

# Choosing the Right Orange

CPVC Fire Protection Systems Brand Comparison Guide



SCIENCE. SERVICE. SAFETY.









# Introduction

**BlazeMaster® Fire Protection Systems vs. all other brands of CPVC.** CPVC is a strong, reliable thermoplastic that offers superior corrosion and flame resistance, long service life and cost savings compared to metal piping systems. For more than 30 years, these characteristics have made CPVC the material of choice for many fire protection systems around the world. **But it's a fact: not all orange fire protection piping is equal.** Differences in manufacturing, material science and chemical processing among CPVC brands directly translate to performance and reliability disparities. This is important because the quality of the CPVC piping in a fire sprinkler system can make all the difference in the event of an emergency.

## Meeting and Exceeding Standards, Codes and Approvals

Fire safety is a heavily regulated industry. The materials that go into creating fire sprinkler systems must be carefully selected. Resin and chlorine content vary among CPVC piping manufacturers, depending on each manufacturer's product formula. BlazeMaster® Fire Protection Systems not only meet, but exceed, global performance and manufacturing standards for CPVC piping systems, making it the most specified nonmetallic fire sprinkler piping system in the world.

BlazeMaster Fire Protection Systems carry the markings of Underwriters Laboratories, Inc. (UL & C-UL) and Underwriters Laboratories of Canada (ULC), Factory Mutual (FM)\*, The Loss Prevention Council (LPC), vertrauen durch Sicherheit (vdS), Tianjin Fire Research Institute (TFRI) and the NSF International (NSF) for use with potable water\*\*. In fact, BlazeMaster Fire Protection Systems was the first CPVC material to pass the UL 1821 fire test, where CPVC pipe is subjected to a 1,600°F (871°C) flame, back in 1988. It was also the first CPVC fire sprinkler system approved for use with 16-inch exposed joists in exposed basements.

With proper care, BlazeMaster CPVC products can be used with common construction materials without compatibility concerns. [Properly applied spray foam,](#)

[drywall and concrete do not have adverse effects on](#)

[BlazeMaster CPVC.](#) In fact, BlazeMaster Fire Protection Systems have a UL listing to be embedded in concrete, unlike leading competitors. BlazeMaster CPVC can also be installed in direct contact with precast or site-poured concrete walls or decks without compatibility concerns. Plus, drywall and spackling require no special installation considerations when being used with BlazeMaster Fire Protection Systems.

BlazeMaster CPVC pipes are engineered to exceed ASTM International (formerly known as the American Society for Testing and Materials) standards for strength—14 percent greater than the ASTM base requirement. BlazeMaster CPVC fittings carry an impact strength of at least three times that of the base requirement. [Tested against other brands of CPVC pipe, BlazeMaster Fire Protection Systems products surpass the competition in both burst and impact resistance testing.](#)

In addition, the piping component of BlazeMaster Fire Protection Systems was the first piping material on the market to meet the 4120-06 material classification under ASTM F422. While most competitive products meet only 4120-05 requirements, BlazeMaster Fire Protection Systems meet them both. By meeting the pressure/temperature rating of 100 psi at 180°F (82°C) required by the 4120-06 classification, BlazeMaster CPVC offers an added strength and reliability that contractors prefer and appreciate.

\*As manufactured by Durman, GF Harvel, IPEX, Mexichem Brasil, Tyco and Viking.

\*\*Refer to individual manufacturers' installation instructions for specific listings and approvals.

# Burst and Impact Resistance Testing

When a fire breaks out, the fire protection system must perform as designed to save lives and property. That means you must have faith in the piping behind the wall or above the ceiling—and BlazeMaster Fire Protection Systems can be counted on to deliver.

BlazeMaster Fire Protection Systems are engineered to tough standards to ensure their integrity and ability to perform. [Burst \(or pressure\) testing and impact resistance testing, overseen by independent laboratory Engineering Systems Inc. \(ESI\), was conducted on BlazeMaster CPVC 1-inch pipe and Spears 1-inch FlameGuard® pipe\\*.](#)

## Burst Testing

Burst testing was performed to ASTM International Standard F442, the U.S.-recognized specification that covers requirements for test methods for materials, workmanship, dimensions, sustained pressure, burst pressure, flattening and extrusion quality.

ASTM F442 testing requires testing of five replicate samples of burst pressure. The test was conducted at a rate that ensured burst failure occurred within 60–70 seconds. The results: Contractors and engineers can confidently specify BlazeMaster Fire Protection Systems for the highest available pressure rating.

Pressure Testing with 1" Pipe	
BlazeMaster CPVC pipe	1,579 PSI
Spears FlameGuard pipe	1,413 PSI

Source: ESI

\* FlameGuard® is a trademark of Spears Manufacturing.



