Wet & Wild Subro: Understanding Common Water Losses

Presented By:
Phil Carroll, Esq.
Joe Rich, Esq.

COZEN O'CONNOR

Overview of Topics

- The Rise of Water Loss Claims
- CPVC Failures
- Common Water Losses – supply lines, filters & fittings
- Pro Press Fitting Failures
- Dezincification and Stress Corrosion

Water Gets Everywhere

COZEN O'CONNOR

The Numbers Don't Lie

COZEN O'CONNOR

Why Do We Care?

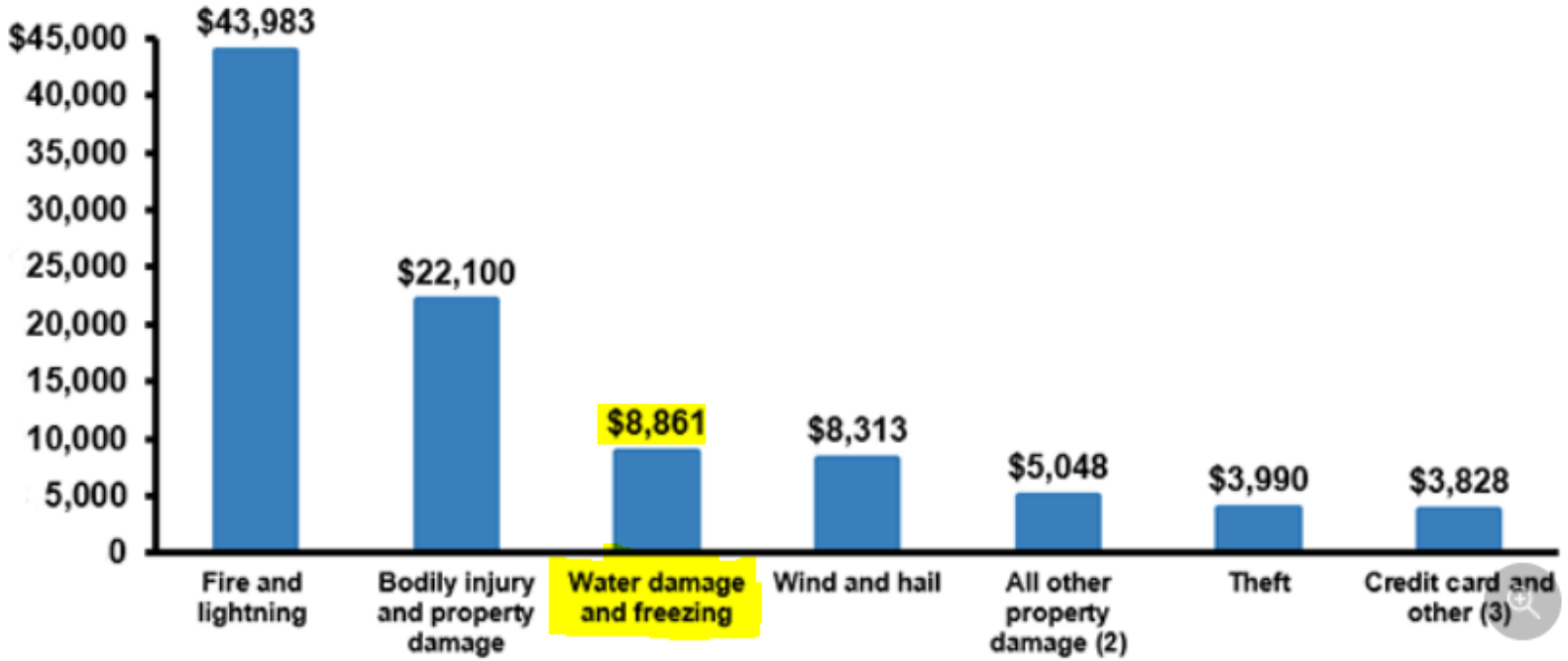
- **$18.5 Billion Dollars**
  - 45.1% of all claims in 2015 (totaling $41.2 billion) were water damage or freeze claims
- **1 in 50 homes** has a claim caused by water damage or freezing every year

Source: Insurance Information Institute: https://www.iii.org/fact-statistic/facts-statistics-homeowners-and-renters-insurance#Homeowners Losses Ranked By Claims Severity (Average Claim), 2011-2015 (1)

COZEN O'CONNOR

Homeowners Losses Ranked By Claims Severity (Average Claim), 2011-2015 (1)

(Weighted average, 2011-2015)



(1) For homeowners multiple peril policies (HO-2, HO-3, HO-5 and HE-7 for North Carolina). Excludes tenants and condominium owners policies. Accident year incurred losses, excluding loss adjustment expenses, i.e., indemnity costs per accident year incurred claims. Excludes Arkansas, Texas and Puerto Rico.

(2) Includes vandalism and malicious mischief.

(3) Includes coverage for unauthorized use of various cards, forgery, counterfeit money and losses not otherwise classified.

Source: ISO®, a Verisk Analytics® business.

Source: Insurance Information Institute: https://www.iii.org/fact-statistic/facts-statistics-homeowners-and-renters-insurance#Homeowners Losses Ranked By Claims Severity (Average Claim), 2011-2015 (1)

COZEN O'CONNOR

Average Homeowners Losses, 2011-2015 (1)

SHARE

(Weighted average, 2011-2015)

Cause of loss	Claim frequency (2)	Claim severity (3)
Property damage (4)	**6.64**	**$9,640**
Fire and lightning	0.35	43,983
Wind and hail	2.86	8,313
Water damage and freezing	2.13	8,861
Theft	0.42	3,990
All other (5)	0.88	5,048
Liability (6)	**0.14**	**$16,368**
Bodily injury and property damage	0.10	22,100
Medical payments and other	0.04	2,875
Credit card and other (7)	**(8)**	**3,828**
Average (property damage and liability), 2011-2015	**6.78**	**$9,779**

(1) For homeowners multiple peril policies (HO-2, HO-3, HO-5 and HE-7 for North Carolina). Excludes tenants and condominium owners policies. Excludes Arkansas, Texas and Puerto Rico.
Claims per 100 house years (policies).
(3) Accident year incurred losses, excluding loss adjustment expenses, i.e., indemnity costs per accident year incurred claims.
(4) First party, i.e., covers damage to policyholder's own property.
(5) Includes vandalism and malicious mischief.
(6) Payments to others for which policyholder is responsible.
(7) Includes coverage for unauthorized use of various cards, forgery, counterfeit money and losses not otherwise classified.
(8) Less than 0.01.

