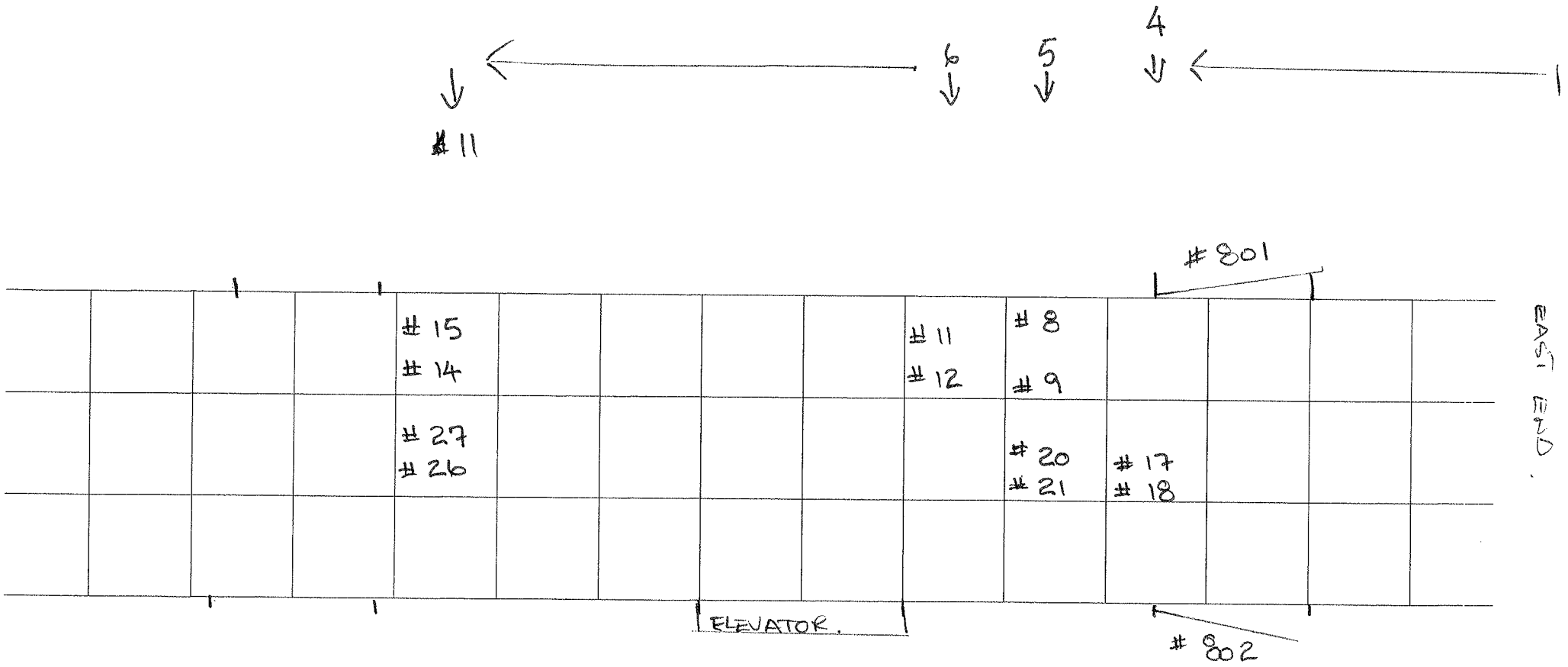
TAG #		DESCRIPTION	LOCATION
21	DHW	#203, #303, #403, #502, #602, #702, #802 LAUNDRIES	CEILING OF 8TH FLOOR HALLWAY
22	DHWR	#203, #303, #403, #502, #602, #702, #802 LAUNDRIES	CEILING OF #203 MAIN BATHROOM
23	DCW	#203, #303, #403, #502, #602, #702 MAIN AND ENSUITE BATHROOMS #802 MAIN BATHROOM	8TH FLOOR SOUTH STAIRWELL
24	DHW	#203, #303, #403, #502, #602, #702 MAIN AND ENSUITE BATHROOMS #802 MAIN BATHROOM	8TH FLOOR SOUTH STAIRWELL
25A	DHWR	#203, #303, #403, #502, #602, #702 MAIN AND ENSUITE BATHROOMS #802 MAIN BATHROOM	CEILING OF #203 MAIN BATHROOM
25B	DHWR	#203, #303, #403, #502, #602, #702 MAIN AND ENSUITE BATHROOMS #802 MAIN BATHROOM	CEILING OF #203 MAIN BATHROOM
26	DCW	#204, #304, #404, #503 ENTIRE SUITES #602, #702, #802 MASTER BATHROOMS	CEILING OF 8TH FLOOR HALLWAY
27	DHW	#204, #304, #404, #503 ENTIRE SUITES #602, #702, #802 MASTER BATHROOMS	CEILING OF 8TH FLOOR HALLWAY
28A	DHWR	#204, #304, #404, #503 ENTIRE SUITES #602, #702, #802 MASTER BATHROOMS	CEILING OF 2ND FLOOR HALLWAY
28B	DHWR	#204, #304, #404, #503 ENTIRE SUITES #602, #702, #802 MASTER BATHROOMS	CEILING OF 2ND FLOOR HALLWAY

DO NOT SOLDER

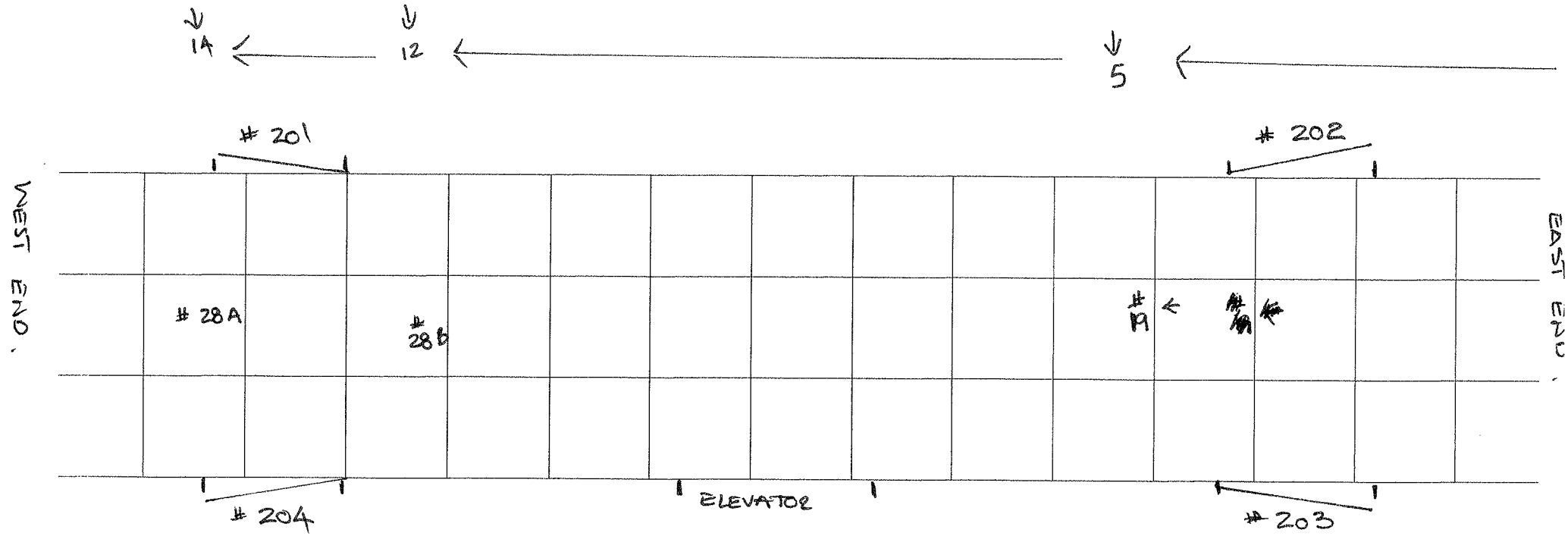
DOMESTIC PIPING IS EPOXY LINED

HOT WATER TEMPERATURE MUST NOT EXCEED 140°F

VALVE LOCATION MAP. 8TH FLOOR.



VALVE LOCATION MAP. 2ND. FLOOR.



4.

Warranties

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Limited Warranty

CuraFlo of BC Ltd. 10 Year Limited Warranty

Valid for CuraFlo potable water delivery system and all additional specified materials and services supplied, installed by CuraFlo of BC Ltd. to property owners and succeeding owners during the warranty period.

This warranty revision is effective: ***December 6, 2011***
Warranty Expires: ***December 6, 2021***

Limited Warranty:

CuraFlo of BC Ltd. warrants to the property owners and succeeding owners that the CuraFlo Lining System installed in the copper domestic water delivery system of Chateau Comox located at 1272 Comox Street, Vancouver, BC, shall be free from defects in material and workmanship under normal conditions of use, when used for potable water distribution for the period of this warranty.

Warranty Coverage and Duration

- CuraFlo Lining System, as installed by CuraFlo of BC Ltd., will maintain a leak proof seal and lining of the pipes for a period of ten (10) years measured from date of installation *(project substantial completion).*
- CuraFlo of BC Ltd. will repair any leaks and restore the protective lining in the lined portion of the pipes at no charge to the customer for a period of ten (10) years under the terms of this warranty.
- CuraFlo of BC Ltd. will repair and restore any damage caused to the building (not personal property) resulting in leaks from the lined portion of the pipes at no charge to the customer for a period of one (1) year under the terms of this warranty.
- CuraFlo of BC Ltd. warrants that all new plumbing fittings installed will be leak proof for a period of one (1) year only and warrants an additional five (5) year labor (installation) warranty on these fittings.
- Any additional plumbing components installed by CuraFlo of BC Ltd. or installed as part of the contract are covered by any manufacturer warranties as well as by a one (1) year labor warranty provided by CuraFlo of BC Ltd. measured from date of installation *(project substantial completion).*
- CuraFlo of BC Ltd. or its authorized agent will provide 24-hour daily call out service that will respond to all requests for emergency service. This service is provided free in response to all leaks resulting from a failure of the CuraFlo Lining System and/or any other component parts of the system under the terms of the warranty. All other calls will be billed out at a regular hourly and/or after hour rate.

