Ore Report

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**Ore Report**

Iron is made from many raw materials the main and arguably most important being iron ore from which the iron is extracted. There are several different types of iron ore that have different properties thus producing different metals with varying applications. Though there are several types of iron ore in nature I will only be comparing three in this report, these three being hematite, magnetite, and siderite, hematite and magnetite being the most bountiful in nature of the three. I will be looking at characteristics of these iron ores and I will also be examining why one might be chosen over the others.

**Hematite**

Hematite is named for the red color that is found in all forms of hematite, hema meaning blood in greek. It is one of the oldest iron ores to be mined; its residue has been found in ancient grave sites and used to draw on cave walls. Some forms of Hematite, when cut and polished, was used as mourning jewelry for some time because of its natural dark color. It is one of the main sources of iron in the world today; the largest deposit is near Lake Superior making up approximately 90% of all the iron mined in the USA. Notable amounts of Hematite can be found in Brazil, England, Italy, and Switzerland. It is mined and used to make steel mainly by its vast availability and by the fact of its affordability. It is also used because of its high iron content at 70%.

**Magnetite**

Magnetite is named for its magnetic capabilities being the only mineral with natural magnetism. In America it was mined in excess for a prolonged amount of time during the 19th century in New York and New Jersey. Many of these once busy mines have been shut down for quite some time due to, as it seems to be, magnetite becoming such a common occurrence that it became boring to collectors. More modern and plentiful mines are found in Arkansas, Utah, and Vermont. Outside of the US it can be found in Pakistan, Russia, South America, and Switzerland. There are also large deposits of magnetite in Chile that was formed by volcanic activity. Magnetite is a common material and is used mainly because of its high iron content at approximately 60% which is less than Hematite but very much worth the time of shipping, producing, and refining.

**Siderite**

Siderite is found across the globe and, although common, is less valuable for the sake of its iron content which is at 48% which is considerably less than Hematite or Magnetite. Siderite can be found in many regions including but not limited to; Brazil, China, France, Germany, and Romania. Locally Siderite can be found in Colorado, Idaho, and South Carolina among others.

**Turning Iron Ore into Steel**

There are many different types of iron ore that can and are used in steel production due to different circumstances such as where the iron ore is mined, what the iron content is in the ore, what other characteristics the iron ore has, and how expensive it is. When it comes to steelmaking in the US it makes sense to use Hematite as the North is abundant in it and it’s the iron ore with the highest iron content.

When the iron ore is chosen, whichever variety it may be, it is a drawn out process in producing steel from the bare elements of iron ores. First the iron ore is shipped to the refinery where it, limestone, and coke (or charcoal) are put into a blast furnace and heated to extreme temperatures upward of 2500 degrees Fahrenheit. By this process the impurities are removed and it is turned into molten iron which is cast into pig iron or can be further refined through the addition of other elements that give the steel better and more varying properties. When the steel is given the desired properties it is softened to be formable and made into slabs then cooled. It is a repetitive process from here to heat, form, then cool again until the steel is thin enough that it can be rolled and then shipped out to customers.

Steel is literally the foundation to our modern businesses, homes, and places of education. Understanding and utilizing steel from the beginning is imperative in making stronger and safer appliances, vehicles, and buildings that if made properly can last for years or even decades to come.

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