Source: ISO®, a Verisk Analytics® business.

- In the five-year period, 2011-2015, 6.8 percent of insured homes had a claim. Wind and hail accounted for the largest share of claims, with 2.9 percent of insured homes having such a loss.

Source: Insurance Information Institute: https://www.iii.org/fact-statistic/facts-statistics-homeowners-and-renters-insurance#Homeowners Losses Ranked By Claims Severity (Average Claim), 2011-2015 (1)

COZEN O'CONNOR

Homeowners Insurance Losses By Cause, 2011-2015 (1)

SHARE

(Percent of losses incurred)

Cause of loss	2011	2012	2013	2014	2015
Property damage (2)	**96.9%**	**96.7%**	**95.3%**	**96.2%**	**97.1%**
Fire and lightning	18.3	22.9	28.2	24.1	23.8
Wind and hail	45.7	48.8	30.5	28.7	20.3
Water damage and freezing	22.0	17.5	26.7	33.4	45.1
Theft	2.4	2.9	3.4	2.4	1.8
All other property damage (3)	8.6	4.5	6.5	7.6	6.1
Liability (4)	**3.1%**	**3.3%**	**4.7%**	**3.8%**	**2.9%**
Bodily injury and property damage	2.9	3.2	4.4	3.6	2.7
Medical payments and other	0.1	0.2	0.2	0.2	0.2
Credit card and other (5)	**(6)**	**(6)**	**(6)**	**(6)**	**(6)**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

(1) For homeowners multiple peril policies (HO-2, HO-3, HO-5). Excludes tenants and condominium owners policies. Excludes Arkansas, Texas and Puerto Rico.
(2) First party, i.e., covers damage to policyholder's own property.
(3) Includes vandalism and malicious mischief.
(4) Payments to others for which policyholder is responsible.
(5) Includes coverage for unauthorized use of various cards, forgery, counterfeit money and losses not otherwise classified.
(6) Less than 0.1 percent

Source: ISO®, a Verisk Analytics® business.

Source: Insurance Information Institute: https://www.iii.org/fact-statistic/facts-statistics-homeowners-and-renters-insurance#Homeowners Losses Ranked By Claims Severity (Average Claim), 2011-2015 (1)

COZEN O'CONNOR

Example: Florida

- "The frequency and severity of water loss claims in Florida have increased every year since 2010, according to data call results from the Florida Office of Insurance Regulation (OIR)."

- "OIR's report states that the combined impact of changes in frequency and severity result in **an average increase in water losses of 14.2 percent each year**."

Source: *"Report: Florida Water Loss Claims Up 46 Percent in 5-Year Period," Insurance Journal, March 2, 2016, https://www.insurancejournal.com/news/southeast/2016/03/02/400663.htm*

COZEN O'CONNOR

COZEN O'CONNOR

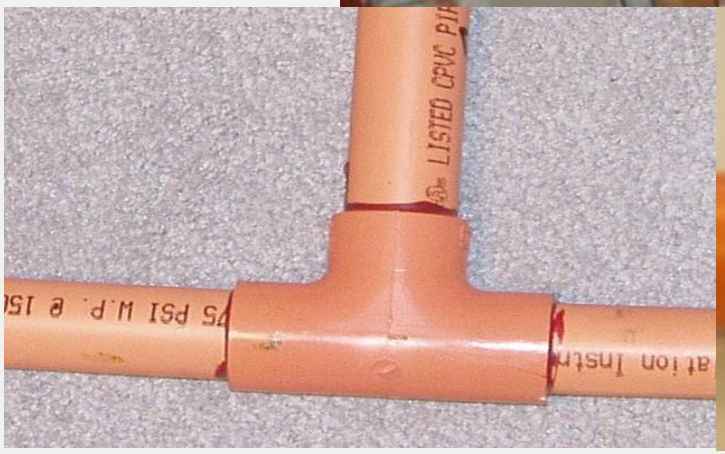
CPVC Sprinkler Pipes

- **CPVC = Chlorinated PolyVinyl Chloride**
- Overview:
  - What they Are?
  - How They Fail?
  - Evaluating Recovery Issues!


It's the
"Orange Stuff"

WHAT IS CPVC?

- All plastic fire sprinkler pipe & fittings are made of CPVC



COZEN O'CONNOR

Why use CPVC?

- Typically considered more chemically resistant than PVC

- When compared with metallic sprinkler systems they are:
  - Faster to install
  - No Plumber needed
  - Lighter weight
  - Can be much faster to repair damaged sections
  - Less likely to cut the installer (burrs, sharp edges)
  - Lower system maintenance costs
  - When installed correctly they work great!

