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Forward Ethylene Markets: A Price-Protection Primer and Focus on a High-Exposure Market

Kathy Hall, Executive Editor, PetroChem Wire by OPIS

Donna Todd, Senior Editor, PVC & Pipe, PetroChem Wire by OPIS

PetroChemWire.com

Introduction

Have you ever found yourself really ticked off at the ethylene market because of how expensive prices were on the day you had to take delivery?

If you produce or consume a commodity made from ethylene, you have unique exposure in the market. And price exposure involves risk.

But you don't need to be a prisoner of this risk. Tools exist to help you.

In an ideal world you:

- Actively manage your ethylene risk.
- Limit your exposure and save yourself money.
- Or, use your exposure to speculate and make yourself money.

If none of these perfect-world scenarios apply to you, this report will underscore the importance of ethylene price protection using forward curves.

Later in this report, we'll talk about the PVC market, a perfect example of a market with exposure to the fluctuations of ethylene prices.



Ethylene Risk Management Strategies — Then and Now

Dating back to the 1950s and well into the 1980s, U.S. ethylene and propylene prices were “settled” once each quarter. In the 1990s, this changed to once each month.

This “posted price” was actually code for “a price no one really paid because they all had discounts and rebates built into it.”

The U.S. ethylene and propylene markets underwent a huge transformation in the 2000s. Gone were the days when the market penciled a guesstimate into its books only to update it up to 30, 60 or 90 days later.

“Spot market” trading became commonplace, as U.S. ethylene and propylene markets evolved to the highest functioning level ever experienced. The modern market has spot trades, “balance of the month” trades, paper trades, spread trades, and forward trades.

People interested in the price of ethylene and propylene now have a new value to reference every day. And as an extension to that, people can also uncover prices for ethylene and propylene’s raw materials every day. Ethane is by far the most popular feedstock.

The entire supply chain should be functioning better than ever, right?

Yes and no.

There is a high level of price granularity referenced by the inner circle of the ethylene and propylene markets. But, the rest of the supply chain — those who produce or consume a commodity made from ethylene or propylene, like the PVC market — is often left in the dark. They are not privy to the deals that are done or the prices that are reached.

That’s where the ethylene futures market becomes a critical tool for managing price risk.



How to Use Ethylene Futures to Guard Against Price Volatility

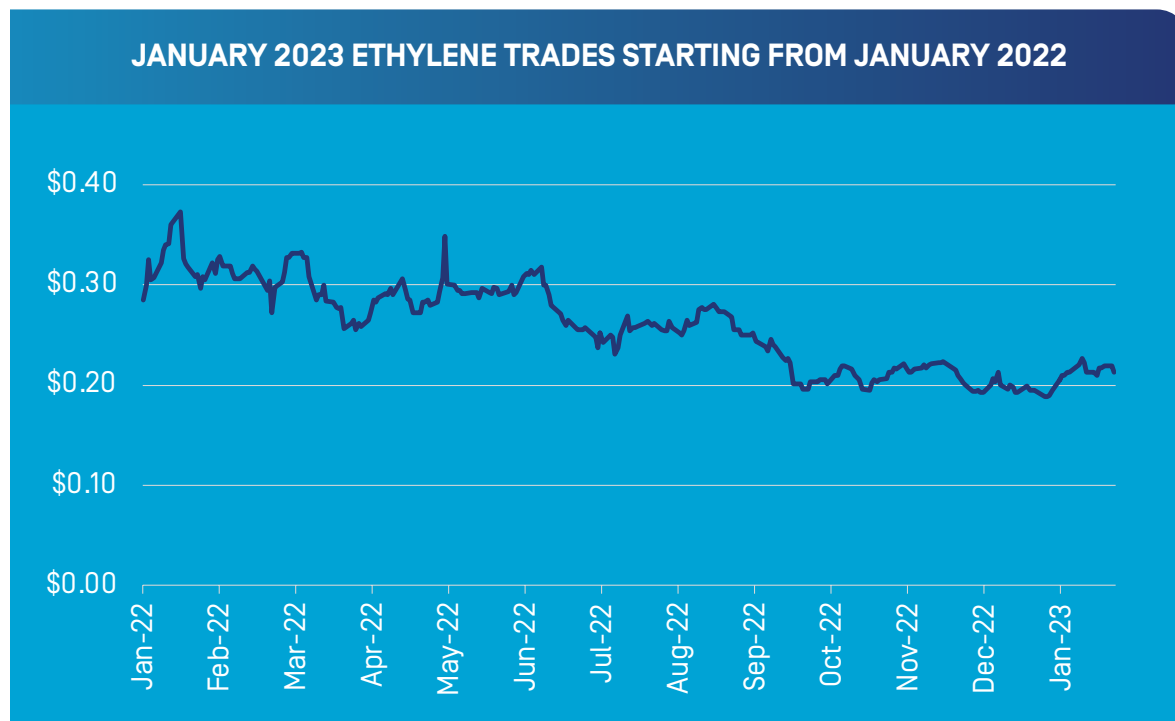
Let's look at your strategy regarding your position in the ethylene market.

