Victaulic invented grooved mechanical piping in 1925, and our products were used during World War I to rapidly deploy piping systems carrying essential resources like fuel and water to the front lines. Today grooved piping systems are an excellent alternative to welding, threading and flanging for a variety of applications such as comfort piping, utility and process piping and fire protection systems.

Grooved joining technology and Victaulic are rooted in sustainability; our products’ inherent qualities naturally make them environmentally friendly. Even before the evolution of the green building trend, the grooved piping method has provided a more efficient, cleaner and safer pipe joining system.

**PROJECT SPOTLIGHT**

**ALBERICI HEADQUARTERS, ST. LOUIS, MISSOURI, UNITED STATES**

- one of the world’s greenest buildings
- unique under-floor HVAC System
- 14-month fast-track design building schedule
- 110,000 square feet / 10,200 square meters
- 18” / 450mm raised floor system
- Superior indoor air quality
At Victaulic, we believe that being sustainable is about more than obtaining credits or points.

Victaulic is a partner who shares in your commitment to environmental responsibility, with roots in sustainability that run more than 85 years deep. Victaulic products are made from natural and recycled resources, and they eliminate waste, emissions and noise while maximizing energy efficiency. We focus on providing sustainable solutions at every stage – from research and development, product manufacturing, system installation and efficient operations, through the life of a building or plant piping system.
**VICTAULIC SOLUTIONS**

**IMPACT THE TRIPLE BOTTOM LINE:**

**PEOPLE**

**VICTAULIC INSTALLATION METHODS PROVIDE:**
- a safe and secure work environment
- reduced health risks associated with no-flame joining methods

**PLANET**

**THE PLANET BENEFITS FROM:**
- reduced carbon emissions
- elimination of hazardous air pollutants and greenhouse gases
- a reduction in landfill waste

**PROFIT**

**VICTAULIC INSTALLATION METHODS:**
- reduce energy costs
- reduce labor, maintenance and operation costs
- enhance productivity
ENERGY EFFICIENT
INSTALLATION OF VICTAULIC COUPLINGS
REQUIRES ZERO ELECTRICAL ENERGY

The installation of a coupling on prepared pipe does not require any incremental electrical energy to install as compared to other pipe joining methods such as welding and soldering. A typical 4”/100 mm, schedule 40 carbon steel arc welded joint consumes 5 KW of electrical energy with an estimated 25 percent waste during the installation process. A 4”/100 mm Victaulic coupling is installed by tightening two nuts and bolts with a hand ratchet.

CASE IN POINT: SAVING MORE THAN 123,000 KW OF ELECTRICITY

A recent project requiring 1,105 butt welds on Schedule 40 pipe in sizes 10” through 24” (250mm - 600mm) would have required 123,227 KW of energy to be consumed for a total cost of $7,886.51 (USD). Factoring in a 25 percent KW waste on welded joints equals a loss of $1,971.63 (USD) and 30,807 KW on this job alone.

Using the grooved method saved this single project the equivalent amount of electricity consumed by 130 average homes in one month. And the wasted electricity would have equaled the amount of electricity consumed by 33 average homes in one month.

To find out how this was calculated and see how much energy you could save on your next project visit: www.sustainablepipingsolutions.com
Victaulic has been an innovator in manufacturing throughout its history – our global lean processes reduce waste and increase efficiency. Our products are manufactured using recycled and natural elements – fire, water, metal and sand. We manufacture close to the markets we serve to provide superior product delivery, as well as conserve our natural resources and reduce transportation-related pollution.

Six–10 million tons of sand are used worldwide in foundry manufacturing each year. At Victaulic, 100% of the sand used in our foundries is reclaimed, recycled or given beneficial disposal. Our sand reclamation efforts allow us to recycle 2,496 tons of sand each year in the US alone.

Each week Victaulic prevents 70 tons of sand from being dumped into landfills in the US – the equivalent of four dump truck loads.
THE FACTS

- Products made from 90% recycled materials
- Team of environmental engineers on staff to ensure sustainable manufacturing processes
- 100% of the sand Victaulic uses in its foundries is reclaimed, recycled, or given beneficial disposal
- More than 75% of all Victaulic couplings are dip coated, in lieu of spray painting, to decrease emissions

To request documentation of Victaulic material composition to support a certification application go to: www.sustainablepipingsolutions.com

THROUGH DIP COATING PROCESSES VICTAULIC REDUCES VOCs IN THE ATMOSPHERE BY 2/3

Conventional spray painting has only a 40% transfer efficiency rate. That means 50–60% of the paint is wasted and a high percentage of Volatile Organic Compounds (VOCs) are released into the atmosphere. Dip coating results in 0% waste and fewer VOCs.