COZEN O'CONNOR

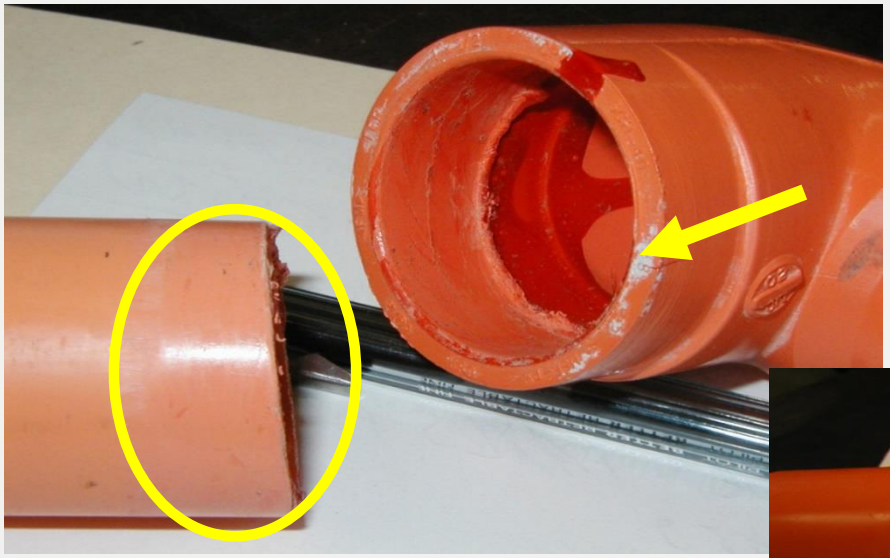
FAILURE TYPES FOR CPVC

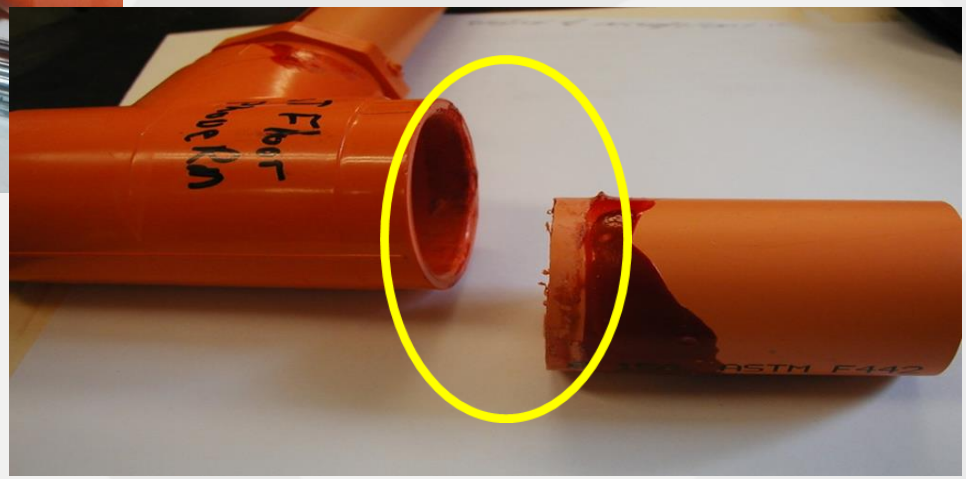
- INSTALLATION ISSUES
  - Impact Damage – other trades / job site
    - Demonstration of Sample Piece of CPVC Pipe
  - Assembly Issues – cutting pipe / alignment of pipes / clamping / connections
  - Adhesive Issues – solvents types and amounts / application

COZEN O'CONNOR

FAILURE TYPES FOR CPVC

- INSTALLATION ISSUES – Assembly Issues
  - pipe not cut perpendicular to axis,
  - burr not removed / improper cutting
  - not enough overlap





COZEN O'CONNOR

FAILURE TYPES FOR CPVC

- CHEMICAL ATTACK/MATERIALS ISSUES
  - Environmental Stress Cracking (“ESC”)

COZEN O'CONNOR

FAILURE TYPES FOR CPVC

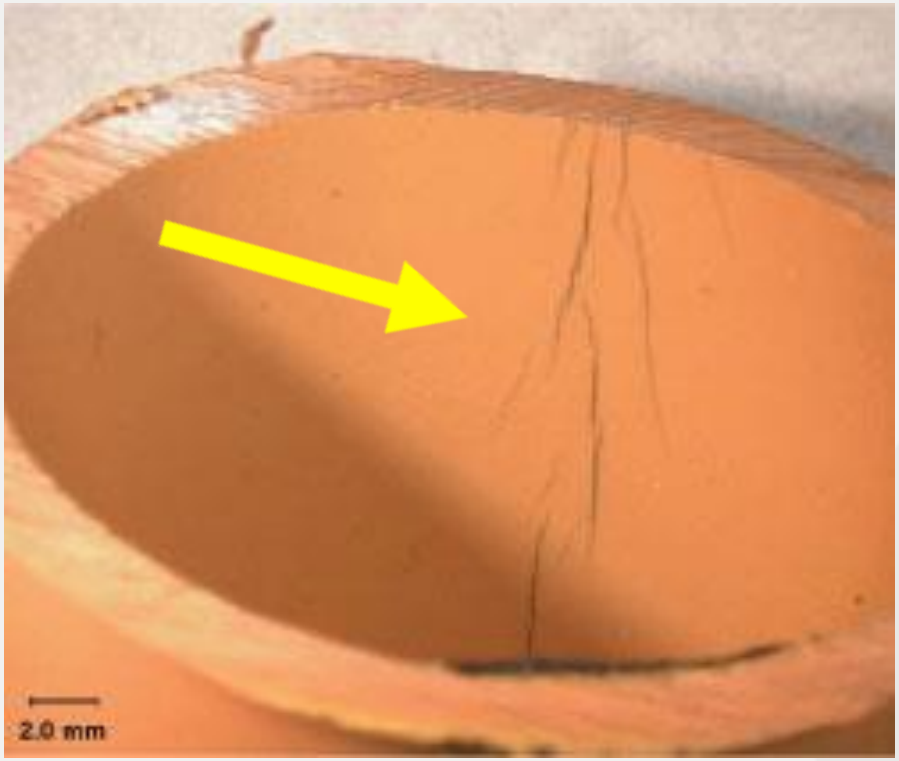
COZEN O'CONNOR

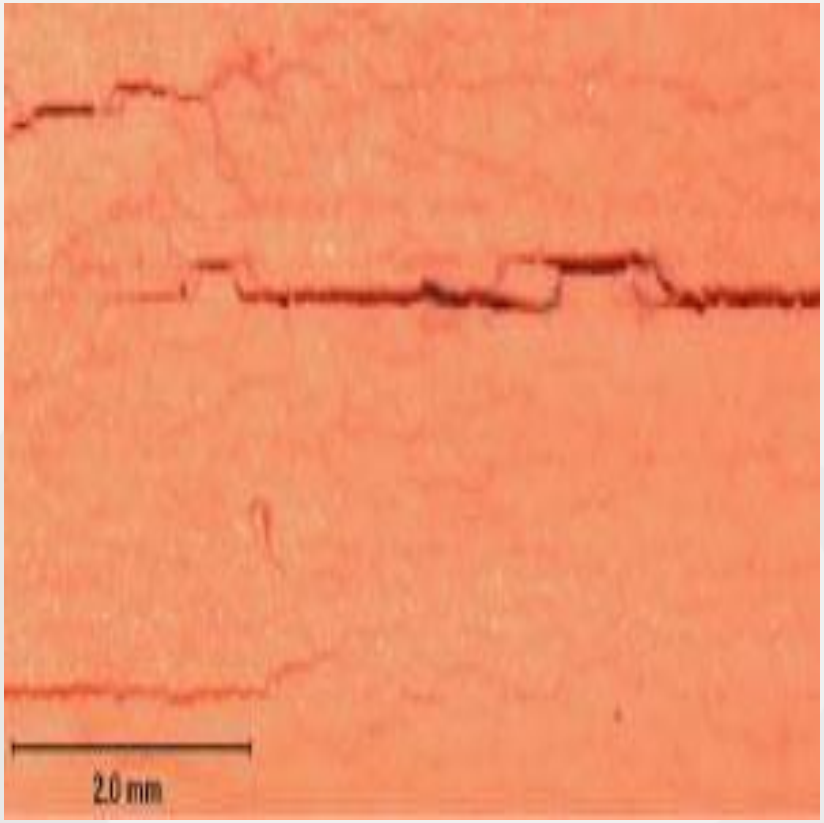
FAILURE TYPES FOR CPVC

- CHEMICAL ATTACK
  - Environmental Stress Cracking “ESC”
  - Aggressive agents
  - Stress
  - Time frames
  - Temperature
  - Potential for more than one failure

