

Plastics News

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Pipe extruders add products, plants at bullish time



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Vinyl Institute

Houston-based Westlake Corp. is launching a new product in the United States — molecularly oriented PVC (PVCO) pipe — and will manufacture it at a new 190,000-square-foot plant in Wichita Falls, Texas, as demand for housing and infrastructure grows.

Westlake introduced its PVCO pipe products, which use the same materials as PVC but are mechanically stretched, to Canada in 2021.

The manufacturing process realigns the pipe material's molecules to improve tensile strength. This means Westlake can produce thinner-walled pipe with the same pressure capacity as thicker-walled PVC pipe, which addresses sustainability and affordability issues. For starters, PVCO pipes are produced with 40 percent less PVC, which saves energy in manufacturing and shipping. Then, in water systems, PVCO provides about 10 percent more internal flow area compared with other Westlake products, among other benefits.

Westlake is joining Ipex and JM Eagle as the third North American manufacturer of PVCO pipes — products resonating in the market at a time when long-term demand is projected from municipal and residential markets for drinking water, wastewater and stormwater applications for both new construction and replacement.

"We operate in a very bullish market where our growth is bolstered by unique integrated solutions and a leading market position. Our leading North American presence provides

scale and capability to enable strong partnerships with key distributors," said Andre Battistin, vice president of Westlake Pipe and Fittings.

Battistin spoke June 13 during an online Westlake "teach in" about its housing and infrastructure products businesses.

With related estimated sales of \$2.8 billion, Westlake is the No. 3 pipe, profile and tubing producer in North America, according to *Plastics News'* latest ranking. JM Eagle is No. 1 with related estimated sales of \$3.9 billion, and Ipex is No. 5 with estimated sales of \$1.68 billion.

PVCO pipes have been getting more consideration for having more robust mechanical properties than standard PVC and triple the impact resistance, Battistin said.

Municipalities have been specifying PVCO as a preferred water main material and the products are preferred by installers, he added.

"PVCO is 75 percent lighter and 60-70 percent less expensive than ductile iron, and it is 40 percent lighter than traditional PVC and has 10 percent increased internal flow vs. traditional PVC," Battistin said.

As PVCO pipes make a bigger splash, PVC continues to displace other types of materials for water sector pipe, such as cast iron, ductile iron and concrete, enabling manufacturers to gain market share, according to Bruce Hollands, president and CEO of the Uni-Bell PVC Pipe Association, an Irving, Texas, trade group representing PVC pipe producers.

"Like PVC pipe, the use of molecularly oriented PVC pipe is increasing as the demand for ductile iron pipe continues to decline," Hollands said in an email. "PVCO pipe provides utilities with another proven option for a non-corroding, durable pipe material."

In the meantime, use of PVC pipe continues to grow every year. Hollands said the products have "the lowest break rate, longest service life, lowest carbon footprint and lowest life cycle cost of all piping materials."

A major end use for PVC pipe is water mains, which carry drinking water from pumping stations to homes, schools and businesses. More than 50 percent of all water mains installed in the U.S. and Canada over the last 10 years were PVC pipe, Hollands said, adding the products also are advancing in the trenchless sector.

Hollands also points to PVC pipe undergoing what he described as "the most rigorous and transparent environmental evaluation of all pipe materials."

"PVC pipe has been reviewed through a comprehensive, third-party life cycle analysis under the stringent guidelines of the International Organization for Standardization 14025 and 14040 standards, which are the most recognized environmental industry standards in the world," Hollands said. "No other pipe materials in North America have published an LCA or environmental product declaration conducted according to ISO standards."

Moving forward, Hollands expects to see further growth for PVC water and sewer pipe in larger-size applications up to 60 inches.



PE pipe gains

2023 was a growth year for the plastic pipe market and following a slow start to 2024, the summer months and construction season have increased backlogs dramatically, according to David Fink, president of the Plastics Pipe Institute (PPI).

Based in Irving, Texas, PPI represents all segments of the plastics piping industry, including PVC, polyethylene, polypropylene and nylon products.

PVC and PE pipe are solving a piece of the infrastructure puzzle, Fink said in a phone interview, pointing to anti-corrosive qualities in addition to affordability as driving demand.

Corrosion within metallic pipes can affect drinking water quality by depleting disinfection chemicals and promoting the growth of bacteria inside the pipe, creating biofilms linked to E. coli and Legionnaires' disease outbreaks, according to Uni-Bell.

