CHARLOTTE PIPE AND FOUNDRY COMPANY

ReUze®

Made With FlowGuard Gold®

Fact Sheet

What is ReUze®?

- Simply put, ReUze is purple FlowGuard Gold® pipe.
- More specifically, ReUze is purple pigmented CTS CPVC pipe for distributing gray water, reclaimed/recycled water and/or rainwater inside the building.
- ½", ¾", 1", 1-½" & 2" purple FlowGuard Gold pipe
- 20' lengths only
- Uses existing FlowGuard Gold tan fittings and yellow one step solvent cement conforming to ASTM F 493
- ReUze is clearly identified as a non-potable water piping system by its distinctive purple color and print line (WARNING: NON-POTABLE WATER DO NOT DRINK, NSF-rw)

Why is it Purple?

- Color plays a vital role in the pipe market as a means of identifying the application. It provides a level of caution.
  - White for DWV and some low pressure applications
  - White, blue and dark gray for cold water piping
  - Green for sewer service
  - Dark gray for industrial pressure applications
  - Yellow is for gas service
- Purple is for non-potable water
- 2009 IPC, 608.8.2—"purple shall be used to identify reclaimed, rain and gray water distribution systems."
- Precedence for purple in Canadian standards, Australian standards, municipal water pipe industry and outdoor irrigation pipe

Why CPVC?

- The intended applications are inside the building
  - Codes do not allow PVC for water distribution inside the building
- CPVC has well established standards
  - ReUze is listed to the same standards as traditional FlowGuard Gold
    - ASTM D 1784 Rigid Vinyl Compounds
    - ASTM D 2846 CPVC for Hot and Cold Water Distribution
    - NSF Standard 14 Plastic Piping Components

- Why CPVC vs. Other Competitive Products?
    - Reduced Condensation
        - Due to its low coefficient of thermal conductivity, it is often not necessary to insulate FlowGuard Gold® CPVC against condensation within conditioned buildings. Under most conditions that cause copper pipe to sweat and drip, FlowGuard Gold pipe will remain free of condensation.
    - Ease of Installation
        - One step low VOC solvent cement, no special tools and a well known and trusted joining method
    - Quiet Operation
        - One study found that there is a 19.5 dBA sound level difference between ¾" Copper pipe and ¾" CPVC pipe. To put this in perspective, it can be stated that the copper pipe was **four times** louder (as the human ear interprets sound level) than the FlowGuard Gold CPVC pipe.
    - Energy Efficient
        - CPVC is an insulator; therefore it has superior heat retention which saves money on water heating costs. On the other hand copper is a conductor, so it loses heat rapidly.
    - CTS easily adapts to fixtures
    - Over 50 years of successful installations

Why Charlotte Pipe ReUze® CPVC?

- Charlotte Pipe ReUze is made with FlowGuard Gold
    - Robust material
        - 24448 cell class
- Water filled ReUze is plenum rated
    - Meets ASTM E 84 25/50, as required in the IMC and UMC
- The Charlotte Pipe TrueFit® System
    - Due to the fact that Charlotte Pipe makes both the pipe and fittings, customers receive two advantages. First, the pipe and fittings are designed to fit together, resulting in an interference fit. Second, customers have a single source of accountability.
- Field Support from both Charlotte Technical Services and Lubrizol

Applications

- There are 3 sources of non-potable water to be used with ReUze
    - Rainwater
    - Gray water—used water from lavatories, bathtubs, showers, clothes washers and laundry tubs that has not come into contact with toilet waste. It is NOT waste water from kitchen sinks, dishwashers, water closets or urinals
    - Reclaimed/Recycled water—treated domestic waste water supplied by a public agency that is utilized for beneficial or controlled use as opposed to being discharged to surface water
- Residential:
    - Toilet and urinal flushing
    - Laundry
    - Fire protection
    - Air conditioner chiller water
    - Decorative fountains and other water features
    - Indoor irrigation
    - Swimming pool make-up
    - Cleaning

- Commercial & Industrial:
    - Same as above, plus:
    - Cooling tower make-up water
    - Boiler feed
    - Stack scrubbing
    - Process water
    - Wash down
- 64% of the water consumption in our homes goes to flushing toilets and watering our grass. Potable water that has gone through an expensive treatment process, piped through miles of leaking pipes, and paid for by us homeowners should not be used for these applications.
- Each day 5 billion gallons of potable water are used solely to flush toilets!
- In large facilities, up to 70% of the potable municipal water is used for building systems other than plumbing fixtures!
    - It doesn't make any sense to use potable water to flush our waste down the toilet, and it doesn't make sense to use potable water for cooling tower make-up.

The State of the Water Industry

- A lot of people refuse to believe that there is a water shortage. After all, 3/4 of the earth's surface is covered by water. However, only 1% of this water is fresh water.
- There are a number of key drivers and key trends and developments in the water business. For these key drivers and key trends and developments, Steve Maxwell lists 5 possible solutions, and ReUze® is tied to every one of these solutions.
- Out of the roughly 130 gallons of water per capita per day that we currently treat to drinking water standards, most individuals drink less than a gallon a day. Most of the rest of that water is used for applications where the water doesn't have to be treated to highly exacting drinking water standards.
- In other words, much of our current consumption could be recovered and treated for a variety of secondary uses.
- Even if only small incremental gains could be made in terms of non-potable water re-use, overall water availability concerns could be substantially impacted.