To protect your bottom line, you cannot look exclusively at day-of spot prices. The real action on today's price has been building for many months.

On the other hand, the futures market presents opportunities for months and years ahead. These prices settle every day for 24 months forward. You can use these contracts to lock in prices, because this market is highly transparent and visible.

Let's look at the journey of the January 2023 contract throughout 2022.

It spent most of the first half of 2022 above the 30 cent per pound level, reaching a high early in the year at 37.25 cents. The second half of the year was a different story, as Jan 2023 ethylene in 3Q 2022 circled around the 20-30 cents per pound range and 4Q saw prices struggle to stay at 20 cents per pound.



Depending upon whether you were delivering or consuming ethylene, any price on this curve could represent a great price or a terrible price. But, the key takeaway is that it was a KNOWN price. And price visibility is your friend.

So, how do you get in on this?

To trade on the futures exchange that trades ethylene, CME NYMEX, you need two things: a margin account and a broker licensed to enter your trades on the exchange.

Here's how it works: Say you are an ethylene buyer and you want to set a certain amount of physical ethylene to be delivered each month in 2023 at a price level you determine fits your company's budget.

You call your broker and take a position in the paper ethylene market for 2023 in which you sell calendar 2023 ethylene futures at the price you are looking to lock in.

The money gleaned from the sale of that futures position flows into an account. You can then use that money to offset the price you pay to your supplier for the physical ethylene you buy. It's like two sides of a scale that balance each other out in spite of market volatility.

Bottom line: Locking in risk associated with the physical delivery of millions of pounds of ethylene saves you unexpected volatility.