CuraFlo of BC Ltd. must receive notification of any believed failure verbally within 48 hours of believed failure, and written within 30 days of believed failure. CuraFlo of BC Ltd. shall have less than ninety (90) days to determine whether it acknowledges responsibility for any believed defects in material or workmanship. If CuraFlo of BC Ltd. or its authorized agent does not respond to an emergency call within three (3) hours, owners may have emergency repairs carried out by a contractor of their choice without notification. Allowances for all emergency work done are at the discretion of CuraFlo of BC Ltd. Documentation on failures must be provided including samples *(for testing)* of the failed portion of the pipe.

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

The customer is responsible to provide reasonable access to the work site *(the building in need of repairs/restoration)* during the hours of 8:30 a.m. to 5:30 p.m. Monday to Friday to CuraFlo of BC Ltd. and any of their sub-contractors to complete repairs and restoration work and on a 24-hour basis to respond to emergency plumbing failures allowing them to mitigate damages to the building.

It is agreed that the exclusive remedies under this limited warranty are for defects of the CuraFlo Lining System. CURAFLO FRANCHISEE Inc or its agent will repair or replace any section of pipe that is proven to be defective. If CuraFlo of BC Ltd. cannot repair (water damage) caused by a leak within forty-eight (48) hours, the customer is at liberty to effect repairs. Reimbursement of costs to the customer is at the discretion of CuraFlo of BC Ltd. All other components of the plumbing system are covered under the terms of the portion of this warranty as it applies to those components only.

This limited warranty applies only if the articles sold hereunder are selected and installed by CuraFlo of BC Ltd. according to the current installation and operating instructions as provided by CuraFlo Technologies Inc.

AND

a) Are not exposed to temperatures above 140 degrees F.
b) Are not exposed to pressures above 150 psi.
c) Remain in their original location at time of installation.
d) Are connected to a potable water supply operating under normal conditions.
e) Show no evidence of acts of God, mishandling, accidental damage, or installation of non-compatible nature in the system.
f) Are installed in accordance with local building and plumbing codes and by-laws.

Any action taken by CuraFlo of BC Ltd. or it's authorized agents to investigate, repair or replace items in response to a notification of failure will not be construed as acceptance of liability. All acceptance of liability will be forwarded to the building owner(s) or their representatives in writing.

The above is the full extent of the warranty provided by CuraFlo of BC Ltd.

By the mutual agreement of the parties, it is agreed that this limited warranty and any claims arising from breach of contract, breach of warranty or any other claims arising hereunder, shall be governed and construed under the laws of the Province of British Columbia. The Province of British Columbia will be the proper jurisdiction for the determination of any claims. An owner or succeeding owner must cooperate fully on a reasonable basis. It is expressly understood that authorized CuraFlo of BC Ltd. sales representatives, sub-contractors, plumbing and lining professionals have no authority to bind CuraFlo of BC Ltd. to any agreement or warranty of any kind without written consent of CuraFlo of BC Ltd.

The parties agree that any breach or dispute of this warranty by either party must be settled through binding arbitration, the cost of such arbitration to be borne solely by the losing party.

CuraFlo of BC Ltd. disclaims any warranty not provided herein.

Signature of Contractor: _____

SANJIV GUPTA
OFFICER FOR CURAFLO OF BC LTD.

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604 298 7278 FAX 604 294 5673 WEBSITE CURAFLO.COM/BC

Limited Warranty for Supply and Installation of New Faucets

This is to certify that all faucets **supplied and installed** on an individual basis in apartments at the Chateau Comox located at 1272 Comox Street, Vancouver, BC, are guaranteed by CuraFlo of BC Ltd. for a period of one-year against labour and workmanship from the date of project substantial completion.

These faucets carry a warranty against manufacturer defects by their respective manufacturer. Please see attached Lifetime Faucet and Finish Limited Warranty issued by Delta Faucet Canada.

NOTE: This warranty applies to: **Suite #403 (Delta 335 WF Kitchen Faucet)**

Attached

DELTA

Customer Support Main Page
Installation Guide and Specs
Frequently Asked Questions
Warranty
Product Registration
Will It Fit My Sink?
Literature
Help Me Find...
Contact Us

Need immediate assistance?

Chat online with a Customer Support Representative!

Or

call 1-800-345-DELTA (3358) between 7 a.m. and 9 p.m. (CST), Monday through Saturday.

Warranty FAQs

Satisfaction Poll

Did you find what you were looking for?

- Yes - It was easy to find what I needed
- Yes - but I struggled to find what I needed
- No - I could not find what I needed
- No - I visited the site by mistake

SUBMIT

WARRANTY

Lifetime Faucet and Finish Limited Warranty

All parts and finishes of the Delta faucet are warranted to the original consumer purchaser to be free from defects in material and workmanship for as long as the original consumer purchaser owns their home. Delta recommends using a professional plumber for all installation and repair.

Delta will replace, FREE OF CHARGE, during the warranty period, any part or finish that proves defective in material and/or workmanship under normal installation, use and service.

Replacement parts may be obtained by calling 1-800-345-DELTA (3358) or by writing:

Delta Faucet Company
Product Service
55 E. 111th Street
Indianapolis, IN 46280

This warranty is extensive in that it covers replacement of all defective parts and even finish, but these are the only two things that are covered. LABOR CHARGES AND/OR DAMAGE INCURRED IN INSTALLATION, REPAIR, OR REPLACEMENT, AS WELL AS ANY OTHER KIND OF LOSS OR DAMAGE ARE EXCLUDED. Proof of purchase (original sales receipt) from the original consumer purchaser must be made available to Delta for all warranty claims. THIS IS THE EXCLUSIVE WARRANTY BY DELTA FAUCET COMPANY, WHICH DOES NOT MAKE ANY OTHER WARRANTY OF ANY KIND, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY.

This warranty excludes all industrial, commercial and business usage, of faucets whose purchasers are hereby extended a five-year limited warranty from the date of purchase, with all other terms of this warranty applying except the duration of the warranty. This warranty is applicable only to Delta faucets manufactured after January 1, 1995.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Any damages to this faucet as a result of misuse, abuse, or neglect or any use of other than genuine Delta replacement parts WILL VOID THE WARRANTY.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. It applies only to Delta faucets installed in the United States of America, Canada and Mexico.

If you have any questions or concerns regarding our warranty plan, please e-mail us, or call 1-800-345-DELTA (3358).

CURAFLO OF BC LTD · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Limited Warranty for Installation of New Faucets

CuraFlo of BC Ltd. installed faucets on an individual basis in apartments at the Chateau Comox located at 1272 Comox Street, Vancouver, BC, as provided by the owner(s), and guarantees labour and workmanship for a period of thirty (30) days from the date of project substantial completion.

Note: This warranty applies to the following:

Suite #203
Suite #302
Suite #404
Suite #502
Suite #503
Suite #602
Suite #801

5.

Certificates, Technical Sheets & Reports

MCCUAIG & ASSOCIATES ENGINEERING LTD

201-33 East 8th Ave, Vancouver, BC V5T 1R5
Tel: (604) 255-0992 Fax: (604) 255-1054
Info@mccuaig.net www.mccuaig.net

CERTIFICATION OF SUBSTANTIAL COMPLETION

PROJECT NAME: CHATEAU COMOX

PROJECT ADDRESS: 1272 COMOX STREET,VANCOUVER, BC

PROJECT DESCRIPTION: EPOXY LINING ON DOMESTIC WATER SYSTEM

PROJECT NUMBER: 20110610

DATE OF SUBSTANTIAL COMPLETION: December 6TH, 2011

To the best of our knowledge, and in accordance to the Builders Lien Act of British Columbia, and the contract documents this project is Substantially Completed. Substantial Completion is defined in the Builders' Lien Act as the cost of completion or correction of remaining work not exceeding

a) 3% of the first $500,000.00 of the contract price,
b) 2% of the next $500,000.00 of the contract price, and
c) 1% of the balance of the contract price.

Engineer — Date: December 21st, 2011

Project Manager — Date: Dec 21, 2011

Ref. No. **20110610**-E-CRT-CSC-Certificate of Substantial Completion

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

Certificate of Pressure Test

This certificate is awarded to: **Chateau Comox**
1272 Comox Street
Vancouver, BC

We hereby confirm a pressure test of all domestic water piping, under the Scope of this Contract, was conducted at 1272 Comox Street, Vancouver, BC, to a pressure of 100 psi.

Signature of Contractor: _____

for **Karl Schmid**
CuraFlo of BC Ltd.

IAPMO RESEARCH AND TESTING, INC.

5001 East Philadelphia Street, Ontario, California 91761-2816 • (909) 472-4100 Fax (909) 472-4244 • www.iapmo.org

ANSI Accredited Program
PRODUCT CERTIFICATION

NSF / ANSI 61

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

Effective Date: March 2011 -Rev. 3/14/2011- Void After: March 2012

Product: Barrier Materials **NSF 61 Section 5** File No. N-4917

Issued To: Curaflo Inc.
23400 Commerce Park Road
Beachwood, OH 44122

IDENTIFICATION: Product containers shall be permanently and legibly marked with the manufacturer's name or trademark, and product identification, batch number or date of manufacturing. The fitting may also be marked with the standard designation within a rectangular box.

CHARACTERISTICS: Epoxy coatings for pipes or tanks to be applied according to the manufacturer's instructions and the specifications within this certificate of listing.

Manufactured in compliance with NSF/ANSI 61-2005 AD 1.0.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Robert R. Sieman
Chairman, Product Certification Committee

Russ Chaney
CEO, The IAPMO Group

For the most accurate and updated information please visit http://pld.iapmo.org/N-4917

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

-Rev. 3/14/2011- Void After: March 2012

Product: Barrier Materials **NSF 61 Section 5** File No. N-4917

Issued To: Curaflo Inc.

