

# Iron, Titanium and Vanadium Extraction from Titaniferous Magnetite Ores

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The comes about research facility, mechanical and calculation investigates of physical, chemical and thermophysical forms at the oxidizing simmering (sintering and pelletizing) of the titaniferous crude materials are considered. The estimation of impact of metallurgical properties (reducibility, strength, softening and softening temperatures of simmering minerals) on forms warm and mass trade at the diminishment within the impact heater is executed. Titan-bearing metals with the different  $TiO_2$  substance are examined. Tests of minerals are given by metals of the current generation within the Guseva Gorsky store (Russian League, normal test), additionally minerals from partitioned generation of minerals - is moo titanium and is tall titanium. Metals of the Kuranakhsy store (Russian League), the Tebinbulaksky store (Republic of Uzbekistan) and tall titanium minerals of the Medvedovsky store and the Yare Sky store (both Russian Alliance) permitting pigmentary titanium dioxide are moreover considered. Preparing the required metals expect so-called plans heater - converter and, counting oxidizing broiling of mineral concentrate with accepting agglomerate and pellets. The miniaturized scale X-ray diffraction stage examination and attractive characteristics of tests is made. The comes about mechanical tests on the altar of metallurgical properties of agglomerates and its impact on impact heater files. Specialized and financial files of impact heater refining of agglomerate and pellets (coke utilization and efficiency, chemical composition of cast press and slag), obtained from a concentrate of the Kachkanarsky store, are calculated. As a entirety plausibility and reasonability of preparing titaniferous metals with the distinctive substance of titanium dioxide and getting vanadium containing cast press and the slag containing titanium dioxide is shown.

Different metallurgical preparations are considered for handling titanium-containing minerals in order to extricate Press, Titanium and Vanadium. Minerals and concentrates from different low-and high-titanium stores (Kachkanarsky, Medvedovsky, Kopansky, Kuranakhsy, Tebinbulaksky deposits) are examined in-vitro in terms of reducibility, toughness, softening and dissolving temperatures. A few methods were utilized such as stage, X-ray and basic examination. Scientific models are moreover utilized to calculate conceivable pyrometallurgical forms. Two preparing courses for these minerals are proposed, to be specific the "impact heater dissolving - converter softening" course and the "metallization electric softening" course. The plausibility of creating press, vanadium, and titaniferous containing materials is additionally shown.

We consider sources of crude materials for creating pigmentary titanium dioxide in Russia. We found that Russia has colossal adjusted stocks of titan-containing metals, counting ilmenite, titaniferous, and leucoxene. We appear in most areas and make proposals regarding their advancement. We too deliver illustrations of pigmentary titanium dioxide generation from distinctive titaniferous metals from the Russian Alliance, and recommend conceivable organization of generation of pigmentary titanium dioxide within the Ural locale of Russia.

Russia has expansive stocks of titanium dioxide. In any case, generation of pigmentary titanium dioxide in Russia is nonexistent, and per capita utilize is around 0.4 kg per year, compared with around 4 kg per capita within the United States, Finland and Germany. Hence, titanium

dioxide utilization per capita in a nation relates with that country's particular inside net product.

Around half of Russia's adjusted stock of titanium dioxide is found within the Yaretsky field of petroliferous sandstones within the Komi Republic. A comparable field of bituminous sandstones is found at the Athabasca oil sands in Canada. Not one or the other field is created because of a need of compelling innovation. The remaining Russian titanium dioxide stocks are found in magmatic areas, which moreover contain press and vanadium. As of now, metals from the Kachkanarsky Store (16% of Fe, 0.13% of  $V_2O_5$ , 1.23% of  $TiO_2$ ) are the as it were combined source of press and vanadium, and are prepared on-site utilizing the impact heater and converter. The Medvedovsky field in Chelyabinsk Oblast, in which 5% of the Russian stocks of titanium dioxide (7% of  $TiO_2$ ) are found, is of intrigued as an ore base of ferrous metallurgy (press and vanadium). Within the Urals and encourage to the east, the press mineral base of Russia's ferrous metallurgy is given basically by metals of this kind from the Kopansky, Chineysky, Kruchininsky, Kuranakhsy, and Huge Seyim Stores, which contain over 30% of Russia's titanium stocks. In this think about, we considered the issue of giving crude materials for creating pigmentary titanium dioxide and related questions. We found that mineral crude materials ought to be transported to the Ural locale to deliver pigmentary titanium dioxide, titanium, press, and vanadium by mining the numerous stores found there.

The comes about research facility, mechanical and calculation investigates of physical, chemical and thermophysical forms at the oxidizing broiling (sintering and pelletizing) of the titaniferous crude materials are considered. The estimation of impact of metallurgical properties (reducibility, toughness, softening and dissolving temperatures of simmering minerals) on forms warm and mass trade at the diminishment within the impact heater (two-dimensional areas of gas and charge temperatures, degrees of press decreases, cohesion zone) is executed. Titan Bearing minerals with the different  $TiO_2$  substance are examined. Tests of minerals are given by minerals of the current generation within the Guseva Gorsky store (normal test), conjointly metals from partitioned generation of metals - is moo titanium and is tall titanium. Minerals of the Kuranakhsy store, the Tebinbulaksky store (Republic of Uzbekistan) and tall titanium minerals of the Medvedovsky store and the Yaretsky store permitting accepting pigmentary titanium dioxide are moreover considered. Handling of the desired minerals accept so-called plans counting oxidizing broiling of mineral concentrate with getting agglomerate and pellets. The miniaturized scale X-ray diffraction stage investigation and attractive characteristics of tests is made. The comes about mechanical tests on the altar of metallurgical properties of agglomerates and its impact on impact heater records. Specialized and financial files of impact heater refining of agglomerate and pellets (utilization of coke and efficiency, chemical composition of cast press and slag), obtained from a concentrate of the Kachkanarsky store, are calculated. The scientific demonstrate of impact heater handle is considered. As an entire plausibility and reasonability of handling titaniferous minerals with the contrast substance of titanium dioxide and getting vanadium containing cast press and the slag containing titanium dioxide is appeared.