Practice Tip: Chemical Attack failures are not just manufacturing claims; ESC starts small and end up big; properties usually have history of small leaks prior to a major break; raises potential for claim against third party service providers who perform periodic maintenance

ENVIRONMENTAL STRESS CRACKING (ECS)





COZEN O'CONNOR

Antimicrobial Coatings

this type of protective coating is applied.

Steel Piping with Antimicrobial Coating

- **August 6, 2013 Update**

  Lubrizol's position regarding the chemical compatibility of antimicrobial coated steel pipe when used with BlazeMaster® CPVC pipes and fittings has been that before using any coated steel pipes with an antimicrobial coating, installers should check with the manufacturers of the steel pipe and/or the manufacturers of the antimicrobial coating for compatibility with CPVC.In response to numerous industry inquiries, Factory Mutual (FM) modified their nonmetallic (FM 1635) and steel pipe (FM 1630) standards to include testing that demonstrates the chemical compatibility of nonmetallic fire sprinkler pipe with coated steel sprinkler pipe. This evaluation is a requirement for both types of pipe that are FM approved. Installers should look for results of testing in accordance with the FM protocols to ensure the compatibility of any coated steel pipes they might use with BlazeMaster® CPVC pipes and fittings. Additionally, **Lubrizol recommends that Allied Steel pipe coated with ABF II not be used in BlazeMaster CPVC systems.**

  This has been Lubrizol's position for years. Beginning in 2008, Lubrizol noted that industry concerns were being expressed about antimicrobial coatings, and at that time Lubrizol stated that the Allied ABF II antimicrobial coating "would not be classified as compatible with CPVC if it were applied directly to the CPVC." But Lubrizol began at that time to conduct testing that tried to duplicate a real world level of migration of the ABF II coating to CPVC. The testing did not show a consistent pattern which would indicate a pervasive problem. Nevertheless, in January 2009, Lubrizol said: "Lubrizol recommends that only non-coated steel piping be used with BlazeMaster® fire sprinkler systems and that aftermarket coating not be used, unless the coating being used, whether applied by the manufacturer or otherwise, has been added to the FGG/BM/CZ™ System Compatible Program." Lubrizol's recommendation has continued from that time to the present. Lubrizol has never recommended the use of ABF II coated pipe with BlazeMaster® CPVC pipe and fittings.

O'CONNOR

FAILURE TYPES FOR CPVC

- CHEMICAL ATTACK – INCOMPATIBLE PRODUCTS

Other Compatibility Topics

Updated: October 10, 2016

Supersedes: March 4, 2016

Acetone
Antifreeze
Cable

Cleaners
Cleaning CPVC Pipe
Cooking Oils
Dishwashing Liquid
Drains

Flexible Materials
Fireproofing
Fungicides

Gap Filler
Grease
Hangers and Straps

Heat Trace
Insecticides
Insulation
Leak Detectors
Metal Piping Connected to Installed CPVC Piping
Mold Inhibitors
Paint
Plasticizers

Polyurethane (Spray-on) Foams
Primers
Residual/Cutting Oils with HVAC Applications
Rubber
Sleeving Materials
Solvent Cements
Spray-on Coatings
Steel Piping with Antimicrobial Coating
Teflon® Tape
Termiticides

COZEN O'CONNOR

FAILURE TYPES FOR CPVC

- CHEMICAL ATTACK – **Joe's Favorite:**

Fragrances - Perfumes

- Scented products such as cologne, perfume, or essential oils (peppermint oil, orange oil, spearmint oil, etc.) should not be put into a CPVC piping system for the purpose of being able to detect leaks by odor. Most fragrance chemicals and essential oils are strong solvents and/or environmental stress cracking agents for CPVC.

COZEN O'CONNOR

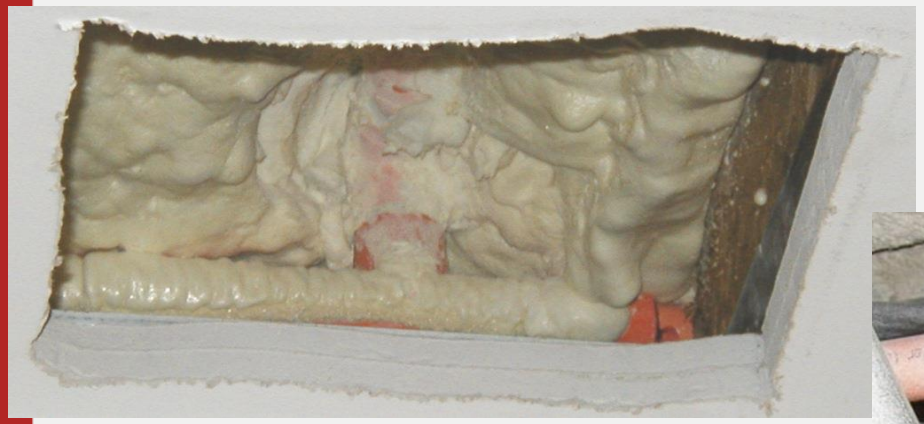
FAILURE TYPES FOR CPVC

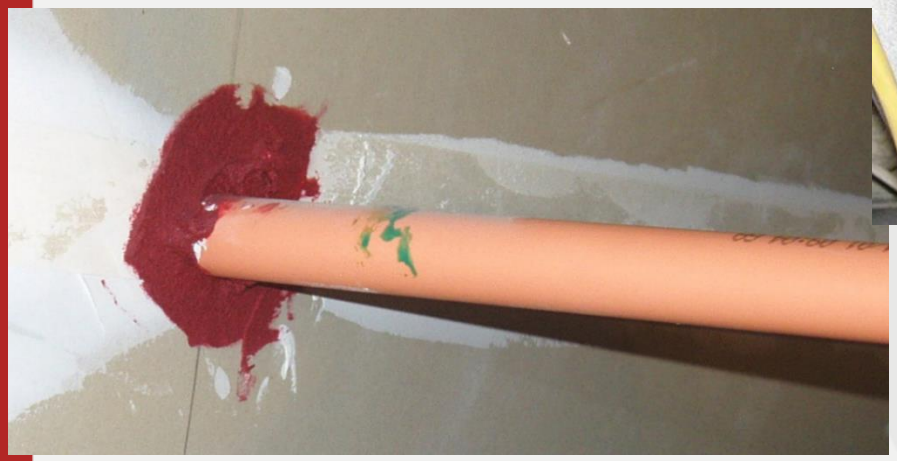
TYPICAL PLAYERS IN "ESC" CASES:

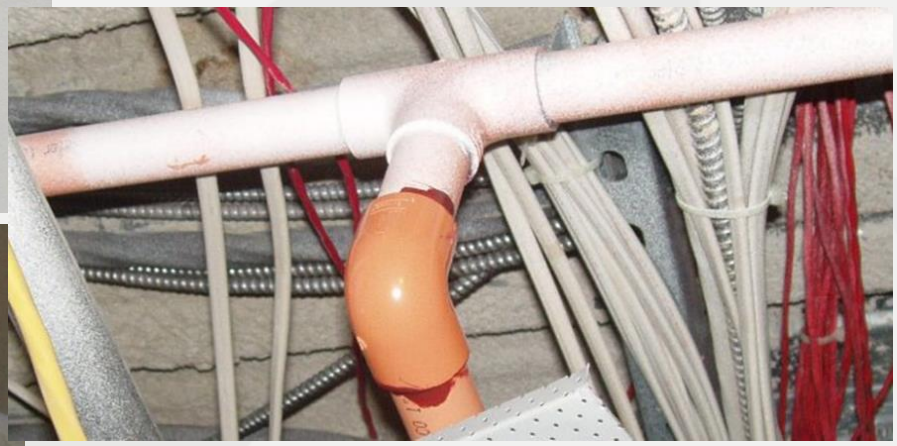
- INSTALLER/GENERAL CONTRACTOR – installed CPVC
- NIBCO – coupling adaptors for CPVC to steel pipe
- ALLIED TUBE – manufacturer of steel pipe
- VIKING and/or HARVEL – manufacturer of "BlazeMaster" CPVC
- LUBRIZOL – Owners of Trademark on formula for making BlazeMaster CPVC Pipe
- SPRINKLER SYS. CO. – periodic maintenance; knowledge of system issues

FAILURE TYPES FOR CPVC

- CHEMICAL ATTACK – Examples:







COZEN O'CONNOR

COZEN O'CONNOR

Common Failures that Lead to Water Damage

- Braided Metal Water Supply Line
- Water Filter
- Plastic Connector Nut
- Other Fittings

COZEN O'CONNOR

COZEN O'CONNOR

COZEN O'CONNOR

Watts Floodsafe Connectors or is it?

- Stress Corrosion Cracking & Dezincification

COZEN O'CONNOR

- “JY” stamp which Watts has identified as manufactured by Zheijang Jingheng

COZEN O'CONNOR

Water Supply Line

- How?
  - Braided mesh exterior mesh fails interior tube not strong enough to withstand interior pressure or exterior forces
- Causes
  - Abrasion
  - Environment
- Issues
  - Design Defect
  - Age
  - Bundling by Adverse

WATER FILTER

- Age
- Exposure
- Who Installed
- Who Serviced
- Which Part
  - Original
  - Replacement

COZEN O'CONNOR

COZEN O'CONNOR

Plastic Connector Nut

- Where
  - Toilet Water Supply Lines
  - Connection to inlet fill valve
- Causes
  - Manufacturing Defect
  - Chemical
  - Overtighten
- Issues
  - Which Cause
  - Age
  - Who Overtightened