MODELS:

Trade Designation Coatings - Tank	Water Contact Size Restriction	Water Contact Temp.	Water Contact Material
AquataPoxy A-6[4]	>= 50 gallons	CLD 23	EPOXY
AquataPoxy A61[3]	>= 200 gallons	CLD 23	EPOXY
AquataPoxy A-7[2]	>= 1000 gallons	CLD 23	EPOXY

[2] Colors: White
Number of Coats: 1-2
Maximum Field Use Dry Film Thickness (in mils): 80
Maximum Thinner: None
Recoat/Cure Time: 8 hours / 7 days

[3] Number of Coats: 1
Colors: Aqua(Green) or white
Maximum Field Use Dry Film Thickness (in mils): 120
Maximum Thinner: None
Cure Time: 5 hours at 72°F
After final cure, 15 minutes flush is required prior to being placed into service.

[4] Colors: White, Black, Blue, Gray
Number of Coats: 1-2
Maximum Field Use Dry Film Thickness (in mils): 125
Maximum Thinner: None
Recoat/Cure Time: 8 hours at 77°F / 3 days at 77°F

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

-Rev. 3/14/2011- Void After: March 2012

Product: Barrier Materials **NSF 61 Section 5** File No. N-4917

Issued To: Curaflo Inc.

ADDITIONAL COMPANY INFO:

CuraFlo Technologies

CuraPoxy

Cohesant Materials Inc.

Trade Designation	Water Contact Size Restriction	Water Contact Temp	Water Contact Material
Coatings - Pipe			
CuraPoxy [1]	1/2" to 4"	C. HOT	EPOXY
CuraPoxy XL [2]	2" to 36"	C. HOT	EPOXY
CuraPoxy LS [3]	1/2" to 4"	C. HOT	EPOXY

[1] Colors: Blue
Number of Coats: 1
Maximum Field Use Dry Film Thickness (in mils): 120
Cure Time: 1 hour at 100°F followed by 4 hrs at 72°F
15 minutes flush is required prior to being placed in service
[2] Colors: Blue
Number of Coats: 1
Maximum Field Use Dry Film Thickness (in mils): 120
Cure Time: 1 hour at 100°F followed by 4 hrs at 72°F
15 minutes flush is required prior to being placed in service
[3] Colors: Blue
Number of Coats: 1
Maximum Field Use Dry Film Thickness (in mils): 20
Cure Time: 1 hour at 100°F followed by 4 hrs at 72°F
15 minutes flush is required prior to being placed in service

IAPMO RESEARCH AND TESTING, INC.

5001 East Philadelphia Street, Ontario, California 91761-2816 • (909) 472-4100 Fax (909) 472-4244 • www.iapmo.org

ANSI Accredited Program
PRODUCT CERTIFICATION
#0202

SCC Accredited
CB-P/S
OCPS
Accrédité CCN

CERTIFICATE OF LISTING

IAPMO Research and Testing, Inc. is a product certification body which tests and inspects samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

Effective Date: August 2011 Void After: August 2012

Product: Internal Pipe Epoxy Coating File No. 4491

Issued To: Curaflo Franchising Inc.
23400 Commerce Park
Beachwood, OH 44122

IDENTIFICATION: The container shall bear, affixed by label, the manufacturer's name or trademark, "Certified to IGC 189" and the UPC® certification mark. Internally coated pipe shall be permanently and legibly marked at 20' intervals on the outside of the exposed pipe with the manufacturer's name or trademark and the coating designation and material.

CHARACTERISTICS: A mechanically applied epoxy coating material to pressurized metallic piping systems. The coating shall be applied in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code.

Products comply with the applicable sections of the latest edition of the Uniform Plumbing Code® and the International Plumbing Code®. Manufactured in compliance with IGC 189-2008.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Robert P. Siemon
Chairman, Product Certification Committee

Russ Chaney
CEO, The IAPMO Group

For the most accurate and updated information please visit http://pld.iapmo.org/4491

This listing period is based upon the last date of the month indicated on the Effective Date and Void After Date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of the Product Certification Committee, or any evidence of non-compliance with applicable codes and standards or of inferior workmanship, may be deemed sufficient cause for revocation of this listing. Production of or reference to this form for advertising purposes may be made only by specific written permission of IAPMO Research and Testing, Inc. Any alteration of this certificate could be grounds for revocation of the listing.

DOC#081A

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

Void After: August 2012

Product: Internal Pipe Epoxy Coating File No. 4491

Issued To: Curaflo Franchising Inc.

MODELS:

Note: This product shall not be used where section 310.2 of the Uniform Plumbing Code is violated.

Curapoxy

Curapoxy LS

IAPMO RESEARCH AND TESTING, INC.
CERTIFICATE OF LISTING

Void After: August 2012

Product: Internal Pipe Epoxy Coating

File No. 4491

Issued To: Curaflo Franchising Inc.

ADDITIONAL COMPANY INFO:

MATERIAL SAFETY DATA SHEET

Trade Name: **CuraPoxy™ XL - Part A**

SECTION I

Manufacturer:	CuraFlo™ 23400 Commerce Park Beachwood, OH 44122	**Emergency Telephone #:**	703-527-3887 Chemtrec
Date:	February 1, 2007	**Information Telephone #:**	800-714-9259
Reason for Revision:	Change of Address		

SECTION II: INGREDIENT INFORMATION

INGREDIENT	CAS NUMBER	PEL	TLV
Polyfunctional Glycidyl Ether Modifier	trade secret	N/E	N/E
Mica	12001-26-2	*3 mg/m^3	*3 mg/m^3
Titanium Dioxide	13463-67-7	*15 mg/m^3	*10 mg/m^3

N/E indicates "not established"
SARA Title III, Section 313 ingredients: None All ingredients are TSCA inventory listed.
*Note: The PEL & TLV for this ingredient are for respirable dust levels only. In this product, it is pre-dispersed and not available as a dust. Therefore, under normal use conditions it is not considered a hazard.

The specific identity and/or remaining ingredient(s) are being withheld as a trade secret.

SECTION III: PHYSICAL DATA

Boiling Point: > 100 deg C
Vapor Pressure: Not available
Vapor Density: Not applicable
Solubility in Water: Negligible
Specific Gravity: 1.1 - 1.4
Melting Point: Not available
Evaporation Rate: Not established
% Volatile by Volume: <1%
Appearance and Odor: Heavy paint consistency - mild epoxy odor

SECTION IV: FIRE & EXPLOSION HAZARD DATA

Flash Point: >100 deg C, TCC Method **OSHA/NFPA Fire Hazard Classification:** Class III B
Extinguishing Media: Foam, CO_2, Dry Chemical, Water Spray **LFL:** Not available **UFL:** Not available
Special Fire Fighting Procedures: The use of self-contained breathing apparatus is recommended for firefighters. Water may be helpful in keeping adjacent containers cool. Avoid spreading burning liquid with water used for cooling purposes.
Unusual Fire and Explosion Hazards: Keep work areas free of hot metal surfaces and other sources of ignition.
NFPA classification: Health: 2 Flammability: 1 Reactivity: 0

SECTION V: REACTIVITY DATA

Stability: Stable, will react with amines.
Incompatibility: Strong acids and bases, selected amines, oxidizing agents.
Hazardous Decomposition or Byproducts: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, phenolics, acids, aldehydes, ketones and other unidentified toxic and/or irritating compounds.
Hazardous Polymerization: Will not occur.

SECTION VI: HEALTH HAZARD DATA

Primary Routes of Entry:

EYES: May cause slight transient (temporary) eye irritation. Product may be irritating to the eyes.
SKIN: May cause allergic skin reaction in susceptible individuals. Prolonged exposure not likely to cause significant skin irritation. Repeated exposure may cause skin irritation. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.
INHALATION: Vapors are unlikely due to physical properties.
INGESTION: Single dose oral toxicity is low. No hazards anticipated from ingestion incidental to industrial exposure.
SYSTEMIC and OTHER EFFECTS: Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects.

Carcinogenicity: Contains no ingredient listed as a potential carcinogen or as a carcinogen per OSHA, ACGIH, NTP or IARC at concentrations equal to or greater than 0.1%.

Emergency and First Aid Procedures:

EYES: Flush with large quantities of water for at least 15 minutes. Consult a physician.
SKIN: Wash thoroughly with soap and flowing water.
INHALATION: Remove to fresh air if effects occur. Consult a physician.
INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled: Keep sources of ignition and hot metal surfaces isolated from the spill. Material may flow slowly. Scrape into containers for disposal.
Waste Disposal Methods: Dispose of according to all local, state and federal regulations.
Precautions to Be Taken in Handling and Storing: Keep containers closed when not in use. Avoid prolonged or repeated contact with skin. DO NOT handle or store near flame, heat or strong oxidants. Do not store in direct sunlight. Avoid prolonged storage above 35 deg C.

SECTION VIII: CONTROL MEASURES

RESPIRATORY: If exposure may or does exceed occupational exposure limits, respiratory irritation is experienced, or during spray application, use a properly fitted MSHA/NIOSH approved respirator fitted with organic vapor cartridges. In addition, spray application may require the use of paint pre-filters. If sanding or grinding on cured material, use above respirator fitted with HEPA filters or a dust mask.
VENTILATION: General mechanical ventilation is sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.
EYES: Use safety glasses, splash-proof eye goggles or goggles with full faceshield.
CLOTHING/GLOVES: Use impermeable gloves to prevent skin irritation. If potential for skin contact is present, impervious protective clothing should be worn.
OTHER PROTECTIVE EQUIPMENT: The availability of eye washes and safety showers in work areas is recommended.

SECTION IX: TRANSPORT DATA

Proper Shipping Name: Not regulated
Hazard Class: Not regulated
Identification Number: None
Packing Group: None

SECTION X: DISCLAIMER

CURAFLO MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY INFORMATION PRESENTED HEREIN, ALL OF WHICH IS PROVIDED "AS IS". TO THE MAXIMUM EXTENT PERMITTED BY LAW, CURAFLO EXPRESSLY EXCLUDES ALL WARRANTIES, OBLIGATIONS, REPRESENTATIONS, LIABILITIES, TERMS AND CONDITIONS (WHETHER THEY ARE EXPRESS OR IMPLIED, OR ARISE IN CONTRACT, STATUTE, OR OTHERWISE, AND IRRESPECTIVE OF THE NEGLIGENCE OF CURAFLO, ITS EMPLOYEES OR AGENTS) IN CONNECTION WITH THE INFORMATION PRESENTED HEREIN. CURAFLO MAKES NO REPRESENTATIONS OR WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PURPOSE, NONINFRINGEMENT OR CONFORMITY WITH DESCRIPTION OR SAMPLE.

