

# FerroVanadium

## Steel

The most common use of ferrovanadium is in the production of steel. In 2017, 94% of domestic consumption of vanadium was to produce iron and steel alloys.<sup>[8]</sup> Ferrovanadium and other vanadium alloys are used in carbon steel, alloy steel high strength steel, and HSLA (High Strength Low Alloy) steel.<sup>[9]</sup> These steels are then used to make automotive parts, pipes, tools, and more.<sup>[6]</sup>

The addition of ferrovanadium toughens the steel making it more resistant to temperature and torsion.<sup>[2]</sup> This increase in strength is a result of the formation of vanadium carbides which have a rigid crystal structure as well as a finer grain size which decreases the ductility of the steel.<sup>[10]</sup> In addition to adding to the composition of the steel, ferrovanadium can also be used as a coating on the steel. When coated with nitrated ferrovanadium, the abrasion resistance of steel increases 30-50%.<sup>[11]</sup>

## Market

Between 2013 and 2017, the United States imported 13,510 tons of ferrovanadium, a majority of which came from Czechia, Austria, Canada, and the Republic of Korea.<sup>[8]</sup> The price of ferrovanadium has fluctuated dramatically since 1996, hitting an all-time high in 2008 at \$76041.61/ton FeV80.<sup>[12]</sup> In more recent years, it has once again seen an increase in price as environmental standards shut down some of the vanadium producers in China. These shutdowns, as well as the closure of a South African vanadium mine, created a vanadium shortage, forcing ferrovanadium factories to reduce their production of ferrovanadium, decreasing its supply and driving up the price.<sup>[8]</sup>

### European ferro-vanadium prices soar to 8-year high as China rallies, traders restock

Ferro-vanadium prices surged 20.3% in Europe in the first half of the week, as upstream supply concerns continued to unnerve the market and give momentum to still higher prices.

Metal Bulletin assessed ferro-vanadium prices in a range of \$33-38 per kg, delivered duty-paid in Europe, on Wednesday July 26, soaring 20.3% from July 21's assessment of \$28.50-30.50 per kg. European ferro-vanadium prices are now at their highest level since November 2008, according to Metal Bulletin data. "The market is being driven by the Chinese and immediately the traders elsewhere are running behind," a consumer source said. Upcoming environmental inspections affecting China's vanadium producers are set to tighten the local and international market, creating a rush to...