More than 75% of all Victaulic fittings and couplings are dip coated.
During installation and maintenance, mechanical grooved piping systems significantly reduce or eliminate waste, emissions and noise pollution on the jobsite providing a safer and healthier environment. Grooved systems employ a proven roll grooving process to join piping, valves and other components. Using a simple two-bolt coupling design, pipe fitters can make rugged, secure joints quickly and easily using only basic hand tools. And, with a union at every joint, they have maximum flexibility for on-site decision making. All couplings are sealed for optimum integrity with a durable elastomeric gasket designed to withstand years of sustained high compressive and cyclical loads.

By-products of weld and solder fumes can contain lead oxide, carbon monoxide, VOCs and hydrochloric acid in addition to many other harmful particles and gases. Reducing the Particulate Matter (PM) preserves indoor and outdoor air quality, leading to a safe and healthy environment.

In 2007 alone, the use of Victaulic grooved mechanical pipe couplings in lieu of welding on HVAC applications in the US reduced 145 metric tons of airborne weld emissions – which is equivalent to eliminating the airborne pollution of one million cars on the road for a month. The elimination of these harmful pollutants means less airborne pollution providing for a more sustainable environment, but also a safer jobsite during construction, maintenance or retrofit work.
NO FLAME, NO FUMES.
- The no-flame alternative to welding allows for faster installation and safer environments by reducing hazardous and noxious fumes and reducing overall man hours on a project.

IMPROVED AIR QUALITY.
- Victaulic couplings reduce the emissions of Particulate Matter (PM) on the job site. Particulate Matter has a harmful effect on the environment and on health.

ZERO INCREMENTAL ELECTRICAL ENERGY REQUIRED.
- There’s no need for electricity and no draw on the power grid. Welding or soldering can use up to 4,000 watts per hour on an eight-inch joint. Grooved mechanical joints on prepared pipe use zero.

ELIMINATE JOBSITE REWORK.
- Visual inspection allows for quick verification of proper installation and therefore virtually eliminates the re-work associated with welding. The industry standard for estimated weld rework is 5–6%.

GROOVED PRE-FABRICATION MINIMIZES TRANSPORTATION COSTS AND SITE IMPACT.

Victaulic-joined pipe can be pre-fabricated and configured to lay flat on a truck bed unlike prefabricated welded spools. This means that 2/3 more material is transported per truckload as compared to welded pipe spools.

Accurate pre-fabrication reduces need to over-order product for site assembly leading to reduced lay down area and minimizing overall site impact.

29% OF THE REPORTED U.S. GREENHOUSE GAS EMISSIONS IN 2006 WERE ATTRIBUTED TO TRANSPORTATION SOURCES.

Victaulic reduces its impact by...
- manufacturing close to the markets it serves
- reducing material transportation requirements by 2/3 through pre-fabrication
IMPROVED OPERATING EFFICIENCES THAT ELIMINATE & REDUCE COST

Mechanical pipe joining systems provide an optimal way to effectively and easily maintain piping systems in structures, thereby discouraging deferred maintenance, thus promoting operating efficiencies and, ultimately, saving money.

THE COST OF DEFERRED MAINTENANCE

In the U.S., buildings account for 40% of the estimated total energy consumption, and 30% of a building’s annual budget is attributed to energy costs. Organizations that have implemented comprehensive maintenance programs find their total costs can be as much as 50% lower than the costs for those organizations that tend to defer routine maintenance. Facilities in which proper HVAC maintenance is completed will use at least 15 to 20% less energy than those where systems are allowed to deteriorate.

Deferred maintenance:
- costs building energy efficiencies
- contributes to an increase in carbon emissions

Victaulic piping systems are more easily accessible for scheduled and unscheduled maintenance, meaning less deferred maintenance and increased overall operations efficiency.
EASY SYSTEM ACCESS LEADS TO EFFICIENT AND TIMELY MAINTENANCE.

- For access to a grooved piping system, a maintenance person simply loosens two nuts and bolts. Grooved piping systems also can be installed in wet or dry conditions to speed up the maintenance process.

NO-FLAME INSTALLATION ALLOWS FOR MAINTENANCE IN OCCUPIED SPACES.

- Mechanical pipe joining systems are a safe alternative for maintaining piping systems in specialty facilities where open flames could potentially create a hazardous environment, and there is no disruption to business productivity due to downtime.

UNION AT EVERY JOINT MAXIMIZES FLEXIBILITY.

- Conducting maintenance on mechanical systems is more efficient than on welded systems during both scheduled and unscheduled maintenance reducing downtime by an average of 25%.

REDUCED DOWNTIME.