MATERIAL SAFETY DATA SHEET

Trade Name: **CuraPoxy™ XL - Part B**

SECTION I

Manufacturer:	CuraFlo™ 23400 Commerce Park Beachwood, OH 44122	**Emergency Telephone #:**	703-527-3887 Chemtrec
Date: **Reason for Revision:**	February 1, 2007 Change of Address	**Information Telephone #:**	800-714-9259

SECTION II: INGREDIENT INFORMATION

INGREDIENT	CAS NUMBER	PEL	TLV
Modified cycloaliphatic amine	trade secret	N/E	N/E
Mica	12001-26-2	*3 mg/m^3	*3 mg/m^3

N/E indicates "not established"
SARA Title III, Section 313 ingredients: None All ingredients are TSCA inventory listed.
*Note: The PEL & TLV for this ingredient are for respirable dust levels only. In this product, it is pre-dispersed and not available as a dust. Therefore, under normal use conditions it is not considered a hazard.

The specific identity and/or remaining ingredient(s) are being withheld as a trade secret.

SECTION III: PHYSICAL DATA

Boiling Point: > 100 deg C
Vapor Pressure: Not available
Vapor Density: Not applicable
Solubility in Water: Negligible
Specific Gravity: 1.1 - 1.4
Melting Point: Not available
Evaporation Rate: Not established
% Volatile by Volume: <1%
Appearance and Odor: Heavy paint to mastic consistency – slight ammonia odor

SECTION IV: FIRE & EXPLOSION HAZARD DATA

Flash Point: >100 deg C, TCC Method **OSHA/NFPA Fire Hazard Classification:** Class III B
Extinguishing Media: Foam, CO_2, Dry Chemical, Water Spray **LFL:** Not available **UFL:** Not available
Special Fire Fighting Procedures: The use of self-contained breathing apparatus is recommended for firefighters. Water may be helpful in keeping adjacent containers cool.
Unusual Fire and Explosion Hazards: Keep work areas free of hot metal surfaces and other source of ignition.
NFPA classification: Health: 3 Flammability: 1 Reactivity: 0

SECTION V: REACTIVITY DATA

Stability: Stable
Incompatibility: Strong acids and bases, selected epoxy resins and strong oxidizing agents.
Hazardous Decomposition or Byproducts: Thermal decomposition in the presence of air may yield carbon monoxide, carbon dioxide, ammonia, nitrogen oxides and other unidentified toxic and/or irritating compounds.
Hazardous Polymerization: Will not occur.

SECTION VI: HEALTH HAZARD DATA

Primary Routes of Entry:

EYES: Severe eye irritant. May cause burns. Vapors may be irritating.
SKIN: Severe skin irritant. May cause injury to skin following prolonged or repeated contact. Repeated exposure may cause sensitization of the individual.
INHALATION: Vapors/mists may be corrosive to the upper respiratory tract. Repeated or prolonged exposure can result in lung damage. May cause respiratory tract sensitization.
INGESTION: Not expected to be a relevant route of exposure. However, the material is corrosive and may cause permanent damage to the mouth, throat and stomach.
SYSTEMIC and OTHER EFFECTS: Product can be alkaline, corrosive and irritating to skin, ears, eyes and mucous membranes. May cause injury upon prolonged contact and repeated contact.

Carcinogenicity: Contains no ingredient listed as a potential carcinogen or as a carcinogen per OSHA, ACGIH, NTP or IARC at concentrations equal to or greater than 0.1%.

Emergency and First Aid Procedures:

EYES: Flush with large quantities of water for at least 15 minutes. Seek immediate medical attention.
SKIN: Wash immediately with soap and water. If irritation or sensitization occurs, remove individual from further contact with material. Remove and wash contaminated clothing before reuse.
INHALATION: Remove to fresh air if effects occur. Consult a physician.
INGESTION: If this product is swallowed, administer 3-4 glasses of milk or water. Do not induce vomiting. Seek medical advice.

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to Be Taken in Case Material is Released or Spilled: Keep sources of ignition and hot metal surfaces isolated from the spill. Material may flow slowly. Scrape into containers for disposal.
Waste Disposal Methods: Dispose of according to all local, state and federal regulations.
Precautions to Be Taken in Handling and Storing: Keep containers closed when not in use. Avoid breathing vapors and prolonged or repeated contact with skin. DO NOT handle or store near flame, heat or strong oxidants. Do not store in direct sunlight. Avoid prolonged storage above 35 deg C.

SECTION VIII: CONTROL MEASURES

RESPIRATORY: Respiratory protection should not be needed. If exposure may or does exceed occupational exposure limits, respiratory irritation is experienced, or during spray application, use a properly fitted MSHA/NIOSH approved respirator fitted with ammonia & methylamine cartridges. In addition, spray application may require the use of paint pre-filters. If sanding or grinding on cured material, use above respirator fitted with HEPA filters or a dust mask.
VENTILATION: General mechanical ventilation is sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.
EYES: Use chemical safety glasses, splash-proof eye goggles or goggles with full faceshield.
CLOTHING/GLOVES: Use nitrile or other chemical resistant gloves. Wear clean, long-sleeved, body covering clothing and rubber boots.
OTHER PROTECTIVE EQUIPMENT: The availability of eye washes and safety showers in work areas is recommended.

SECTION IX: TRANSPORT DATA

Proper Shipping Name: Amines, liquid, corrosive, n.o.s. (modified cycloaliphatic amine)
Hazard Class: Corrosive Material - 8
Identification Number: UN 2735
Packing Group: III

SECTION X: DISCLAIMER

CURAFLO MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO ANY INFORMATION PRESENTED HEREIN, ALL OF WHICH IS PROVIDED "AS IS". TO THE MAXIMUM EXTENT PERMITTED BY LAW, CURAFLO EXPRESSLY EXCLUDES ALL WARRANTIES, OBLIGATIONS, REPRESENTATIONS, LIABILITIES, TERMS AND CONDITIONS (WHETHER THEY ARE EXPRESS OR IMPLIED, OR ARISE IN CONTRACT, STATUTE, OR OTHERWISE, AND IRRESPECTIVE OF THE NEGLIGENCE OF CURAFLO, ITS EMPLOYEES OR AGENTS) IN CONNECTION WITH THE INFORMATION PRESENTED HEREIN. CURAFLO MAKES NO REPRESENTATIONS OR WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PURPOSE, NONINFRINGEMENT OR CONFORMITY WITH DESCRIPTION OR SAMPLE.

McCuaig & Associates Engineering Ltd.

201 – 33 East 8th Avenue
Vancouver, BC V5T 1R5
Phone: 604-255-0992
Fax: 604-255-1054

5th December, 2011

Chateau Comox
c/o Southview Property Management
110 – 7580 River Road
Richmond BC V6X 1X6

Via Email

Attention: Mr. Kevin D Green

RE: Pipe Sample Testing, Chateau Comox – 1272 Comox Street, Vancouver BC

Dear Mr. Green,

McCuaig & Associates Engineering were provided with pipe samples by Curaflo of B.C. Inc. The samples were taken on November 9th. The pipe sample testing involved a visual inspection, knife peel test, bond test, and thickness measurements. The pipes were tested in accordance to Section 10.0 Quality Control Section of the CuraFlo Commercial Technical Manual.

The pipe samples provided are as follows:

			Diameter	Length
Sample 1	Cold	203-403, 502-802 Kitchen Riser	1 1/4"	16"
Sample 2	Hot	203-403, 502-802 Kitchen Riser	1 1/4"	16"

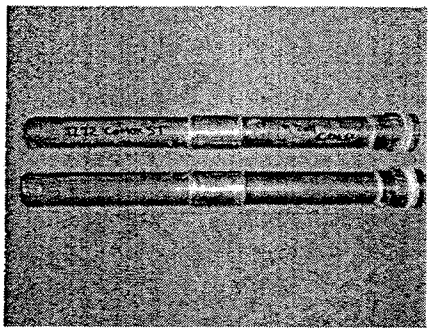


***Photo 1** – Pipe Sample 1*

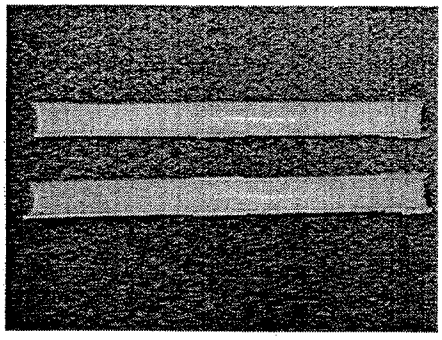


***Photo 2** – Pipe Sample 1*

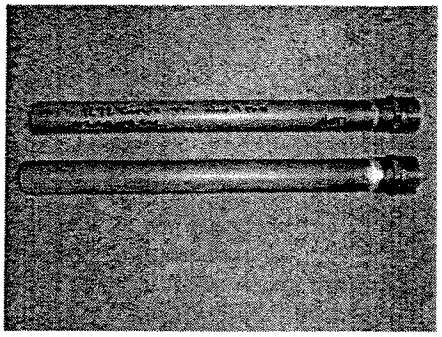


***Photo 3** – Pipe Sample 2*

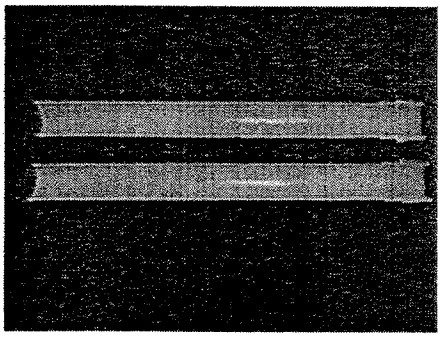


***Photo 4** – Pipe Sample 2*

Visual Inspection

The pipe samples were cut longitudinally and the inner surface was visually examined. The following table summarized the results.