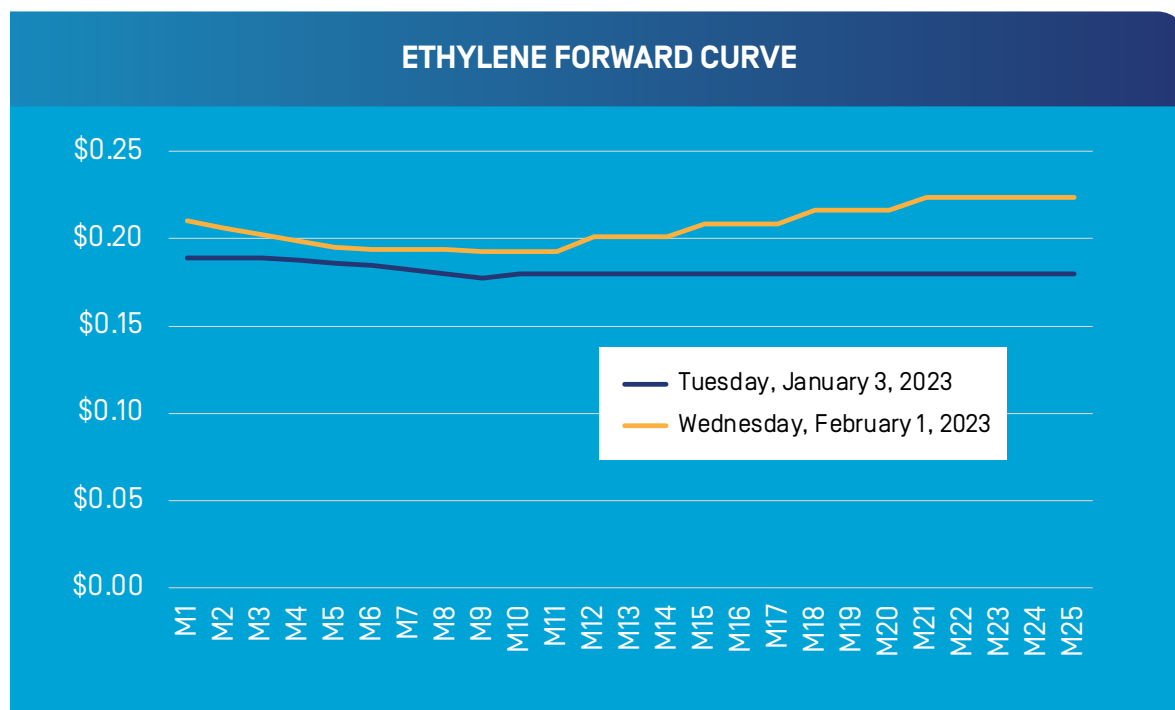


Monitoring the Ethylene Market Can Help You Fine-Tune Your Strategy

The clock is ticking louder every day for next month and next quarter. If you came into the market that turned south with wishes and prayers instead of a position locked in, it may have felt like trying to catch a falling knife. If the market turns around and spikes, you may feel like you're being shot out of cannon with an unexpected bull run.

Let's take a look ahead to the 2023 and 2024 ethylene markets.

The 2023 market on both January 3rd and February 1st were in a slight backward shape — in which prices are less expensive further out on the curve. However, the shape for the 2024 market changed from a flat shape on January 3rd to a mild contango shape by February 1st, meaning that forward prices were higher. On February 1st, current-month pricing was 21 cents, while prices in 2024 were nearly 23 cents. The average for 2023, which can be purchased (or sold) as a calendar 2023 strip, was roughly 18.375 cents on January 3rd and was 20 cents on February 1.



There are many end users of ethylene that need to keep tabs on that market to make informed forward buying decisions, as ethylene is a major ingredient in the production of many products.

And one of those products is PVC....



Change to: OPIS and PetroChem Wire assess forward curves.
Click [HERE](#) for more info.

U.S. PVC: Inside a Market That Relies Heavily on Ethylene

PVC siding. PVC decks on our homes. Vinyl albums!

PVC is all around us ... and beneath its sleek exterior is a market that often walks to its own rhythm.

To start with, PVC is the abbreviation for “polyvinyl chloride,” an organic polymer comprising two ingredients: ethylene and chlorine.

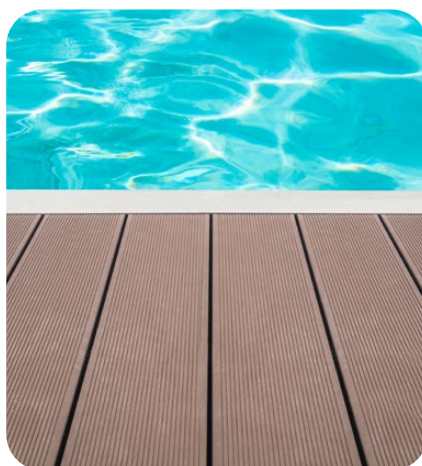
It is one of the world’s most widely used plastics. Its properties make it ideal for a variety of applications. It is biologically and chemically resistant. It is durable and ductile.

It can be made softer and flexible by the addition of plasticizers. And it is naturally fire retardant.

Here’s a closer look at the fundamentals of the PVC market and the way it is priced.

WHAT EXACTLY IS PVC?

PVC defined: PVC is an organic polymer comprising ethylene and chlorine. Ethylene and chlorine are converted first into ethylene dichloride [EDC], which is then converted into vinyl chloride monomer [VCM], before finally being converted into PVC.