COZEN O'CONNOR

COZEN O'CONNOR


Lens MX(G)-MACRO ZVI : Normal : x5
H-View 2.40 inch
Resolve 0.00 inch
1 inch

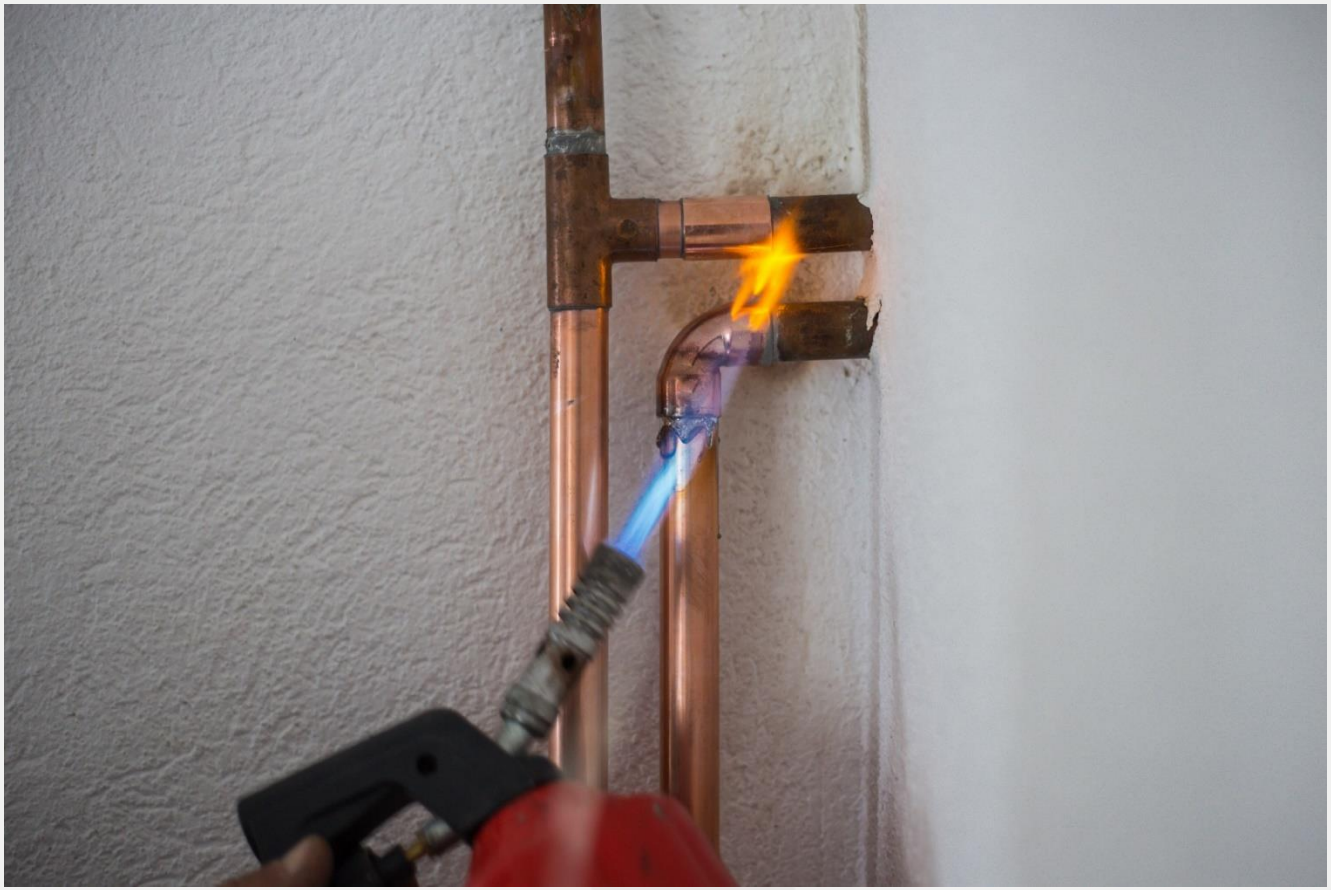
COZEN O'CONNOR


Lens MX(G)-MACRO ZVI Normal :x10
H-View 1.10 inch
Resolve 0.00 inch
0.2 inch


ProPress Fitting Failures

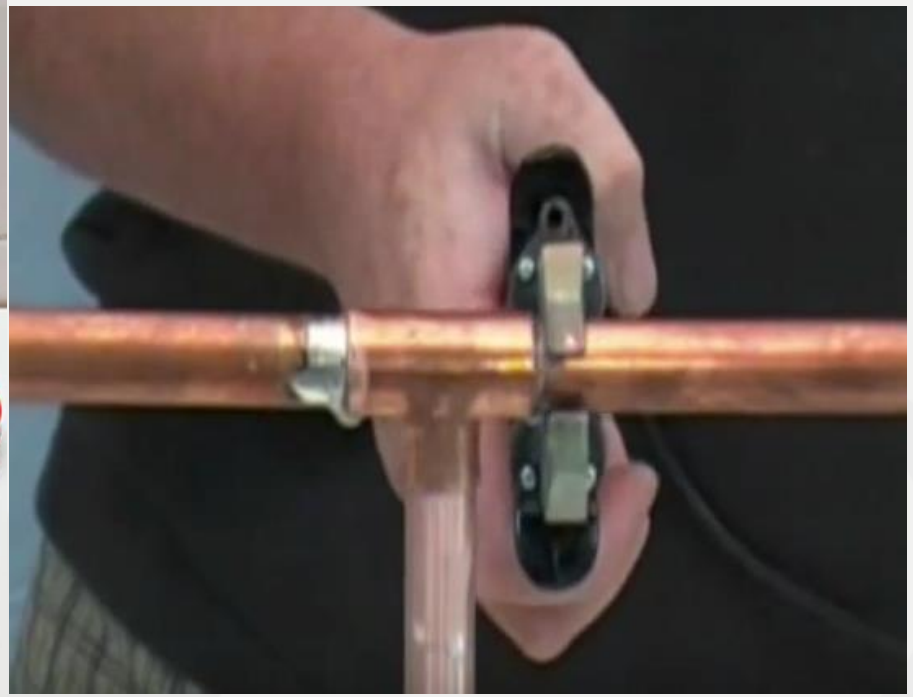
PROPRESS PIPE FAILURES

- Solder/Sweating Pipes: Open Flame



COZEN O'CONNOR

PROPRESS FITTING FAILURES



COZEN O'CONNOR

MAIN TYPE OF FAILURES

(1) Materials Issues – Fittings/Connections; less common

(1) Improper Installation Failures – more common

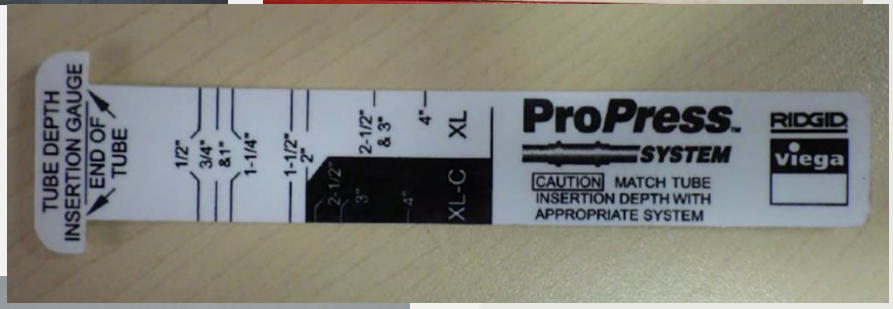
- Wrong Depth for Fitting
- Weak Press Application
- Incompatible Equipment & Materials: Mixing Different Tools & Fittings
- Failure to Calibrate Equipment

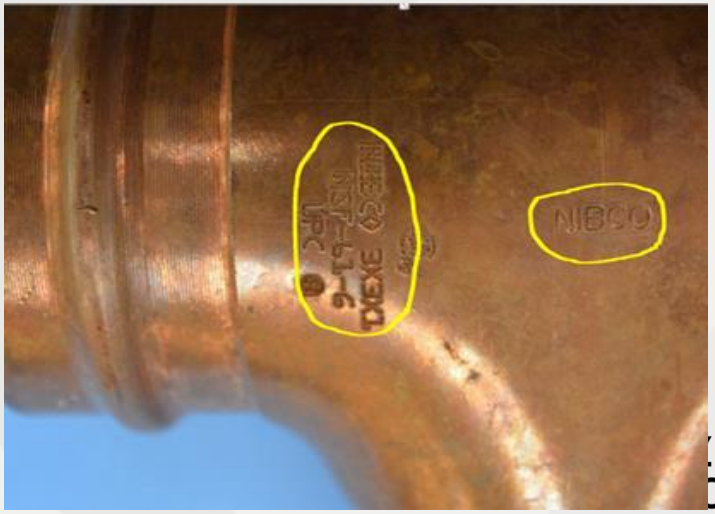
COZEN O'CONNOR


RIDGID
RP 340


RIDGID
2"
ProPress


RIDGID
RP 340 Manual
Pressing Tool
WARNING!