PPI's Fink added: "Non-corrosive infrastructure is a big step forward and PE growth rates are outpacing PVC and other materials due to trenchless installations that are

less disruptive. You can go in through an existing pipeline and burst it out and pull a new pipeline in. Or you can horizontally directionally drill in conduit without ripping up the roads or the fronts of buildings. That has really led to incremental growth and market share for polyethylene over other materials. But in general, all plastics are really doing well."

A year ago, in Shawnee, Okla., the Citizen Potawatomi Nation invested \$25 million to open Sovereign Pipe Technologies, which produces PE pipe for potable water, geothermal and gas gathering applications.

"We are running with four lines — all producing products — and approximately 45 employees," Jeremy Hohn, SPT vice president of sales, said in an email. "Our commitment to local projects and infrastructure is unwavering. We are in the final stages of considering a few tribal projects funded by ARPA [American Rescue Plan Act] here in Oklahoma, and we have supplied a few projects in our own city of Shawnee. Our priority is to support our local community and grow from there."

The biggest market for PE pipe is corrugated products for roadway drainage and agricultural applications, PPI says.

"That's been growing at the expense of concrete and aluminum pipes because PE pipe is lightweight, cost-effective and doesn't corrode," Fink said.

Hilliard, Ohio-based Advanced Drainage Systems Inc. is the largest extruder of these products and one of North America's largest recyclers.

"It's one of the best stories to tell on recycling for post-consumer resin like Tide, Clorox and milk jugs," Fink said. "They can grind it up and reuse it, putting it into corrugated pipe that's going to last 100 years."

With sales of \$2.2 billion, ADS is the No. 4 pipe, profile and tubing extruder in North America, according to *PN's* latest ranking.

ADS began construction recently on a new production plant in Lake Wales, Fla., according to lakewalesnews.net. The facility will produce thin-walled, corrugated plastic pipe for drainage projects.

ADS also just opened an engineering and technology center to develop new pipe technologies and products to manage stormwater during severe storms.

"This new center will also enable ADS to heighten our focus on finding new ways to source and use recycled materials, plus explore how to use discarded plastic products

that were previously thought to be unsuitable," ADS President and CEO Scott Barbour said in an email.

The company's most in-demand infrastructure product is HP Storm polypropylene pipe, he added. Made from an impact-modified compound for strength and stiffness, the PP pipe comes in 12- to 60-inch diameters with a dual-wall construction of corrugated exterior and smooth interior for gravity-flow storm drainage under highways, railroads and airfields.

Meanwhile, most smooth wall PE pipe is in demand as conduit for broadband in the power and communications market or to protect power-generating cables for renewable energy like solar and wind.

"Conduit has been our fastest-growing application for more than a decade, and it will continue with the support of government funding," Fink said.

Strong housing outlook

Another growth driver for plastic pipes is housing. Single-family builds and starts dropped by about 50 percent in the last decade, according to American Homes 4 Rent (AMH), the owner, operator and developer of single-family rental homes.

The plummet began with the 2007-09 financial crisis. Then, in the 2010s, builders suffered from a labor shortage, supply chain disruptions and increasing land prices, AMH said in its midyear report on the housing market released in April.

However, now an increasing amount of the U.S. population is reaching peak household formation years, which provides for favorable demographics, Westlake's Battistin said.

To keep up with demand and population growth, AMH said the U.S. needs to build 18.6 million new homes both for sale and for rent over the next 10 years. That's an opportunity to supply 1.86 million units per year through 2033.