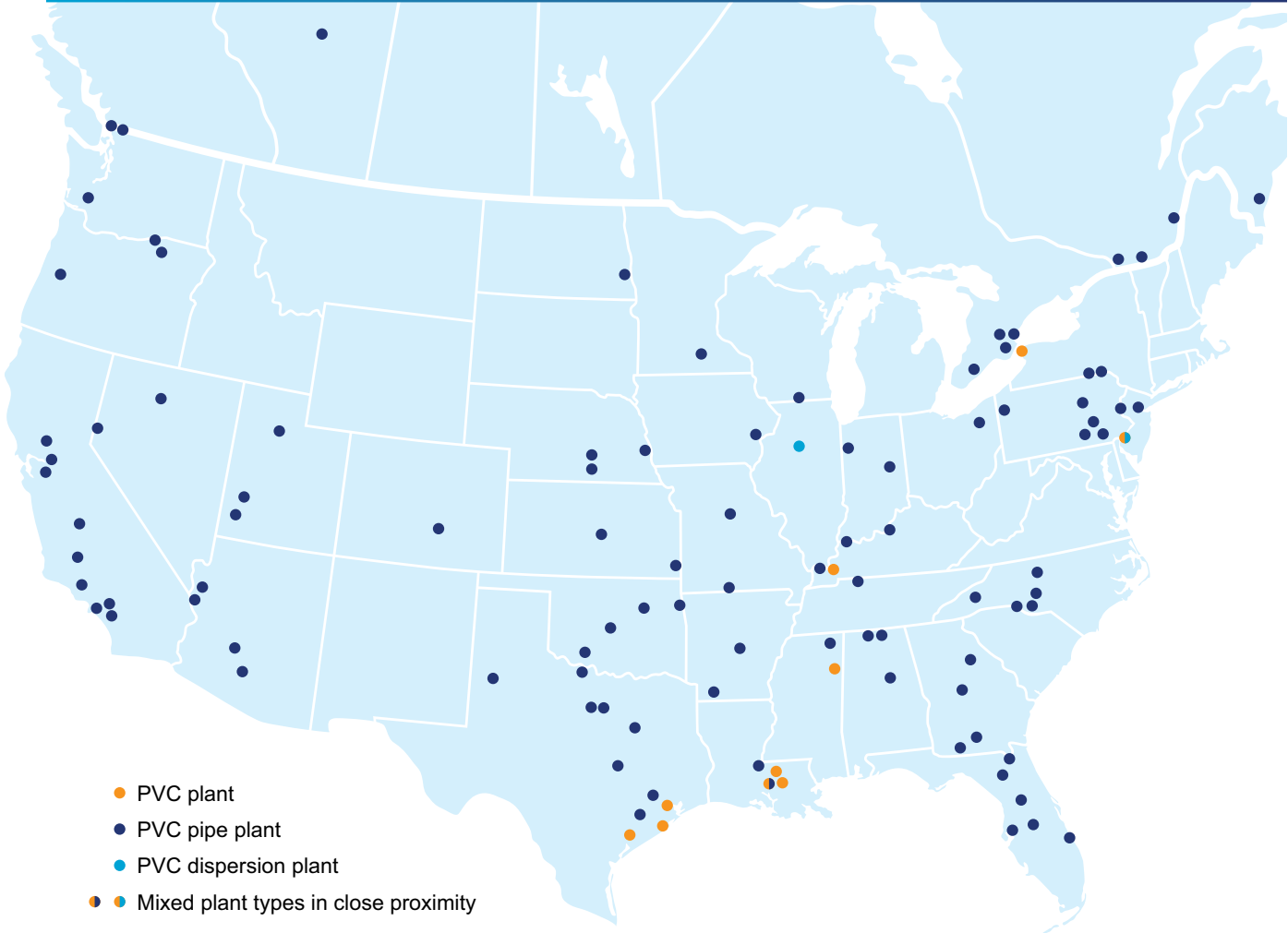
There are four major PVC resin producers in North America:

- Formosa Plastics
- OxyVinyls
- Shintech
- Westlake (including its acquisition of Axiall)

Fact: A total of 19.8 billion pounds of PVC is produced each year in the US at 18 plants owned by five companies.

NOTE: There is only one small PVC plant in Canada, an OxyVinyls plant at Niagara Falls, so for all intents and purposes Canadian converters must import PVC resin from the US.

PVC SUPPLIERS & PVC PIPE MANUFACTURERS IN THE U.S. & CANADA



HOW IS PVC USED?