## Impact Testing

Impact resistance testing was performed in general accordance with ASTM D2444, determined by means of a tup (i.e., a falling weight). Impacts used a tup nose geometry described as “Tup B” in the standard, approximately 2” in diameter and a mass of 12 pounds. The procedure used is commonly called the Bruceton Staircase Method, or the Up-and-Down Method. A total of 20 specimens were tested and the data statistically analyzed to determine a mean impact strength. The results: BlazeMaster Fire Protection Systems came out on top in impact resistance.

Impact Testing with 1" Pipe	
BlazeMaster CPVC pipe	41.4 FT-LBS
Spears FlameGuard pipe	31.8 FT-LBS

Source: ESI

\* FlameGuard® is a trademark of Spears Manufacturing.





## Third-Party Testing Takes the Guesswork Out of Choosing Ancillary Products

Since its inception in 2002, the [FBC™ System Compatible Program](#) has been the leading [chemical compatibility](#) resource for the fire protection industry when it comes to installation of BlazeMaster Fire Protection Systems.

The FBC System Compatible Program ensures that accompanying construction products such as thread sealers, gasket and gasket lubricants, a variety of firestop products and cleaners will perform reliably and in harmony with BlazeMaster Fire Protection Systems. This gives everyone involved in a fire protection system installation retrofit—the contractor, the specifying engineer, the building owner, the authority having jurisdiction (AHJ) and local fire officials—full confidence in the integrity of the installation. It is easy to determine which brands and manufacturers are compatible with BlazeMaster Fire Protection Systems by using the handy online finder.

To be added to the program, suppliers submit their products for third-party testing, with no alterations allowed to the tested and approved products. The third party also audits the manufacturing facility where the product is made. The testing and auditing protocols were developed by Lubrizol Advanced Materials, the company that invented the CPVC material that goes into BlazeMaster Fire Protection Systems, to provide assurance that the approved products are fully compatible and have been tested fairly and properly. Apps are available for [iPhone](#) and [Android](#)

devices to connect directly to the FBC System Compatible Program website to search for chemically compatible products. The website apps also provide a list of incompatible products. The website is continually updated as changes occur and the apps update daily from the website.

No other brand of CPVC fire protection products goes to the depth and breadth of the FBC System Compatible Program. While leading competitors publish lists of recommended products, those recommendations are not based on third-party testing. That makes it important to note once again that not all CPVC products are equal. Each is manufactured with unique compounds. Resins and chlorine contents vary, depending on each manufacturer's product formula. Different products also contain different performance additives. Both factors mean that ancillary products act differently with each manufacturer's CPVC piping brand, requiring consultation with the manufacturer prior to selecting accompanying construction products.

The FBC System Compatible Program is the gold standard among contractors, builders, specifiers, building owners, AHJs and fire officials as the mark of assurance. It means that ancillary products have undergone rigorous third-party testing that has confirmed them to be compatible with BlazeMaster Fire Protection Systems.





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We feel like we have a personal connection at BlazeMaster Fire Protection Systems and we always have someone we can call to get assistance. We feel like BlazeMaster CPVC is the best product, and the other guys are following behind.

– BlazeMaster Fire Protection  
Systems Customer

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BlazeMaster CPVC Pipe and Fittings are widely available and delivered with consistent quality thanks to our network of partner manufacturers.

## The Best Partner Manufacturers

Because reliability of a fire sprinkler system is dependent on more than the quality of the pipe and fittings, BlazeMaster Fire Protection Systems are backed by unmatched online and in-person training and support, the oldest and most comprehensive compatibility program in the industry, and world-class manufacturing partners.

Our manufacturing partners have a proven track record of producing the highest quality materials and must comply with BlazeMaster CPVC's Quality Assurance Program. The program ensures each product is made with consistent quality to maintain the same strict standards regardless of when, where and by whom it is manufactured.





The BlazeMaster Fire Protection Systems team is here to provide the advice, information and training needed to select and install the best fire protection solution. You're never far from local experts who can help take a project from the specification stage to completion.

## Industry-Leading Training and Support

It's never been easier to improve your workforce through training in the installation of BlazeMaster Fire Protection Systems. We offer training and support that simply cannot be matched in the industry, presenting best practices in the installation, application and maintenance of BlazeMaster Fire Protection Systems, including:

- Storage and handling
- Cutting and joining
- Listings and approvals
- Chemical compatibility
- Health and safety

Hands-on training at customer locations has supported installers, contractors, engineers and construction managers in making work safer and more efficient while reducing errors and liability. And for those who can't attend in person, we created free [online installation training](#). While it's not meant to replace hands-on training, it's a valuable resource for earning an online installation training card and certificate at your own pace.