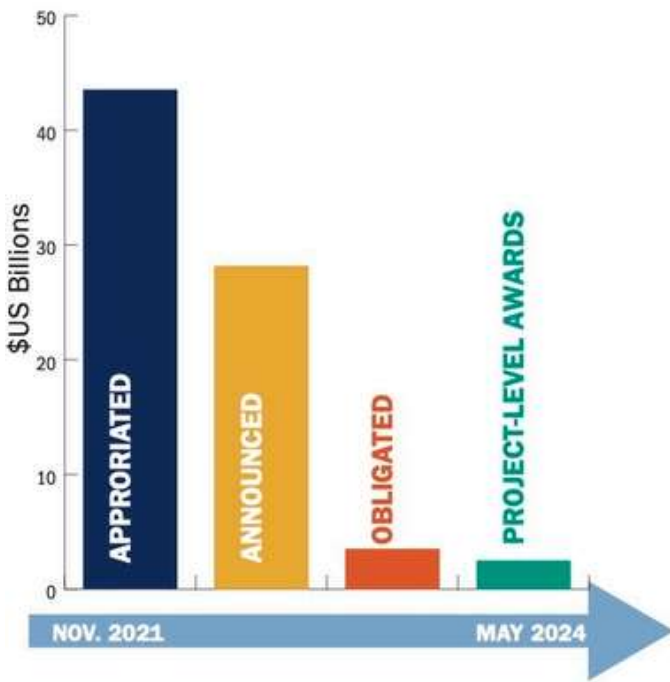
"Each new home requires potable water, sewer and plumbing pipes and in many cases electrical pipe and fittings for an electric car charging station," Battistin said.

Pipe is typically sold within 500 miles of the production site due to high shipping costs, he added, noting Westlake has 15 manufacturing sites, 15 distribution centers and 30,000 product SKUs.

"From our plant and distribution center footprint, we are well positioned to capitalize on areas with the most housing starts and the greatest infrastructure needs," Battistin said.

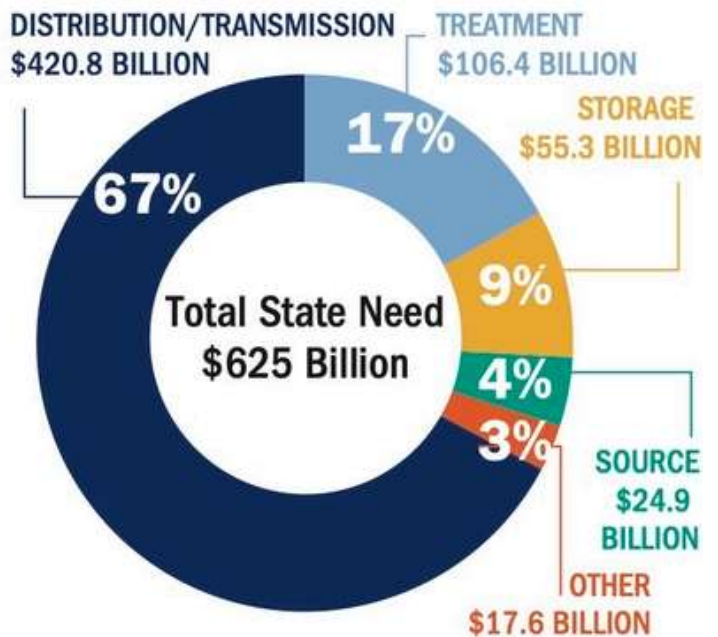
INFRASTRUCTURE FUNDING

IJA SRF FUNDING DISBURSEMENT, MAY 2024



TOTAL 20-YEAR STATE NEED BY INFRASTRUCTURE PROJECT CATEGORY

(IN BILLIONS; JANUARY 2021 DOLLARS)



Pipe share growing

Plastic pipes make up about 35 percent of U.S. drinking water systems and will play a bigger role once a spigot of federal infrastructure funding constrained by workforce shortages flows stronger.

Over the next 20 years, the U.S. and Puerto Rico will need \$625 billion of new drinking water infrastructure and upgrades to existing infrastructure, such as distribution and transmission pipes, treatment plants and storage tanks, according to the U.S.

Environmental Protection Agency's seventh annual Drinking Water Infrastructure Needs Survey and Assessment (DWINSA). The assessment is based on a survey of 3,924 public water systems that yielded 3,820 responses for a 97 percent response rate.

The data, which is used to develop a formula to distribute funding to states, puts the cost to maintain underground distribution and transmission pipelines at \$420.8 billion.

For the first time, the assessment also evaluates the cost of lead service lines (LSL) replacement, workforce concerns, and pipe and storage tank construction materials, making it the broadest effort since the survey's inception in 1995.

Based on the findings, the total projected number of LSLs in the United States and Puerto Rico is 9.2 million. The estimated cost to replace them: \$50 billion to \$80 billion in 2021 dollars. The assessment, which was released in September 2023, is based on 2021 data.

