

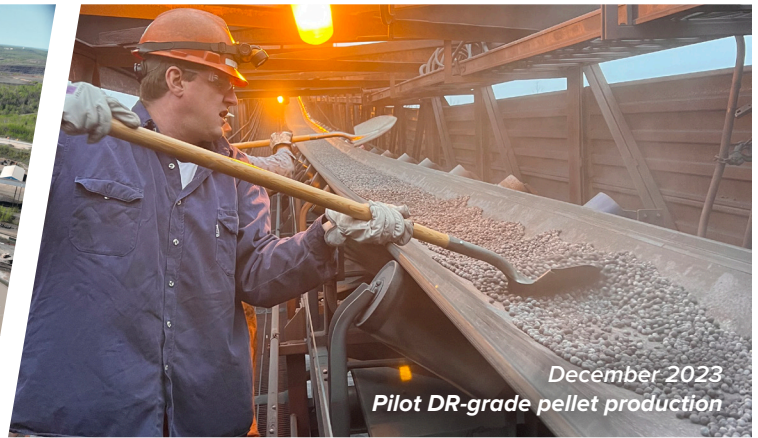


# Keetac DR-Grade Pellet Plant

## INVESTING IN THE FUTURE OF STEEL

U. S. Steel's \$150 million investment in DR-grade pellet capability at Keetac represents a step forward in the company's metalics strategy. This investment enables U. S. Steel to produce direct reduced (DR)-grade pellets that are a vital raw material for more sustainable steelmaking—steelmaking that is more energy efficient with less greenhouse gas emissions.

100% of the new facility's exterior steel is U. S. Steel product



December 2023  
Pilot DR-grade pellet production

### FACILITY OVERVIEW

The Keetac facility can produce up to 4.5 million net tons of DR-grade pellets, which are sold to third-party steel producers, while maintaining the ability to produce blast furnace (BF) pellets to supply U. S. Steel's stateside operations. This offers superior optionality in plant operations.

#### \$150M INVESTMENT



Construction start date



Construction end date



First shipment

COMPLETED ON TIME and ON BUDGET



**4.5M** Approximate annual capacity in net tons



**250**

Construction jobs created

**33**

New full-time jobs created

**300,000+**

Construction labor hours



OSHA Recordable injuries

Concrete laid = 5,100 cubic yards

Structural steel placed = 3,500 tons

Feet of pipe laid = 36,000



United States Steel  
Minnesota Ore Operations  
Keetac

# THE PROCESS

At Minnesota Ore Operations, taconite is mined at two open-pit mines and processed into marble-sized pellets. Both Minntac and Keetac use the same methods to mine, crush, and concentrate to form finished pellets. At Keetac, additional steps are added between the concentrating and agglomerating processes to produce direct reduced (DR)-grade pellets.

## WHAT IS TACONITE?

Primarily found in northern Minnesota, **taconite is a naturally occurring rock** with 15-35% iron content.



### OPEN PIT TACONITE MINING

Taconite is loosened by controlled blasting and hauled to the crushers by giant dump trucks.



### CRUSHING

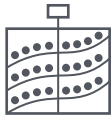
Flint-hard taconite is broken down from chunks the size of a pickup truck flatbed into pieces that fit in a person's hand.



### CONCENTRATING

Gravel-sized taconite is mixed with water and ground into the fineness of face powder. Magnetic separators then separate fine iron particles from waste material.

*DR-Grade Process (only completed at Keetac)*



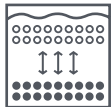
### HIGH-INTENSITY GRINDING

Iron concentrate is sent through a high-intensity grinding (HIG) mill, a first-of-its-kind in North America, to achieve a finer grind.



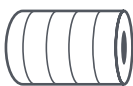
### MAGNETIC SEPARATION

Iron particles are separated from waste material using powerful magnets.



### CHEMICAL FLOTATION SEPARATION

Iron concentrate is treated with chemicals to remove additional silica before going on to the final agglomerating step in the pellet making process.



### AGGLOMERATING

Balling drums use gravity to turn moist concentrate into soft, marble-sized "green balls" that are then baked at 2,450°F to form high-quality iron ore pellets.



Pellets are shipped to U. S. Steel's facilities (blast furnace pellets) or third-party steel producers (blast furnace and DR-grade pellets).