Titanium (Ti)

Base Year 2025

World Production

9.8 million tonnes of contained TiO_2

+1.2%

Brazil Production

14.8 thousand tonnes of contained TiO_2

-26.7%

National Highlight

Bahia (94.3% of contained titanium production)

Trade Balance

↓ Deficit of USD 486 million

Exports

USD 25.7 million

-17.9%

Mining Royalties (CFEM)

R$ 2.21 million

+35.2%

% Change 2025 vs 2024



What is Titanium?

Titanium (Ti) is a metallic element with atomic number 22, characterized by low density, high mechanical strength, corrosion resistance and biocompatibility. It is the ninth most abundant element in the Earth's crust.

Occurrence

Titanium occurs mainly in association with the following minerals:

- Ilmenite;
- Rutile;
- Leucoxene; and
- Anatase

Main Applications

Titanium is used mainly in the form of pigment (titanium dioxide) and in light, corrosion-resistant metal alloys, with applications in:

- the paint, plastics and cosmetics industries (as a white pigment);
- the aerospace and defense industries;
- corrosion-resistant chemical equipment;
- medical and dental implants; and
- the automotive and jewelry industries.



Titanium is a strategic metal, valued for its lightness, mechanical strength and corrosion resistance, with applications ranging from pigments and coatings to the aerospace, defense, chemical and biomedical industries. Its use has been growing in high-technology sectors and in the advanced materials industry.

1. World Supply

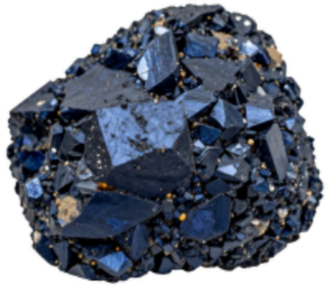
In 2025, according to the United States Geological Survey (USGS), world titanium production (contained TiO_2) totaled 9.8 million tonnes, an increase of about 1.2% over the previous year.



Ilmenite
$FeTiO_3$



Rutile
TiO_2



Anatase
TiO_2

Table – Main titanium-producing countries (contained TiO_2) - 2025

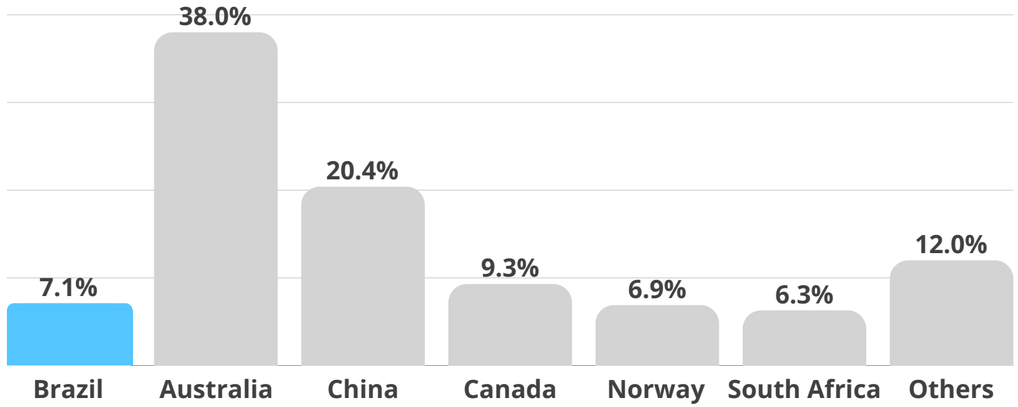
País	Produção (kt)	Participação (%)
Brasil	**15**	**0,2**
China	3.200	32,7
Moçambique	1.910	19,5
África do Sul	1.400	14,3
Austrália	980	10,0
Noruega	390	4
Outros Países	1.905	19,4
Total	**9.800**	**100,0**

Sources: USGS - Mineral Commodity Summaries 2026; ANM (Brazilian production).

2. Reserves

According to the USGS (Mineral Commodity Summaries 2026), world titanium reserves (contained TiO_2), in the form of ilmenite and rutile, totaled 540 million tonnes, highlighting the mineral's significant global availability and its geographic concentration in the main resource-holding countries. Australia leads the global ranking with 38.0% of reserves, followed by China (20.4%), Canada (9.3%), Brazil (7.1%), Norway (6.9%) and South Africa (6.3%), while the remaining countries collectively account for 12.0% of the world total.

Distribution of the Main World Titanium Reserves – 2025





Brazilian titanium reserves (proven and probable), in contained TiO_2 in the form of ilmenite and rutile, declared in 2025 totaled 38.5 million tonnes (Mt).