	Sample 1	Sample 2
Blisters	None	None
Cracks	None	None
Chips	None	None
Pinholes	None	None
Voids	None	None
Holidays in the coating	None	None
Pits	None	None

Sample 1 and Sample 2 have a good surface finish. There are no breaches in the epoxy to the substrate.

Knife Peel Test

We made six 1 ½" longitudinal cuts through the epoxy lining and to the substrate in each pipe sample. None of the cuts on Sample 1 or Sample 2 exhibited separation between the epoxy and the substrate.

Bond Strength Test

The epoxy coating was tested in accordance with method A of ASTM Standard D3359. The results are as follows:

Sample 1: No separation between epoxy and substrate. Rating 5A (No peeling or removal).

Sample 2: No separation between epoxy and substrate. Rating 5A (No peeling or removal).

Thickness Measurement

The thickness measurement for the sample was taken from ten locations. The results are as follows:

Sample 1: average thickness of 0.94mm. The minimum thickness measured was 0.66mm.
Sample 2: average thickness of 0.98mm. The minimum thickness measured was 0.53mm.

The minimum acceptable thickness is 0.25 mm.

Summary

Sample 1 and Sample 2 were in general accordance to Section 10.0 Quality Control specification in the CuraFlo Commercial Technical Manual.

Sincerely,
McCUAIG & ASSOCIATES ENGINEERING LTD.

Prepared by:

Ali Karimi, P. Eng.

Ref. No. **20110610**-E-PIPE RPT-01-FNL

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
201	Lav Basin	6.22	6.15	6.59	6.07
	Tub	3.61	3.51	3.44	3.23
	Kitchen Sink	6.89	6.54	6.30	5.92

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
202	Lav Basin	7.92	7.82	7.87	7.64
	Tub	3.44	3.40	3.21	3.18
	Kitchen Sink	7.21	7.24	7.02	7.02
	Ensuite Basin	7.81	7.62	7.77	7.60

CURAFLO OF BC LTD • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form:

Job No.: L0252 **Job Address:** 1272 Comox Street, Vancouver, BC

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
203	Lav Basin	9.56	9.40	9.42	9.21
	Tub	2.43	2.61	2.56	2.50
	Kitchen Sink	8.44	8.21	8.12	8.07
	Ensuite Basin	7.99	9.12	7.91	8.91

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
204	Lav Basin	12.97	12.15	12.48	11.57
	Tub	3.90	3.40	3.55	3.26
	Kitchen Sink	9.10	9.41	8.88	9.15

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.

Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
301	Lav Basin	7.14	7.10	6.87	6.92
	Tub	3.87	3.62	3.41	3.41
	Kitchen Sink	7.74	7.74	7.63	7.63

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
302	Lav Basin	6.72	6.56	6.38	6.31
	Tub	3.82	3.61	3.61	3.42
	Kitchen Sink	6.81	7.79	6.95	7.84
	Ensuite Basin	6.81	6.42	6.40	6.02

CURAFLO OF BC LTD · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
303	Lav Basin	5.21	5.10	4.66	4.81
	Tub	4.21	4.01	3.96	3.97
	Kitchen Sink	8.21	8.15	8.02	8.02
	Ensuite Basin	8.55	8.41	8.34	8.22

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
304	Lav Basin	10.82	10.81	10.06	10.76
	Tub	4.32	4.31	4.01	3.86
	Kitchen Sink	8.02	7.59	7.97	7.04
	Ensuite Basin	N/A	N/A	N/A	N/A

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.

Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
401	Lav Basin	7.55	7.20	7.21	7.49
	Tub	4.26	4.09	4.01	4.06
	Kitchen Sink	8.62	9.10	8.03	8.96

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
402	Lav Basin	6.98	6.79	7.04	6.56
	Tub	3.21	3.05	3.05	3.03
	Kitchen Sink	7.45	7.23	7.09	7.11

CURAFLO OF BC LTD · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9
OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
403	Lav Basin	7.29	7.41	7.14	7.21
	Tub	3.49	3.41	3.39	3.23
	Kitchen Sink	7.89	7.74	8.09	7.21
	Ensuite Basin	9.22	9.12	8.94	8.87

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
404	Lav Basin	23.21	8.25	7.29	8.18
	Tub	4.02	4.09	4.47	4.12
	Kitchen Sink	10.41	8.97	10.22	8.81

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
501	Lav Basin	9.39	7.47	7.80	6.81
	Tub	3.41	3.21	3.11	3.10
	Kitchen Sink	8.97	8.21	8.68	7.98
	Ensuite Basin	6.91	3.21	6.72	3.05
	Ensuite Tub	3.44	6.44	3.05	6.61

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
502	Lav Basin	6.21	6.11	6.04	5.95
	Tub	4.62	4.21	4.01	4.06
	Kitchen Sink	8.62	8.23	8.22	7.95
	Ensuite Basin	7.02	6.92	6.95	6.24

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
503	Lav Basin	9.55	9.81	9.28	9.61
	Tub	3.97	3.21	4.01	3.43
	Kitchen Sink	14.01	13.21	13.81	12.95

CURAFLO OF BC LTD. • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9
OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address:** 1272 Comox Street, Vancouver, BC

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
601	Lav Basin	7.80	7.60	9.87	7.12
	Tub	2.93	2.87	2.62	2.59
	Kitchen Sink	5.92	6.01	5.44	5.91
	Ensuite Basin	11.62	11.51	11.44	11.38
	Ensuite Tub	3.44	3.21	2.92	3.02

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
602	Lav Basin	9.56	9.31	9.22	9.21
	Tub	3.22	3.14	3.41	3.05
	Kitchen Sink	10.21	10.25	10.80	10.14
	Ensuite Tub	N/A	3.21	N/A	3.05
	Ensuite Basin	N/A	10.14	N/A	9.86

CURAFLO OF BC LTD • 7436 FRASER PARK DRIVE • BURNABY, BC V5J 5B9

OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.

Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
701	Lav Basin	13.85	5.67	15.20	6.21
	Tub	5.02	4.33	4.87	2.51
	Kitchen Sink	6.74	5.57	6.52	6.55
	Ensuite Basin	5.25	N/A	5.15	N/A
	Ensuite Tub	4.01	N/A	3.50	N/A
	Main Bath	N/A	5.55	N/A	5.97

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
702	Lav Basin	15.98	14.18	16.02	14.92
	Tub	4.83	4.85	2.95	4.89
	Kitchen Sink	10.24	10.05	10.12	10.11
	Main Basin	10.47	N/A	10.37	N/A
	Ensuite Basin	N/A	10.15	N/A	11.12
	Ensuite Tub	N/A	4.12	N/A	3.97

CURAFLO OF BC LTD. · 7436 FRASER PARK DRIVE · BURNABY, BC V5J 5B9
OFFICE 604.298.7278 FAX 604.294.5673 WEBSITE CURAFLO.COM/BC

CuraFlo of BC Ltd.
Flow Test Form

Job No.: L0252 **Job Address: 1272 Comox Street, Vancouver, BC**

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
801	Lav Basin	15.06	14.44	14.56	14.11
	Tub	4.11	4.03	4.03	3.89
	Kitchen Sink	14.84	12.97	12.47	12.03

Suite #	Fixture and/or Area Tested	Hot		Cold	
		Time Taken in (Secs) / Volume of Container Used		Time Taken in (Secs) / Volume of Container Used	
		Before Lining	After Lining	Before Lining	After Lining
802	Lav Basin	9.93	10.01	9.17	9.66
	Tub	3.97	3.88	3.95	3.67
	Kitchen Sink	10.09	9.76	10.59	9.68
	Ensuite Basin	9.84	N/A	9.77	N/A
	Ensuite Tub	4.01	N/A	3.92	N/A

6.

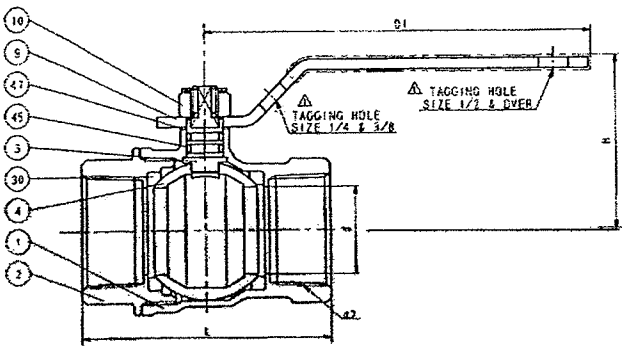
Shop Drawings

FORGED BRASS BALL VALVE

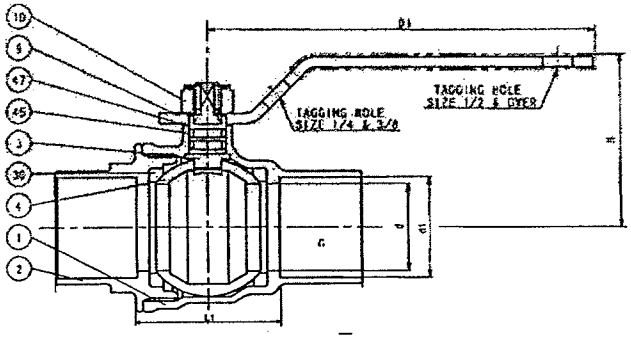
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Chrome Plated Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats
CSA (US/C) • UL • FM**

CODE # 58
THREADED



CODE # 59
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-66) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM.