- Retrofit projects can be completed in occupied buildings without having to vacate the space because mechanical grooved piping re-work does not negatively affect indoor air quality or introduce a fire hazard. During expansion projects and retrofits, using grooved piping, existing piping systems are easily re-routed and kept in operation while new systems are put in place, increasing on-site safety and maximizing productivity.
As the world leader in mechanical piping systems, Victaulic has set the standard for piping efficiencies, engineering expertise and performance reliability, creating a sustainable piping system that lasts the life of the buildings where they are installed. The innovative products designed and manufactured by Victaulic are inherently sustainable and offer design solutions that reduce the impact on our environment:

- superior sound attenuation benefits
- seismic capabilities to maintain piping system integrity during seismic events
- adaptable products that can be easily retrofitted on any building
- no flame required therefore reducing waste and toxic fumes
- more efficient water flow and higher values to increase operating efficiencies
**VICTAULIC VORTEX**

The FM Approved Victaulic Vortex™ Fire Suppression System extends the boundaries of existing technologies, surpassing the capabilities of both inert gas and mist systems. It provides supreme protection and fire suppression with limited residual moisture, no toxic chemicals and full design flexibility.

- unique hybrid solution helped Victaulic to receive EPA SNAP (Significant New Alternatives Policy) Approval
- the world’s first-ever Hybrid (water and inert gas) Fire Extinguishing System
- 100% sustainable
- non-toxic, to humans and to the environment
- during system testing, oxygen levels in the discharged area, stayed at or above the minimum levels for human occupation
- can be utilized in a sealed or open space with no requirement of room integrity
- is easily scalable for simplified system design
- rapidly reset after discharge

The EPA SNAP Approval states that the use of this system should be in accordance with the safe exposure guidelines for inert gas systems in the latest edition of NFPA 2001, specifically the requirements for residual oxygen levels, and should be in accordance with the relevant operational requirements in NFPA 750 Standard on Water Mist Fire Protection Systems.

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**VICTAULIC COUPLINGS SUCCESSFULLY PASS INDEPENDENT SEISMIC TESTING PROGRAM**

The inherent flexibility of Victaulic couplings reduces the transmission of stresses throughout the pipe system, and the resilient gasket aids to further reduce the transmission of vibration. These design features enable Victaulic piping systems to withstand seismic events and keep systems operational.

Victaulic couplings were tested at the ATLSS center, a member of the nationally recognized NEES (Network for Earthquake Engineering Simulations) testing group, to prove the reliability of Victaulic grooved system components when exposed to seismic movements. Victaulic couplings ranging in size from 4”-16” / 100 - 400mm were exposed to accelerations up to 50% greater than the Northridge, California earthquake. The water-filled assemblies were pressurized to 200psi/1375 kPa for the duration of all tests and no pressure loss or leakage was noted during any of the tests.
Victaulic understands the importance of meeting industry standards for green buildings is a global effort. Taking an active role in Green Building Councils and other organizations is pivotal to understanding and promoting sustainability around the world.

Numerous Victaulic sales engineers are certified in sustainable practices in their local regions.

Victaulic sales specialists can partner with their clients on applying the green building principles from the associations listed above, among others. Contact Victaulic for information on specifying products on your next sustainable project.

**Materials & Resources:**
- Victaulic products are made of 90 percent recycled materials.
- Victaulic manufacturing and distribution locations are close to the markets served.

**Sustainable Sites:**
- Reduced construction site footprint and overall waste reduction due to prefabrication, bagging and tagging of materials and coordinated shipments to job site.

**Energy & Atmosphere:**
- Reduced electricity consumption and noxious fumes during installation and maintenance by eliminating welding.

**Indoor Environmental Quality:**
- Victaulic products reduce emissions of particulate matter and eliminate hazardous fumes associated with other joining methods, such as welding or brazing, that have a harmful effect on the atmosphere during construction and maintenance.
- Victaulic mechanical pipe systems deliver unsurpassed vibration isolation and sound attenuation characteristics.
  “Victaulic couplings dampened the overall vibration amplitude by 80-90%.”
  *(As determined by SSA Acoustics, Seattle, Washington, United States)*

**Innovation in Design:**
- Victaulic invests heavily in research and development of new products that have a beneficial impact on the environment.
- Victaulic construction techniques minimize waste and impact on the environment.

To request support for adding Victaulic to your certification application on your next project go to: [www.sustainablepipingsolutions.com](http://www.sustainablepipingsolutions.com)
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SUSTAINABLE EVERY DAY SINCE 1925

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SUSTAINABLE PIPING
FOR THE LIFE OF A SYSTEM

www.sustainablepipingsolutions.com

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