The responses related to pipes indicate systems in the survey will replace 54 percent of existing pipe length with plastic pipe and 34 percent will go with ductile iron pipe. Similarly, 47 percent of systems stated that plastic is the most likely material for new pipe projects, while 34 percent stated that ductile iron is the most likely material for new pipe projects.

Ductile iron pipe is replacing a lot of cast iron pipe, and plastic pipe is replacing a lot of asbestos cement pipe materials.

The overall trend toward plastic pipes continues, and affordability is a big driver of demand, according to Eric Bindler, senior research director at Boston-based Bluefield Research, a consultancy firm for utilities and water technology and service providers. The firm is focused mostly on the water distribution and collection network from the treatment plant to the household and back to the treatment plant.

"The price of everything has gone up, and certainly plastic pipe was not insulated from those supply chain issues, but I haven't seen anything to suggest it has gotten more expensive ductile iron," Bindler said in a phone interview.

For one city that recently bid a project, Prescott, Ariz., the costs came in at \$33.50 per lineal foot of PVC pipe and \$36 per lineal foot of ductile iron, Mayor Phil Goode said in a letter to residents. A price comparison between the two materials on the JM Eagle website puts 100 lineal feet of 20-inch C900/C905 PVC pipe at \$27.23 compared with \$58.30 for ductile iron.

Trickling down

The Infrastructure Investment and Jobs Act (IIJA) sets the stage for \$1.2 trillion investment with a focus on water. Approved in November 2021, about 80 percent of IIJA funding will flow through state revolving fund (SRF) programs to drinking water and wastewater projects.

About \$55 billion is earmarked for water and wastewater investments that will cover municipal facilities, pollution control, treatment systems, stormwater runoff mitigation, green infrastructure, estuary protection and water reuse. Of that total, about \$44 billion is slowly making its way through existing SRF channels, Bindler said.

"The funds go from the EPA to the state, which selects its projects and then gets the money out to the utilities. It's a lengthy process," Bindler said.

The process also is new and daunting to some utilities more accustomed to turning to the bond market to fund improvements back during lower-interest times.

"Only about \$2.5 billion so far has actually been earmarked for individual utilities," Bindler said. "That's just 6 percent of the total, and that money hasn't even necessarily gone to the utilities yet."

Looking at labor

When funding is in hand, installation crews might not be on hand. There's still a labor shortage in the construction sector.

"In terms of water and wastewater construction and employment in the country, it's still like 5-6 percent below where it was prior to the Great Recession," Bindler said. "It's been slowly picking back up in the past couple months, I think, in anticipation of all of this federal funding. But it's still lower than it was 15 years ago, and that's a long time to [be] short-staffed. Now we have all this opportunity to fix the system, but the manpower is a little thin."

For the first time, DWINSA collected responses to workforce questions related to water sector shortfalls expected in the next five to 10 years and the reasons behind them. The two main factors cited are large-scale retirements and a lack of job candidates to fill the roles.

In response, EPA, states, and drinking water industry associations and organizations are working to promote the water sector as a good source of employment and career opportunities.

Trade groups like Uni-Bell, PPI and the PE Pipe Alliance offer training.

"Because the generation entering the workforce likes to learn by YouTube videos, we also have entered that space with online education, training shorts and installation guidelines," Fink said. "It's all about educating people and getting them comfortable about how to transition from existing materials."

Lead lines linger

The 2021 IJJA appropriated \$15 billion to continue identifying and replacing LSLs. The amount has been likened to a down payment with many more billions needed to update the service lines carrying drinking water from the water main in the street to homes and businesses.

LSL replacement is a major undertaking in Florida and Illinois, with each state still having more than 1 million service lines made of lead out of the national 9.2 million total.

In New York, which still has 490,000 LSLs, officials in the city of Rochester have a goal to be lead-free by 2030. Work crews are going by block, replacing LSLs with PE pipes.

Five years ago, about half the city's service lines were lead. Now it's a third.

No timeline has been set. EPA is calling for all LSLs to be replaced within 10 years in its Lead and Copper Rule Improvements proposal, which faces an October deadline for adoption. However, water utilities and some officials say the 10-year time frame can't be met or funded while also dealing with new federal limits on PFAS "forever chemicals" in addition to failing infrastructure.

If the proposed rules aren't published in the Federal Register before Oct. 16, then former Trump-term rules will be in effect, allowing up to 30 years for service line replacement if lead levels test higher than 15 parts per billion.