KITZ Code No. 58 Threaded Ends
59 Solder Ends

STANDARDS

END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3

PRESSURE/TEMPERATURE

150 PSI SATURATED STEAM TO 366°F
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-29

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS - WEIGHTS - QUANTITIES

d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
1/4	.39	1.46	2.76	1.65	1.11	.381	.377	29	120
3/8	.39	1.46	2.76	1.65	1.05	.506	.502	29	120
1/2	.59	1.57	3.15	2.08	1.13	.631	.627	29	96
3/4	.79	1.69	3.15	2.36	1.37	.881	.877	45	60
1	.98	1.97	4.33	2.83	1.64	1.132	1.128	60	36
1 1/4	1.26	2.16	4.33	3.31	2.00	1.382	1.378	68	24
1 1/2	1.57	2.52	5.90	3.62	2.35	1.633	1.628	50	16
2	1.97	2.83	5.90	4.33	2.83	2.133	2.128	71	16

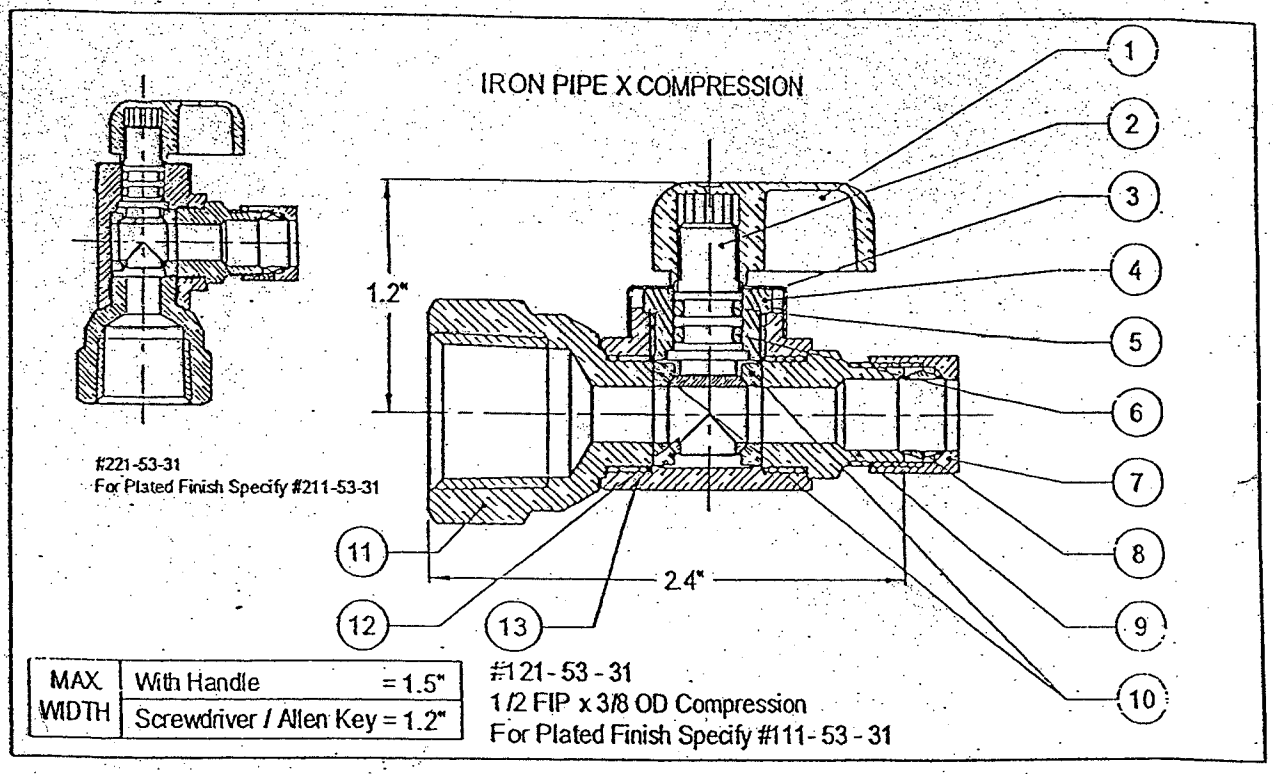
**CSA (US/C):
ASME B16.33 – 125G
AGA 3-88 – 2/5G
CGA 9.1 M97/ANSI 21.15-1997 – .5G
CGA 3.16-M88 – 125G
CGA CR 91-002 - 2G
CGA 9.2 M-88 – .5G
UL-258 – 175 WWP (Fire Protection Trim Valves)
FM-1140 – 175 WWP (Fire Protection Systems)

KITZ®

TDS - 77
Rev. July/00

Dahl **mini-ball**™ Valve

Plumbing, Heating, Cooling, etc



U.S. PATENT No. 5735307

1. Nickel Plated Zinc Handle
2. Nickel Plated Brass Spindle
3. Handle Stop Cap (Brass)
4. Brass Spindle Bushing
5. EPDM O-ring
6. Viton* O-ring
7. Brass 3/8 OD Compression Nut
8. Brass Tapered Sleeve
9. Brass 3/8 OD Compression End
10. Teflon* Seals
11. Brass 1/2 FIP End
12. Brass Ball
13. Brass Body

Working Pressure: 250 psi / 250°F depending on pipe material.

cULus, UPC, NSF 61/9, A112.18.1M

Designed and Manufactured in Canada

Cv=approx. 3.0

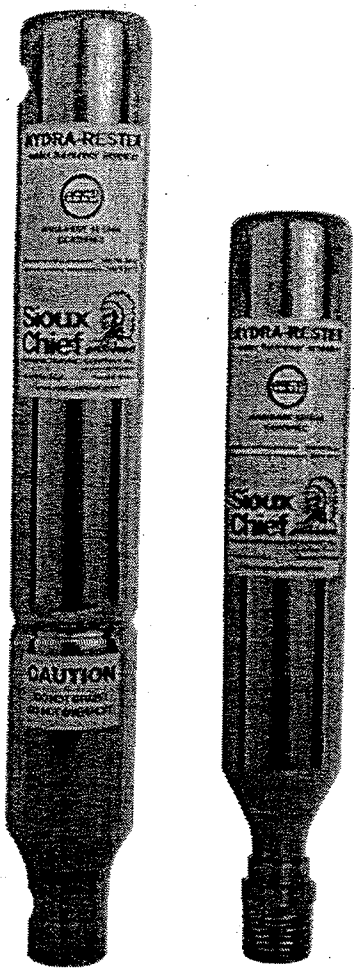
Also available without handle for Screwdriver or Allen key operation

dahl brothers canada limited

2600 STH. SHERIDAN WAY, MISSISSAUGA, ON, CANADA L5J 2M4
905-822-2330 CAN 800-268-5355 U.S. 800-268-2363
FAX(905) 855-1450, USA AND CANADA 800-226-1801

Hydra-Rester®

Engineered Water Hammer Arrester



ASSE 1010

Certified by the American Society of Sanitary Engineering to the ANSI/ASSE 1010-2004 Standard.

Quality Assured

Lifetime cycle tested at U.S. Testing Laboratories in Fairfield, NJ, to withstand 10,000 shock cycles.

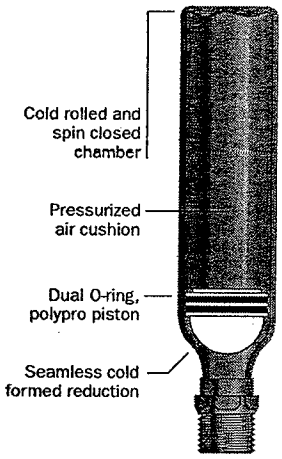
Factory tested to withstand 500,000 cycles, without failure. (#654-C tested)

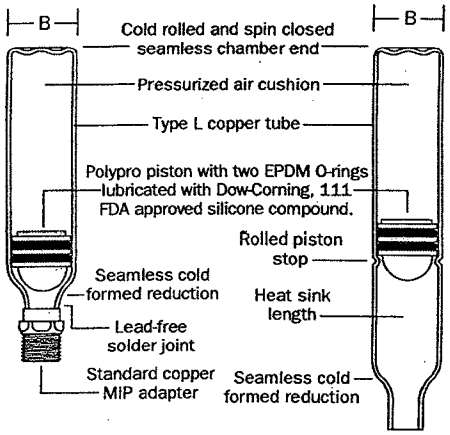
All Hydra-Resters® feature:

Compact Size
Allows for installation in a 2x4 wall cavity.

Installation Angle
Install upright, horizontally, or any angle in between.

Sealed Wall Installation
Approved for installation with no access panel required.





Item No.	Conn. Size	Unit Size	Dimensions		Fixture Unit Capacity	Cubic Inch Volume	Min. Qty.	Case Qty.	List Price Each
			Length	Width					
MIP THREAD									
652-A	1/2"	A	6-1/2"	1-3/8"	1-11	5	1	16	16.50
653-B	3/4"	B	8-3/4"	1-3/8"	12-32	7	1	16	19.75
654-C	1"	C	11"	1-3/8"	33-60	11	1	16	50.50
655-D	1"	D	10-1/8"	2-1/8"	61-113	20	1	4	62.00
656-E	1"	E	12-5/8"	2-1/8"	114-154	29	1	4	84.00
657-F	1"	F	15-1/8"	2-1/8"	155-330	36	1	4	132.00
MALE SWEAT									
652-AS	1/2"	A	8-1/4"	1-3/8"	1-11	5	1	16	16.25
653-BS	3/4"	B	10"	1-3/8"	12-32	7	1	16	19.25
654-CS	1"	C	12-1/2"	1-3/8"	33-60	11	1	16	49.50
655-DS	1"	D	11"	2-1/8"	61-113	20	1	4	61.00
656-ES	1"	E	13-1/2"	2-1/8"	114-154	29	1	4	83.00
657-FS	1"	F	16"	2-1/8"	155-330	36	1	4	131.00

SPECIFICATIONS

Maximum working temp ..... 250 °F
Maximum working pressure ... 350 PSIG
Burst tested to ..... 2,900 PSIG

DISTRIBUTED BY

tel: 1-800-821-3944
fax: 1-800-758-5950
www.siouxchief.com
P.O. Box 397
24110 South Peculiar Drive
Peculiar, Missouri 64078 U.S.A.