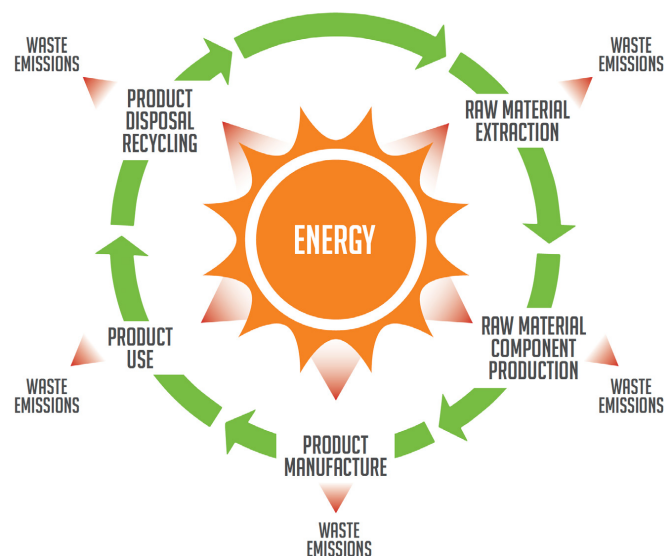
## The Eco-Friendly Fire Protection System

BlazeMaster CPVC Fire Protection Systems support green building practices and was the first in the industry to authorize a Life Cycle Assessment (LCA) of its pipe and fittings. To date, BlazeMaster CPVC is the only brand of fire protection systems in the industry to conduct such a study.

An independent environmental research firm assessed the materials and energy input and output associated with all phases of BlazeMaster CPVC products, from the raw material through manufacturing, use and ultimate disposal. [The LCA](#) not only provided insight into how BlazeMaster Fire Protection Systems affect the environment from cradle to grave, but also allowed our team to see larger trends and measure orders of magnitude that can dictate where specifically we can and should take corrective action for maximum benefit.

For example, the LCA showed us that more of our footprint derives from our upstream supply chain. That enables us to examine what we have control over as a materials manufacturer, and where tradeoffs can be made that would lead to meaningful improvements.

By conducting the LCA in the spirit of continuous improvement, we can better serve our customers and communities. In all areas of performance, BlazeMaster Fire Protection Systems continues to set standards and trends with the industry's largest team of research and development scientists.



# All You Could Want—and Need—in Fire Protection Systems

BlazeMaster CPVC fire sprinkler pipe was the first on the market, more than 30 years ago. Today, BlazeMaster Fire Protection Systems continue to lead the industry through pressure-rated compounds, state-of-the-art processing, rigorous product testing and successful manufacturing partnerships.

- First in third-party burst and impact testing
- Proven strength and durability through independent testing
- Unique UL listings such as those for embedded in concrete and basements
- Ancillary product compatibility assurances through third-party testing
- Support from a team of fire sprinkler industry leaders who are committed to staying informed and supporting the industry by serving on the boards and technical committees of trade associations such as AFSA, NFSA, NFPA, CASA and IFSA



Ensuring your success, BlazeMaster Fire Protection Systems offer superior engineering, hands-on installation support and optimum product performance for reliable fire protection, exceeding expectations—and specifications—every day. You should expect no less when it comes to saving lives and protecting property.

Visit [BlazeMaster.com](https://www.blazemaster.com) to learn more about BlazeMaster Fire Protection Systems, including purchasing, technical support, installation assistance and specification advice.



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**Lubrizol**

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The FBC™ System Compatible Program is a resource made available to manufacturers of ancillary products intended to be used with CPVC to help determine whether a product is chemically compatible with Lubrizol's FlowGuard®, BlazeMaster CPVC®, Corzan®, and products made with TempRite® Technology. Other manufacturers and/or brands of CPVC piping have not been tested as part of the FBC™ System Compatible Program. The FBC™ System Compatible program is, therefore, only applicable to the chemical compatibility of ancillary products with the Lubrizol brands of FlowGuard®, BlazeMaster CPVC®, Corzan®, and products made with TempRite® Technology. This distinction is made because every brand of CPVC piping is made with unique compounds, some of which may contain resins with different molecular weights and varying chlorine content. These characteristics directly impact the performance of the resulting product. Similarly, various CPVC products contain different performance additives. This too affects the performance characteristics of the ancillary product. For these reasons, Lubrizol has no responsibility for any failures occurring as a result of using products in the FBC™ System Compatible Program with CPVC products other than FlowGuard®, BlazeMaster®, Corzan®, and products made with TempRite® Technology.