Possible uses for PVC are:



PIPE: Roughly half of North America's PVC is used to produce pipe for municipal, construction and industrial applications. It is particularly well suited for this purpose due to its light weight, high strength, low reactivity, and corrosion and bacterial resistance. Generally speaking, there are three types of PVC pipe: municipal, plumbing and conduit. Globally, piping is the single largest use for PVC.



RESIDENTIAL AND COMMERCIAL SIDING: Rigid PVC is used to make vinyl siding. About 15% of the PVC produced in North America goes into siding. This material comes in a wide range of colors and finishes and is used as a substitute for wood or metal. It is also used in window frames, doors, gutters and downspouts, and dimensional lumber.



PACKAGING: PVC is widely used as a protective film in stretch and shrink wrapping, laminate films with polyethylene, rigid blister packaging, and food and film packaging. It can also be blow molded into bottles and containers.



WIRING INSULATION: PVC is used as the insulation and fire retardant on electrical wiring. The wires are coated with the resin, and the chlorine acts as a free radical scavenger to insulate and reduce the spread of fire.



MEDICAL: PVC is used to make blood and intravenous bags, kidney dialysis and blood transfusion equipment, cardiac catheters, endotracheal tubes, artificial heart valves and other medical equipment.



AUTOMOTIVE: PVC is used to make body side moldings, windshield system components, interior upholstery, dashboards, arm rests, floor mats, wire coatings, abrasion coatings, adhesives and sealants.



CONSUMER GOODS: Both rigid and flexible PVC are used in a wide variety of finished consumer goods, including modern furniture design, air conditioners, refrigerators, phone systems, computers, power tools, electrical cords, garden hoses, clothing, toys, luggage, apparel, vacuums and credit card stock sheet.

HOW DOES PVC TRADE?

PVC resin does not trade on exchanges or through hubs.

The vast majority of domestic sales are made under contract directly from the producer to the converter.

Spot purchases at one time comprised up to 20% of domestic PVC transactions.

However, since the shale gas revolution gave U.S. producers a distinct ethylene cost advantage over European and Asian producers, most PVC not sold domestically under contract is sold into the export market, as it now comes from the most competitive natural gas supply chain in the world.

Producers typically export about 30% of their annual production. There is no longer a vibrant domestic spot market for PVC — it is all transacted on a monthly contract price, and that negotiation can get quite contentious!

HOW IS PVC PRICED?

PVC domestic prices settle on a monthly basis, generally at the end of the following month, **with the ethylene market being a key factor.**

Example: The January price will be considered to be fully settled at the end of February.



Reason for delay: The market needs to know the contract price of ethylene for the month in question. Ethylene contract prices also settle retroactively at the beginning of the following month *[i.e., the January contract ethylene price will settle at the beginning of February].*

The movement of the ethylene price is used for the following month's PVC negotiations. In general, any movement in the January ethylene price will be a factor in the negotiations for the February PVC contract price. Whatever the movement in the ethylene net transaction price (NTP), about one-half of that amount will be expected to flow through to the PVC price.

For example: If the January ethylene NTP were to fall by 2 cents per pound, PVC producers would be expected to apply a 1 cent per pound reduction to the February PVC contract price.

The above is not an absolute rule, but it is the major feature in negotiations because ethylene comprises approximately 48% of the PVC molecule.

Chlorine makes up the remainder of the molecule, but chlorine pricing seldom moves and it is rarely a factor in PVC pricing negotiations.

ETHYLENE DYNAMICS AND THE PVC MARKET

Representing nearly half of the cost of PVC, ethylene pricing is an important factor in PVC price trends.

When ethylene prices move up, PVC producers tend to be quick to announce price increases of their own to maintain their margins.

When ethylene prices fall, however, there is often reluctance on the part of PVC producers to pass the savings on to PVC buyers. They often attribute the need to maintain domestic prices at current levels to higher export pricing and rising transportation costs.

Further downstream, pipe converters will usually support PVC resin price increases, as they believe that it is easier to raise prices for pipe when resin prices are rising. Also, they are able to announce pipe price increases fairly quickly in response to resin moves.

Buyers in other downstream markets, such as the siding and flooring markets, are more restricted in their ability to raise prices, with siding converters often able to change pricing only once or twice a year.