Sioux Chief

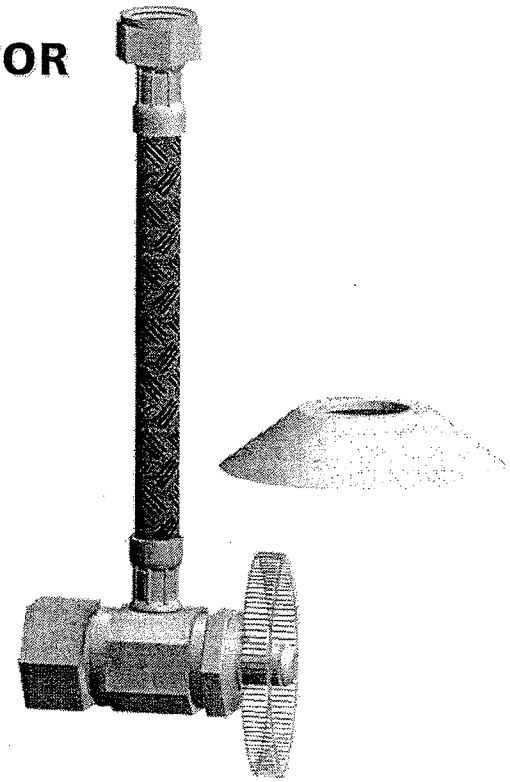
BrassCraft®

FLEXIBLE ONE-PIECE WATER SUPPLIES

PRODUCT APPLICATION

For use with potable hot and cold water. A combined one-piece flexible water supply. A BrassCraft stop is attached to a patented engineered polymer braid connector for installation of faucets, toilets and dishwashers.

BRAIDED FLEXIBLE CONNECTOR



FLEXIBLE CONNECTOR PRODUCT SPECIFICATIONS

Operating Pressure: 125 psi maximum
Operating Temperature: 40°F to 140°F. Intermittent to 180°F.

CONNECTOR MATERIALS:

Nuts: C36000 brass, P.O.M.
Braiding: Polyvinyl chloride coated polyester yarn
(patent no. #5,803,129 and other US patents pending)
Inner Hose: PVC
Washers: Nitrile rubber

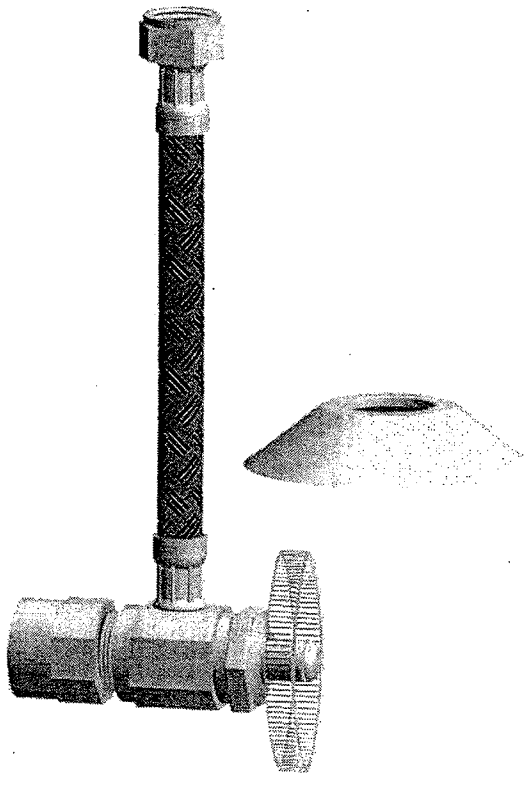
MANUFACTURED IN ACCORDANCE WITH:

- ASME A112.18.6
- NSF 61
- CSA B125

APPROVAL LISTINGS:

- IAPMO File #0452
- Listed by UL to NSF 61
- CSA Approved
- State of Michigan File 1417-PA
- City of New York File #MEA209-97-E

BRASS STOPS



BRASS STOP PRODUCT SPECIFICATIONS

Operating Pressure: 125 psi maximum
Operating Temperature: 40°F to 150°F. Intermittent to 180°F.

BRASS STOP MATERIALS:

Body and Other Brass Components: C36000 brass
Stem: P.O.M.
Washers: Nitrile or EPDM rubber
Handle: Lexan®
Escutcheon: Stainless Steel

MANUFACTURED IN ACCORDANCE WITH:

- ANSI/NSF 61
- CSA B125
- ASME A112.18.1

APPROVAL LISTINGS:

- Listed by UL to NSF 61
- IAPMO File #0645
  (all stops except dual outlet)
- CSA Approved

CPVC/BRASS STOPS

CPVC/BRASS STOP PRODUCT SPECIFICATIONS

Operating Pressure: 125 psi maximum
Operating Temperature: 40°F to 150°F. Intermittent to 180°F.

CPVC/BRASS STOP MATERIALS:

Bodies and Other Brass Components: C36000 brass
Plastic Inserts: CPVC 23447-B per ASTM D1748-81
Seals: EPDM rubber
Handle: Lexan®

MANUFACTURED IN ACCORDANCE WITH:

- ANSI/NSF 61
- ASME A112.18.1
- ASTM D2846

APPROVAL LISTINGS:

- Listed by UL to NSF 61
- IAPMO File #0645
- CSA Approved

SPECIFICATIONS

Trousses d'amenée

When ordering please refer to the price list for required product finish.
Lorsque vous commandez, veuillez consulter la liste de prix pour déterminer le fini requis pour le produit.

SUPPLY KITS

Lavabo/évier (avec soupapes)

LAVATORY/SINK (With Valves)

ONE-PIECE CONSTRUCTION WITH INSERT • POL. CHROME WITH STAINLESS STEEL ESCUTCHEONS

Fabrication monopièce avec insertion • Chrome poli avec cache-entrée en acier inoxydable

Compression Inlet x Compression Riser

	N° de pièce / Part No.	Arrivée de soupape / Valve Inlet	Longueur du tuyau de montée D.E. x / Riser O.D. x Length	Carton Qté / Qty.	Carton Poids / Weight
Angulaire	CR1912A	1/2" nom. Compr.	3/8" O.D. x 12"	50 pr.	50 lb.
	CR1915A	1/2" nom. Compr.	3/8" O.D. x 15"	50 pr.	57 lb.
	CR1920A	1/2" nom. Compr.	3/8" O.D. x 20"	50 pr.	60 lb.
ANGLE					
Droite	CR1412A	1/2" nom. Compr.	3/8" O.D. x 12"	50 pr.	57 lb.
	CR1415A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 15"	50 pr.	63-1/2 lb.
	CR1420A	1/2" nom. Compr.	3/8" O.D. x 20"	50 pr.	68 lb.
	CR1430A	1/2" nom. Compr.	3/8" O.D. x 30"	25 pr.	40 lb.
STRAIGHT					

Arrivée à compression x Tuyau de montée à compression

Copper Sweat 5" Ext. Tube Inlet x Compression Riser

	N° de pièce / Part No.	Arrivée de soupape / Valve Inlet	Longueur du tuyau de montée D.E. x / Riser O.D. x Length	Carton Qté / Qty.	Carton Poids / Weight
Angulaire	CS400A	1/2" nom.Sweat/ Soudure	3/8" O.D. x 12"	50 pr.	54 lb.
	■ CS425A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 20"	50 pr.	62 lb.
	CS500A	1/2" nom.Sweat/ Soudure	1/2" O.D. x 12"	50 pr.	61 lb.
	■ CS505A	1/2" nom. Sweat/ Soudure	1/2" O.D. x 20"	50 pr.	75 lb.
ANGLE					
Droite	■ CS407A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 30"	25 pr.	44 lb.
STRAIGHT					

Arrivée à tube de rallonge 5" à soudure au cuivre x Tuyau de montée à compression

F.I.P. Inlet x Compression Riser

Angulaire	R1512A	3/8" F. I.P.	3/8" O.D. x 12"	50 pr.	46 lb.
	R1520A	3/8" F. I.P.	3/8" O.D. x 20"	50 pr.	56 lb.
	R1712A	1/2" F. I.P.	3/8" O.D. x 12"	50 pr.	50 lb.
	R1715A	1/2" F. I.P.	3/8" O.D. x 15"	50 pr.	56 lb.
	R1720A	1/2" F. I.P.	3/8" O.D. x 20"	50 pr.	62 lb.
	R1730A	1/2" F. I.P.	3/8" O.D. x 30"	25 pr.	38 lb.
ANGLE					
Droite	R1012A	3/8" F. I.P.	3/8" O.D. x 12"	50 pr.	50 lb.
	R1020A	3/8" F. I.P.	3/8" O.D. x 20"	50 pr.	60 lb.
	R1030A	3/8" F. I.P.	3/8" O.D. x 30"	25 pr.	38 lb.
	R1036A	3/8" F. I.P.	3/8" O.D. x 36"	25 pr.	42 lb.
	R1212A	1/2" F. I.P.	3/8" O.D. x 12"	50 pr.	58 lb.
	R1220A	1/2" F.I.P.	3/8" O.D. x 20"	50 pr.	64 lb.
	R1230A	1/2" F. I.P.	3/8" O.D. x 30"	25 pr.	40 lb.
	R1236A	1/2" F I.P.	3/8" O.D. x 36"	25 pr.	44 lb.
STRAIGHT					

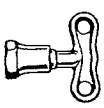
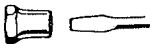
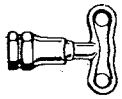
Arrivée à F.I.P. x Tuyau de montée à compression

Copper Sweat Inlet x Compression Riser

Angulaire	R1B12A	3/8" nom. Sweat/ Soudure	3/8" O.D. x 12"	50 pr.	44 lb.
	R1912A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 12"	50 pr.	45 lb.
	R1915A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 15"	50 pr.	50 lb.
	R1920A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 20"	50 pr.	54 lb.
ANGLE					
Droite	R1412A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 12"	50 pr.	48 lb.
	R1420A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 20"	50 pr.	54 lb.
	R1430A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 30"	25 pr.	38 lb.
	R1436A	1/2" nom. Sweat/ Soudure	3/8" O.D. x 36"	25 pr.	40 lb.
STRAIGHT					

Arrivée à soudure au cuivre x Tuyau de montée à compression

Valve Styles

Valve Styles / *Genres de soupapes*	Lock Shield Loose Key / *Bouclier Clé libre*	Lock Shield Screw Driver Slot / *Bouclier Rainure de tournevis*	Stuffing Box / *Boîte à étoupe*	Stuffing Box Lock Shield Loose Key / *Boîte à étoupe Bouclier Clé libre*	Stuffing Box Lock Shield Screw Driver / *Boîte à étoupe Bouclier tournevis*	Cross Handle / *Manette en croix*	Brass Round Handle / *Manette ronde en laiton*
							
Add / *Ajoutez*	Prefix "S" / *Préfixe "S"*	Prefix "SS" / *Préfixe "SS"*	Prefix "T" / *Préfixe "T"*	Prefix "ST" / *Préfixe "ST"*	Prefix "SST" / *Préfixe "SST"*	Prefix "X" / *Préfixe "X"*	Prefix "XX" / *Préfixe "XX"*

Genres de soupapes

■ Non-Standard - subject to availability, minimum order & possible extended delivery. / *Non standard - sous réserve de disponibilité, commande minimale et livraison possiblement retardée.*

1000° Pipe Insulation

Submittal Date _____

KNAUF INSULATION

Description

Knauf 1000° Pipe Insulation is a molded, heavy-density, one-piece insulation made from inorganic glass fibers bonded with a thermosetting resin. It is produced in 3' lengths with or without a factory-applied jacket. The jacket is a white-kraft paper bonded to aluminum foil and reinforced with glass fibers, and the longitudinal lap of the jacket is available with or without a self-sealing adhesive. A butt strip is furnished for each section.