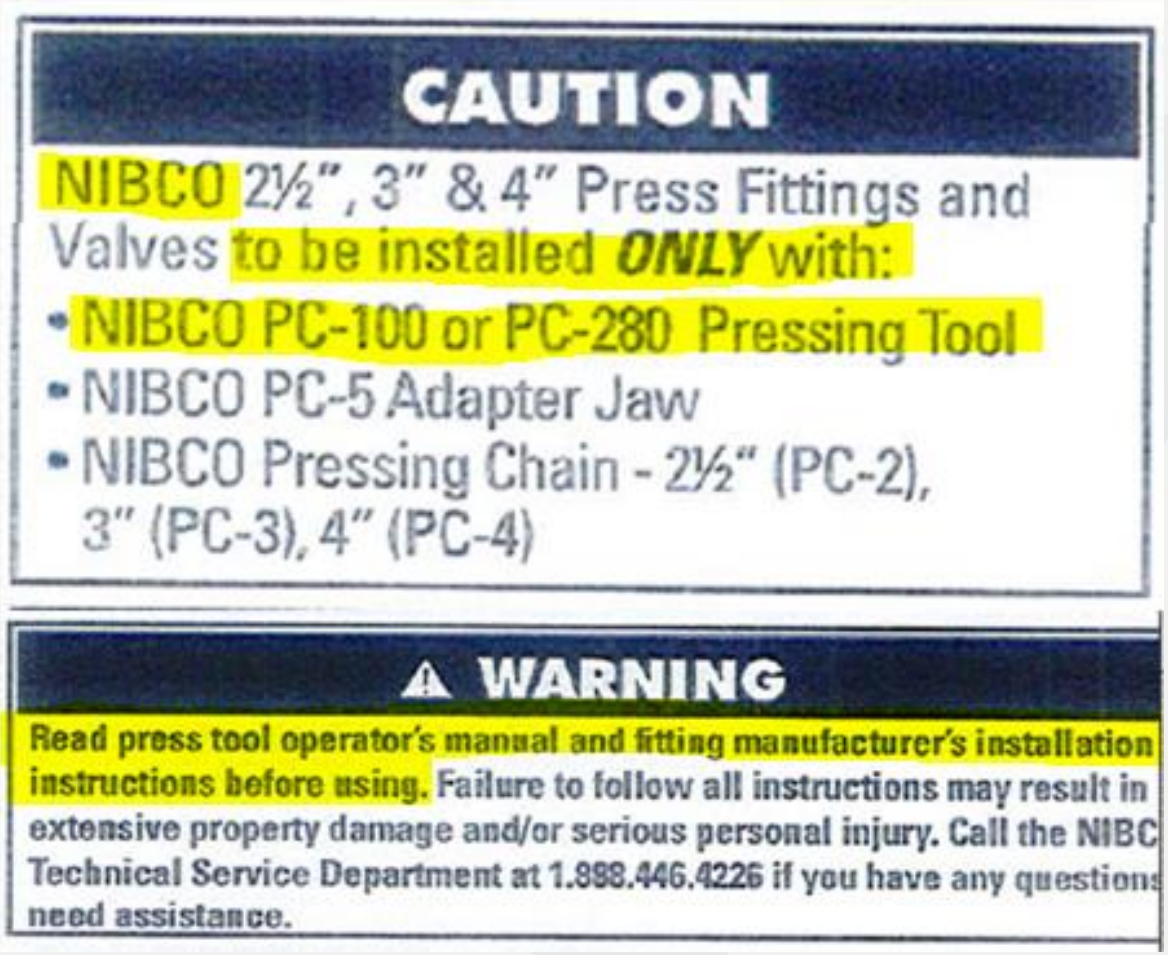

TUBE DEPTH
INSERTION GAUGE
END OF TUBE
1/2"
3/4"
&1"
1-1/4"
1-1/2"
2"
2-1/2"
3"
2-1/2"
& 3"
4"
XL
XL-C
ProPress
SYSTEM
CAUTION MATCH TUBE INSERTION DEPTH WITH APPROPRIATE SYSTEM
RIDGID
viega


NIBCO
NIBCO

TOOL INSTRUCTIONS

- **Only use RIDGID Press Tools and Jaws when specified by the press fittings manufacturer.** Use of incorrect equipment and methods can cause incomplete joints, damage the equipment, void warranties or cause severe personal injury or death.
- **Before operating a RIDGID RP 340 Press Tool, read and understand:**
  - This operator's manual,
  - The attachment instructions,
  - The battery/charger manual,
  - The RPA 120/220 AC Power (Mains) Adapter Instructions,
  - The fitting manufacturer's installation instructions,

FITTING INSTRUCTIONS



CAUTION

NIBCO 2½", 3" & 4" Press Fittings and Valves to be installed ***ONLY*** with:

- NIBCO PC-100 or PC-280 Pressing Tool
- NIBCO PC-5 Adapter Jaw
- NIBCO Pressing Chain - 2½" (PC-2), 3" (PC-3), 4" (PC-4)

⚠ WARNING

Read press tool operator's manual and fitting manufacturer's installation instructions before using. Failure to follow all instructions may result in extensive property damage and/or serious personal injury. Call the NIBC Technical Service Department at 1.888.446.4226 if you have any question need assistance.