Because the pipe segment of the PVC market is the largest by market share, at about 50%, it has more power in price negotiations than most other markets using ethylene as a feedstock.

So, how are PVC prices faring?

PVC MARKET UPDATE

2018 was a very unusual year for PVC.

The January ethylene NTP stood at 32.75 cents per pound and PVC pipe grade prices settled at 43-47 cents per pound. Ethylene prices started dropping in February and fell a total of 6.75 cents per pound through May, when the market settled at 26 cents per pound, which would be 3.24 cents per pound into the PVC molecule.

Since PVC pricing generally moves in 1 cent increments, buyers believed that 3 cents per pound should come off of the PVC price in response.

Instead, PVC producers nominated a 3 cents per pound price increase for March 1. PVC pipe grade contract prices settled for March up 1-2 cents per pound (depending on the buyer) to 45-47 cents per pound, then slipped in April to 43-45 cents per pound and were flat through June.

So, producers were able to hang onto all of the ethylene decreases that had gained them 3.375 cents per pound in margin during that period.

Buyers got some revenge, however, when ethylene prices started to rise in June and totaled increases of 7.75 cents per pound through September, when ethylene prices peaked at 33.75 cents per pound.

During that same time frame, PVC prices were flat at 43-45 cents per pound. Ethylene prices then dropped by 4.55 cents per pound during October and November and were flat in December.