Application

Knauf 1000° Pipe Insulation is used in power, process and industrial applications and in commercial and institutional buildings where maximum fire safety, resistance to physical abuse and a finished appearance are desired. Additional weather protection is needed outdoors.

Features & Benefits

Energy Conservation
- Offers excellent resistance to heat loss or gain, which saves energy and lowers operating costs.
- A low thermal conductivity of .23 at 75°F (24°C).

Low-Cost Installation
- Available with a self-sealing lap, which eliminates need for staples, additional material and tools.
- Fast, easy installation reduces labor costs.

Condensation Control
- Installed properly, the foil vapor retarder and pressure-sensitive lap assure a positive vapor seal.

UL Classified
- All Knauf 1000° Pipe Insulation, plain or jacketed, meets the fire and smoke safety requirements of most federal, state and local building codes.

Easy Size Identification
- Pipe size, wall thickness and Proto 25/50 Rated PVC fitting cover size are printed in a repeat pattern along the longitudinal lap.
- Easy identification at job site.
- Simplifies restocking.
- After application, print is covered by the lap for a neat appearance.

Specification Compliance

In U.S.:
- ASTM C 547; Type I
- ASTM C 585
- ASTM C 795
- ASTM C 1136 (jackets); Type I, II, III, IV
- HH-B-100B (jackets); Type I and II
- HH-I-558C; Form D, Type III, Class 12; Class 13 (to 1000°F, 538°C)
- GREENGUARD Certification
- GREENGUARD For Children & Schools™ Certification
- MEA 325-83-M (City of New York Dept. of Buildings)
- MIL-I-22344D
- MIL-I-24244C (ships)
- NFPA 90A and 90B
- NRC Reg. Guide 1.36
- USCG 164.109/4/0 (plain, unjacketed only)

In Canada:
- CAN/ULC S102-M88
- CCG F1-304 (plain only)
- CGSB 51-GP-9M
- CGSB 51-GP-52M (jacket)

Technical Data

Surface Burning Characteristics
- UL Classified.
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, CAN/ULC S102-M88, NFPA 255 and UL 723.

Temperature Range
- Pipe operating temperatures from 0°F to 1000°F (-18°C to 538°C).

Water Vapor Transmission (ASTM E 96, Procedure A)
- Jacket has a water vapor permeance of .02 perms or less.

Corrosiveness (ASTM C 665)
- No greater than sterile cotton.

Stress Corrosion
- Complies with ASTM C 795, MIL-I-24244C and NRC 1.36.

Puncture Resistance (TAPPI Test T803) (Beach Units)
- Jacket minimum rating of 50 units.

Alkalinity (ASTM C 871)
- Less than 0.6% as Na_2O.
- pH between 7.5 and 10.0.

Microbial Growth (ASTM C 1338)
- Does not promote microbial growth.

Water Vapor Sorption (ASTM C 1104)
- Less than 0.2% by volume.

Linear Shrinkage (ASTM C 356)
- Negligible.

Product Forms and Sizes

Produced in 3' (914 mm) sections:
- For iron pipe from ½" to 24" nominal pipe size (15 mm to 610 mm).
- For copper tube from ⅝" to 6⅛" (16 mm to 156 mm).
- Wall thicknesses from ½" to 6" (13 mm to 152 mm) in single layer (for most sizes).
- All insulation inner and outer diameters comply with ASTM C 585.

Packaging
- Four convenient carton sizes for easy ordering, inventory tracking and storage.
- Reinforced carton handles for strength and easy lifting.
- Bar-coded cartons for accurate shipments and tracking.
- Full product range stocked at distributors for fast availability.

Precautions

Hot Pipe
- May be installed while the system is in operation, at all temperatures up to 1000°F (538°C).
- Knauf recommends, for insulation thickness greater than 6" (152 mm), the temperature must be increased from 500°F (260°C) to maximum temperature at a rate not exceeding 100°F (56°C) per hour.
- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.
- Care must also be taken when using sealants, solvents or flammable adhesive during installation.
- A maximum of 6" (152 mm) wall thickness is recommended.

Cold Pipe
- Use a continuous vapor retarder on piping operating below ambient temperatures.
- Seal all joints, surfaces, seams and fittings to prevent condensation.
- On below freezing applications and, in high abuse areas, the ASJ jacket shall be protected with a PVC vapor retarding outer jacket. In addition, exposed ends of insulation shall be sealed with vapor barrier mastic installed per the mastic manufacturer's instructions. Vapor seals at the butt joint shall be applied at every fourth pipe section joint and at each fitting to isolate any water incursion.
- On chilled water systems operating in high humidity conditions, it is recommended that the same guide lines be followed as listed above for below freezing applications.
- Exterior hanger supports are r ecommended.

Outside Application
- Do not expose pipe insulation to weather. It must be covered with appropriate jacketing, mastic or vapor retardant adhesives.
- All exposed surfaces must be protected. Proto® Indoor/Outdoor PVC Jacketing is recommended. See Knauf Guide Specifications for recommended PVC jacketing application guidelines.
- Apply jacketing, mastics or vapor retardant adhesives per manufacturer's instructions. For metallic jackets, factory-applied condensate barriers are recommended.

ASJ-SSL
- Keep adhesive and contact surfaces free from dirt and water, and seal immediately once adhesive is exposed.
- Apply when ambient and insulation temperatures are between 0°F and 130°F (-18°C and 54°C).
- If stored below 0°F or above 130°F, allow insulation cartons to stand within recommended temperature range for 24 hours prior to application.
- Do not store product below -20°F (-29°C) or above 150°F (66°C).
- When using Knauf's SSL closure system, make sure the longitudinal and circumferential joints are properly sealed by rubbing the closure firmly with a squeegee. Use of staples is not recommended.
- When using Knauf SSL Pipe Insulation, the surface temperature of the insulation should be between -20°F and 150°F (-29°C and 66°C) during the life of the insulation.

Fittings and Hangers
- Use Proto 25/50 Rated (ASTM E 84) PVC Fitting Covers, applying PVC fittings per Proto's Data Sheet.
- Fittings should be insulated to same thickness as the adjoining insulation.
- Apply fittings per manufacturer's instructions.
- When required by specification, a hard insert of sufficient length should be used to avoid compression of the insulation.

Knauf Insulation GmbH One Knauf Drive, Shelbyville, IN 46176 Tel: (800) 825-4434 ext. 8283 FAX: (317) 398-3675

1000° Pipe Insulation

Submittal Date _____

Additional Precautions

- Fiber glass may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material.
- Wash with soap and warm water after handling.
- Wash work clothes separately and rinse washer.
- Use a disposable mask/respirator designed for nuisance-type dusts where sensitivity to dust and airborne particles may cause irritation to the nose or throat.

Application Guidelines

Storage

- Protect insulation from water damage or other abuse, welding sparks and open flame.
- Cartons are not designed for outside storage.

Preparation

- Apply only on clean, dry surfaces.
- Pipe or vessel should be tested and released before insulation is applied.

General Guidelines

- All sections should be firmly butted.
- Seal circumferential joint with a minimum 3" (76 mm) wide butt strip.
- Jackets, coating and adhesives should have a comparable F.H.C. rating.
- Factory-applied jacket can be painted with latex or water-based paint. Solvent-based paints should not be used.
- Do not expose factory-applied jacket to chemicals or liquid water.
- All piping should have continuous insulation.
- Position longitudinal lap downward to avoid dirt and moisture infiltration.
- Do not expose pipe insulation to excessive vibration or physical abuse.
- Faced insulation should not have a facing temperature above 150°F (66°C).

Recommended Thicknesses

ASHRAE 90.1-1989

The minimum thicknesses are based on ASHRAE 90.1-1989 standards and do not necessarily represent the Economic Thickness of Insulation or the thickness required for proper condensation control. Rather, they serve as minimum recommendations for commercial applications. For recommended Economic Thickness, install according to Knauf or NAIMA 3E Plus programs or as specified.

Fiber Glass and Mold

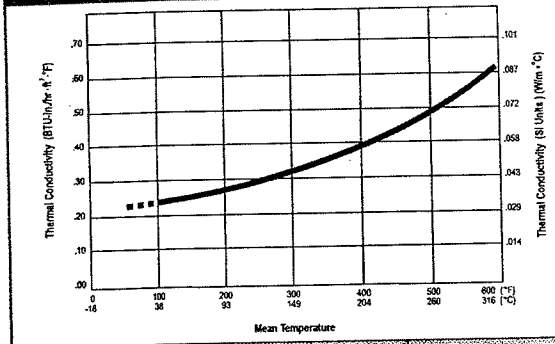
Fiber glass insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated with organic materials. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly. If it shows signs of facing degradation from wetting, it should be replaced.

Notes

The chemical and physical properties of Knauf 1000° Pipe Insulation represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing variations. The data is supplied as a technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Knauf sales representative to assure information is current.

Thermal Efficiency (ASTM C 335)



Mean Temperature	k	k (SI)
75°F (24°C)	.23	.033
100°F (38°C)	.24	.035
200°F (93°C)	.28	.040
300°F (149°C)	.34	.049
400°F (204°C)	.42	.061
500°F (260°C)	.51	.074
600°F (316°C)	.62	.089