LEED®

- Leadership in Energy and Environmental Design
- The goal of LEED is to substantially reduce or eliminate negative environmental impacts through construction and operations practices.
- The LEED Green Building Rating System™ is comprised of prerequisites and credits address 7 topics, one of which is Water Efficiency (WE).
- LEED Certifications are based on the following scale
    - Certified 40-49 points
    - Silver 50-59 points
    - Gold 60-69 points
    - Platinum 80 points and above
- There are 10 possible points for reducing potable water consumption, which is 25% of the points required for LEED Certification!
- The applications in which ReUze is used can help you achieve each one of these points.
- Water Efficiency is weighted more heavily in LEED 2009 as compared to LEED v2.2. This is just another example of the growing emphasis on reusing water.
- Regional Priority is a new credit category for LEED 2009

- Credits identified by USGBC regional councils and chapters as having environmental importance for a project's region
- To see a list of the regional priorities in your state, go to **http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1984**
- Up to 4 extra points can be earned
- In actuality, ReUze can contribute to earning at least 11 LEED points (sometimes more), which is 27.5% of the points required for LEED Certification!

Frequently Asked Questions

Q: Does ReUze® conform to the same standards as FlowGuard Gold®?

A: Yes, ReUze is manufactured to exactly the same standards as FlowGuard Gold.

ASTM D 1784	Rigid Vinyl Compounds
ASTM D 2846	CPVC for Hot and Cold Water Distribution
NSF Standard 14	Plastic Piping Components

Q: Is ReUze plenum rated?

A: Yes, ReUze is plenum rated. ASTM E 84 is the test protocol cited in the Uniform Mechanical Code and International Mechanical Code to determine a material's suitability for installation in a plenum area. Per ASTM E 84, ReUze in sizes 1/2" through 2" water filled does meet the 25/50 flame and smoke requirement for plenum application. Copies of the test report are available upon request.

Q: What fittings should I use with ReUze pipe?

A: ReUze pipe uses tan FlowGuard Gold CTS CPVC fittings. These are the same fittings used for domestic hot and cold water distribution.

Q: What solvent cement do I use to join ReUze pipe with FlowGuard Gold fittings?

A: ReUze pipe and FlowGuard Gold fittings are joined with yellow FlowGuard Gold one-step solvent cement conforming to ASTM F 493.

Q: Is ReUze available in 10' lengths and coils?

A: No, ReUze is available in 20' lengths only.

Q: Why is ReUze purple?

A: Color plays a vital role in the pipe market as a means of identifying the application. Purple is the industry standard for non-potable water applications. By manufacturing the pipe with an integral purple color, we are providing a level of warning to protect human health and safety.

Q: Why does ReUze have a "NSF-rw" mark and what does NSF-rw mean?

A: Third party listing of reclaimed water piping systems provides engineers, regulators and users the assurance that products are independently certified to meet requirements for reclaimed water end use. Third party certification reduces potential liability, increases confidence and product acceptance, and helps to ensure product consistency in meeting all applicable requirements. The reclaimed water pipes are produced in "purple" color and marked with "NSF-rw" for easy identification for this end use application.
Source: NSF International website

Q: Is ReUze Copper Tube Size (CTS) or Iron Pipe Size (IPS)?

A: ReUze is CTS.

Q: What is the difference between reclaimed water and recycled water?
A: Nothing. The terms reclaimed water and recycled water both refer to wastewater provided by a public agency that has undergone tertiary treatment and is suitable for direct beneficial use.

Q: Is ReUze® pipe a LEED® certified product?
A: Products are not certified by the US Green Building Council (USGBC). Buildings are certified based on the LEED rating system.

Q: How many LEED points do you get for using ReUze pipe in a project?
A: Zero for the piping material itself. Plumbing, electrical, mechanical and specialty products are excluded from the Materials and Resources (MR) category in LEED (with the exception of MRc2: Construction Waste Management). However, the applications in which ReUze are installed can help you achieve the 10 available points in the Water Efficiency (WE) category by reducing potable water consumption.

Q: What can I do to let my clients know that sustainable plumbing products like ReUze are important to me and my company?
A: Specify, install, buy, and insist that ReUze be utilized on every plumbing project that you are a part of.

Charlotte Pipe ReUze® Made With FlowGuard Gold® CPVC Copper Tube Size (CTS)

Non-Potable Water Distribution System
Product Specification

All pipe and fittings shall be manufactured from CPVC compound with a cell class of 24448 for pipe and 23447 for fittings as per ASTM D 1784, conform with NSF International standard 14, be listed by NSF International for reclaimed water, and bear the mark “NSF-rw”.

½” through 2” sizes: ReUze® made with FlowGuard Gold® CPVC Copper Tube Size manufactured to standard dimension ratio (SDR) 11 and shall conform to ASTM D 2846. Pipe shall be purple pigmented and have two rows of marking 180˚ apart to include “WARNING: NON-POTABLE WATER DO NOT DRINK.” Fittings shall be either tan or purple in color. Transition fittings shall have brass male or female connections with integral CPVC socket connections as manufactured by Charlotte Pipe and Foundry Company.

All pipe and fittings shall be produced by a single manufacturer and be installed in accordance with manufacturer’s recommendations and applicable code requirements. System shall be joined using approved one-step solvent cement conforming to ASTM F 493. Pipe and fittings shall be manufactured by Charlotte Pipe and Foundry Company and are intended for hot and cold non-potable water distribution systems.