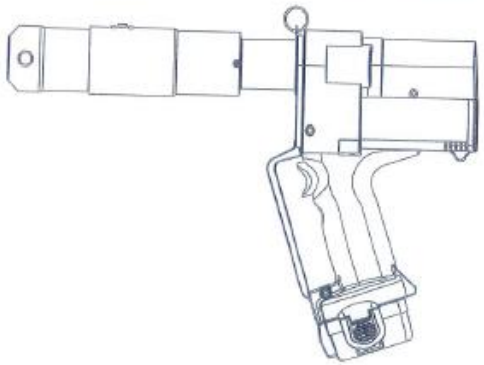
COZEN O'CONNOR

Tool Instructions

NIBCO
AHEAD OF THE FLOW®

NIBCO Inc. – World Headquarters
1516 Middlebury Street
Elkhart, IN 46516
USA

Technical Services
Phone: 1-888-446-4226
Fax: 1-888-336-4226

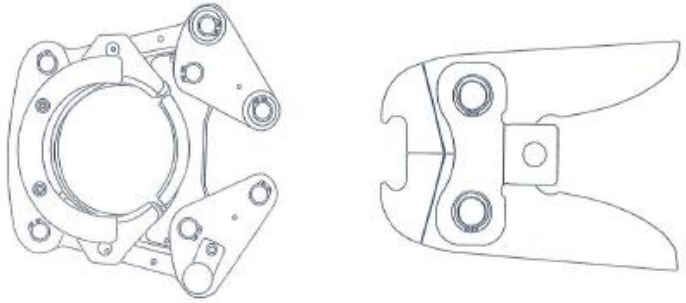


PC-100
Battery-powered
Pressing Tool

NIBCO
AHEAD OF THE FLOW®

NIBCO Inc. – World Headquarters
1516 Middlebury Street
Elkhart, IN 46516
USA

Technical Services
Phone: 1-888-446-4226
Fax: 1-888-336-4226



PC-2, PC-3 and PC-4
Pressing Chains

COZEN O'CONNOR

PERIODIC CALIBRATION

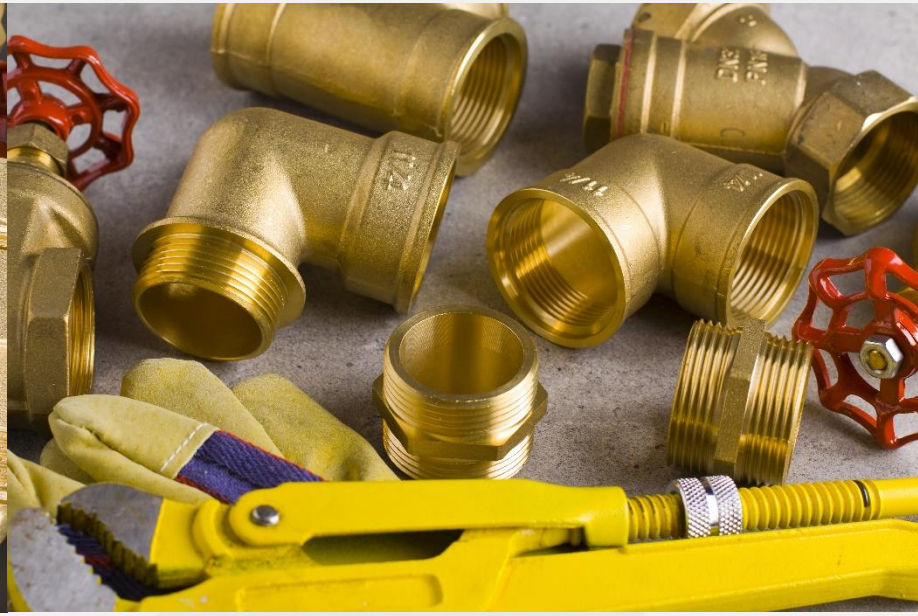
3. Please produce any documents relating to the calibration and/or adjustments of the press mechanism and/or press force of the Machine that was used to install the Fitting from 2009 until the time of the work in December 2014.

Response: The Defendant purchased this particular pro press on September 13, 2013.

The pro press was not calibrated during this period of time.

COZEN O'CONNOR


Dezincification
& Corrossion



COZEN O'CONNOR

Loss of Zinc from brass fitting	⇨	**Loss of Water from Brass Fitting**	⇨	**Water Loss**

Recovery

Manufacturer

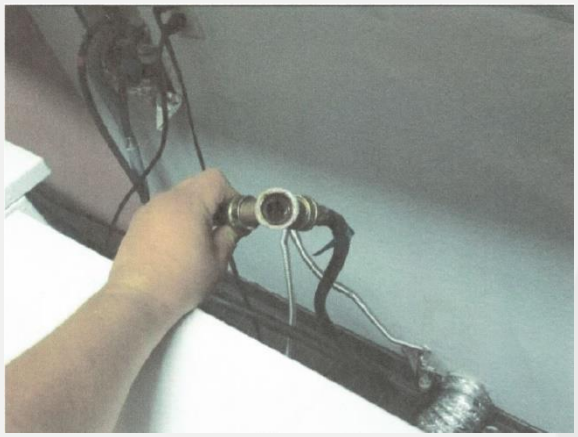
COZEN O'CONNOR

Dezincification: A Materials Defect Issue

- Form of Corrosion / Faster Corrossion
- Essentially leaching of zinc from brass by chemical reaction between water and brass
- Fittings more brittle; less capable over time of handling normal water pressures


0 inch
1
0 inch
1
2




COZEN O'CONNOR

Dezincification Risk

Factor: Brass Zinc Content

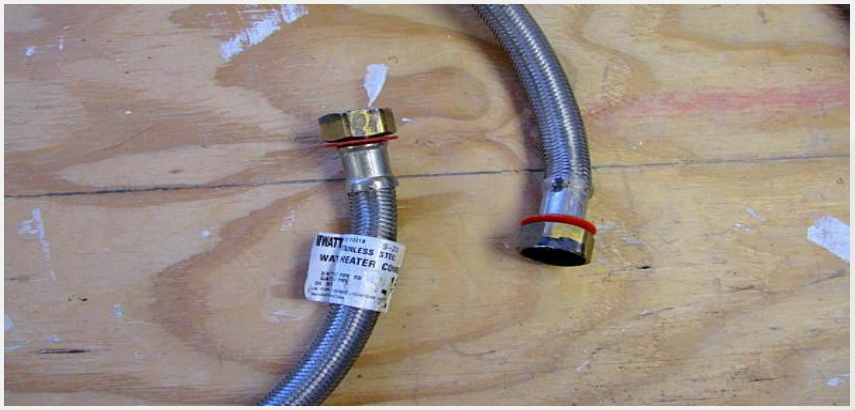
Zinc < 15%	Low Risk
Zinc > 28%	High Risk

What is Corrosion

- What's the difference with dezincification?
- Dezincification is leaching – i.e. inside out process
- Corrosion: is a chemical attack caused by an external factor(s)
  - Chlorine attack

Water Connector Corrosion

- Stainless steel corrodes?
- There are grades to stainless steel?
- Watts, Fluidmaster, etc. …



COZEN O'CONNOR

Contact Information

Phil Carroll

pcarroll@cozen.com

312-382-3147

Joe Rich

jrich@cozen.com

786-871-3841

COZEN O'CONNOR