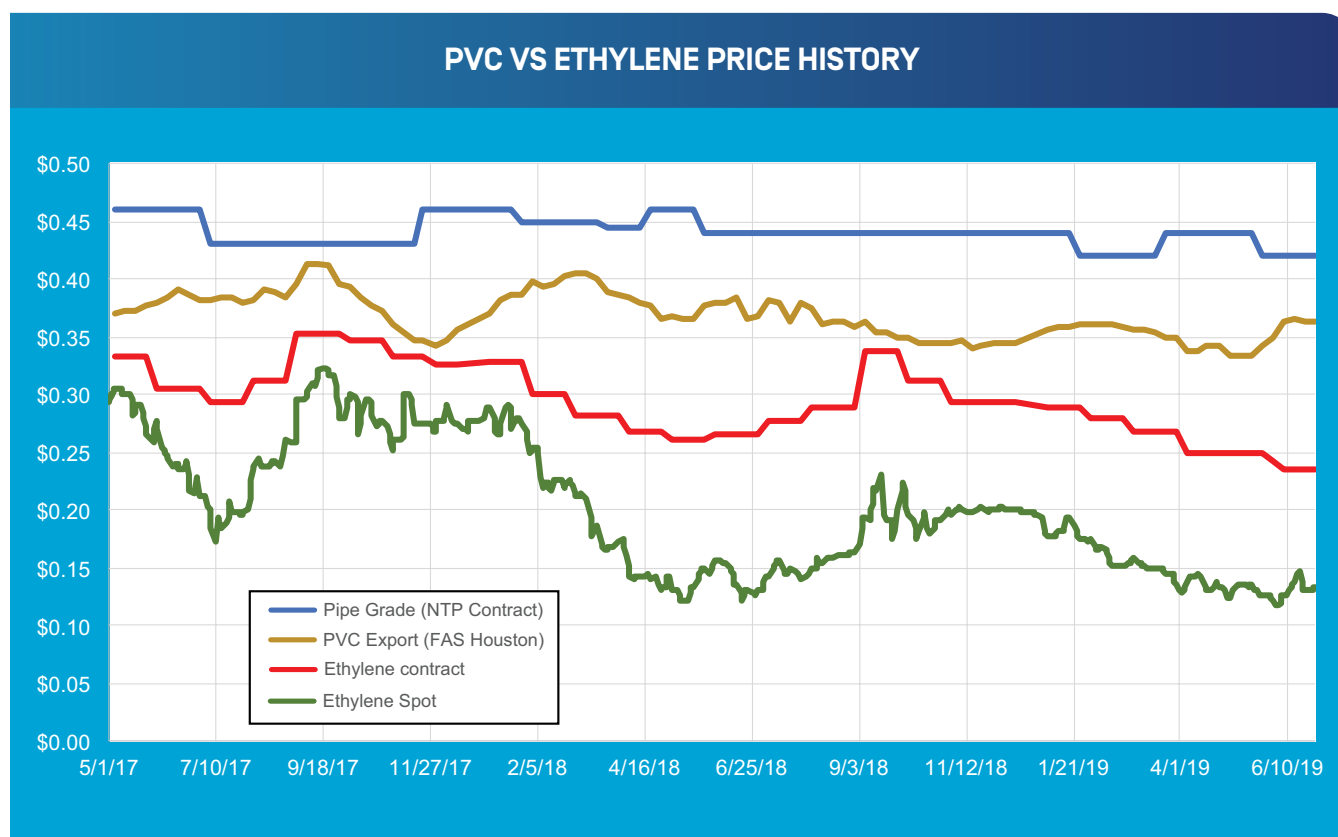


So, during the second half of 2018, ethylene prices were up a net 2.20 cents per pound, or 1.056 cents per pound into PVC. PVC producers announced an unusual 2 cents per pound price increase for December, which failed when contract PVC prices slipped to 41-43 cents per pound for the month.

So, at the end of 2018, PVC resin prices were typically 2-3 cents per pound below where they started in January. This was very atypical of PVC pricing, which normally ends each year 2-3 cents per pound higher than where it started in January.

In 2019, the ethylene NTP started the year in January at 28.75 cents per pound, down 0.5 cents per pound from December. By the time April contracts settled, it had dropped by a total of 3.75 cents per pound to 25 cents per pound. From the time ethylene NTP peaked in September 2018 through the April 2019 settlement at 25 cents per pound, ethylene prices dropped a total of 8.75 cents per pound (which would be about 4.2 cents per pound into PVC).

During that same time frame, the PVC contract NTP for pipe grade started the year in January at 41-43 cents per pound, flat with December's level.



Producers instituted a 2 cents per pound price increase on February 1, which raised prices to 43-45 cents per pound. Buyers were unable to pass this price increase through to their own customers because the country was still in the grip of winter and demand for construction products was low.

PVC prices were flat for March, but dropped 2 cents per pound when April contracts settled at the end of May as some of the ethylene decreases got passed through to PVC customers. This dropped the PVC NTP back to 41-43 cents per pound, but producers would still have about a 2 cents per pound price increase in their margins from the ethylene price reductions. May PVC prices settled flat.

Not ones to let the grass grow under their feet, PVC producers announced a 2 cents per pound price increase on resin effective June 1. They told customers that PVC production rates were above 90% and that resin demand was about to pop and would be strong in the second and third quarters because it got a late start this year after all of the spring flooding and that export prices were rising.



Demand had not jumped up as producers predicted, as rain and flooding were a persistent problem across the country through the spring and early summer, causing construction projects to be delayed. Trenching to bury pipe is not possible when the soil is saturated with water. Some siding converters say their demand was down 5% compared with that of the prior year and demand for vinyl flooring was reduced that year, as well.

Converters got a bit more ammunition the first week of June, when May ethylene contract prices began settling at 24.25 cents per pound, down 0.75 cents per pound from April's level. On June 3, spot ethylene prices hit a historic low with a deal out of the Mont Belvieu, Texas, hub done at 11.75 cents per pound and Louisiana ethylene traded down to 12.125 cents per pound in the Choctaw hub. These prices are the lowest recorded by OPIS PetroChem Wire. The June contract ethylene price settled at 23.5 cents per pound, down 0.75 cents per pound from May's level.

Despite all of this, the June 2 cents per pound PVC price increase was successful, raising the price of pipe grade PVC to 43-45 cents per pound. July prices settled flat. There were predictions that the PVC price would drop by at least 1 cpp for August.

The ethylene contract NTP fell by 10.55 cents per pound through June after it peaked at 33.75 cents per pound in September 2018. This would be 5 cpp into the PVC molecule. None of this ethylene price decline was passed down to PVC buyers.

Needless to say, many PVC resin buyers are unsatisfied with the method currently used to determine contract prices. It remains to be seen if they will work to institute a new price-setting mechanism.

PVC resin buyers can offset their exposure to PVC price risk by engaging the ethylene futures market directly. Click [HERE](#) to learn how.