Sources: USGS - Mineral Commodity Summaries 2026; ANM (Brazilian reserves).

3. Domestic Production

Domestic production of titanium concentrate (contained TiO_2) in 2025 was 14.8 thousand tonnes (14,807 t), all of it in the form of ilmenite. This represents a decrease of 26.7% compared to the previous year. Over the last three years, production behaved as shown in the table below:

Year	2023	2024	2025
Titanium (contained, t)	24,912	20,203	14,807



Bahia accounted for more than 90% of domestic production, notably the municipality of Maracás. The other producing states are Rondônia and Goiás.

Source: ANM

4. Foreign Trade

In 2025, the titanium sector recorded a trade **deficit of USD FOB* 485.98 million.**



Mineral Sector Exports

Total: USD FOB 25.67 million
Variation: -17.9%

Main destinations:
- China (22.2%)
- Argentina (14.3%)
- United States (10.0%)

Mineral Sector Imports

Total: USD FOB 511.65 million
Variation: -13.1%

Main origins:
- China (40.6%)
- Mexico (18.6%)
- United States (14.1%)

Source: Open Data/Ministry of Development, Industry, Trade and Services (MDIC) and COMEXMIN/ANM

- Data include the Mineral Extractive Industry (IEM) and the Mineral Transformation Industry (ITM)

***USD FOB/t** = The seller fulfills its obligations and responsibilities when the goods, cleared for export, are delivered, stowed on board the vessel at the port of shipment, both indicated by the buyer, on the date or within the agreed period.

Foreign trade: main products of the mineral extractive industry (IEM) in 2025

Main Exported Products

	NCM 26140010 - Ilmenite (titanium ores)	NCM 26140090 - Other titanium ores and concentrates
USD FOB	5,773,951	86,979
EXP Share (%)	98.5	1.5

Main Imported Products

	NCM 26140090 - Other titanium ores and concentrates
USD FOB	20,654,724
IMP Share (%)	100.0

Foreign trade: main products of the mineral transformation industry (ITM) in 2025

Main Exported Products

	NCM 32061990 - Other pigments and preparations based on titanium dioxide	NCM 81089000 - Articles of titanium
USD FOB	8,790,353	3,965,234
EXP Share (%)	44.4	20.0

Main Imported Products

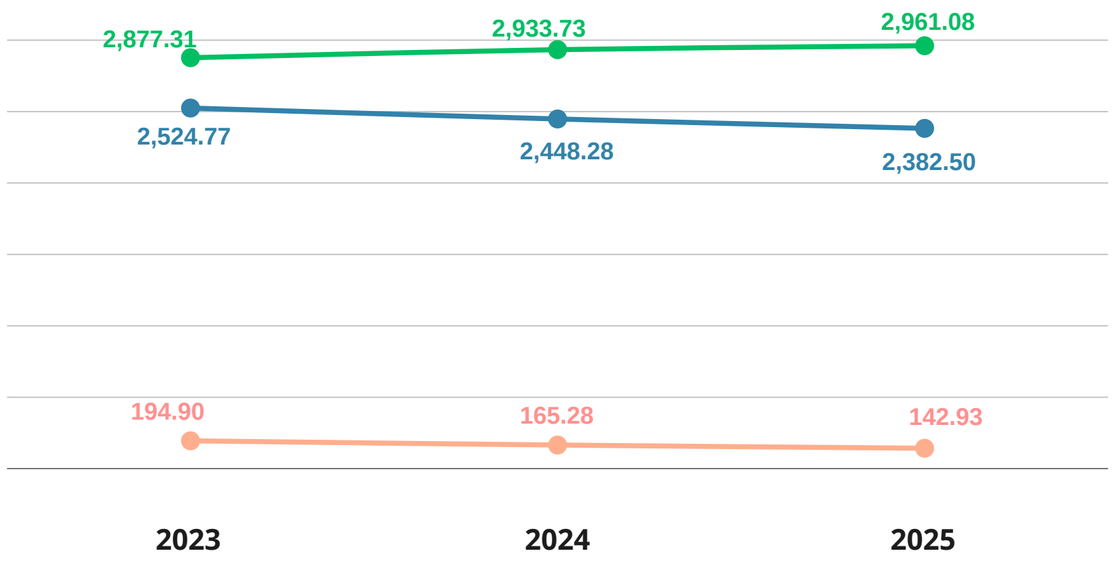
	NCM 32061110 - Rutile-type pigments	NCM 81089000 - Articles of titanium
USD FOB	317,546,002	77,055,420
IMP Share (%)	64.7	15.7

Source: Open Data/Ministry of Development, Industry, Trade and Services (MDIC) and COMEXMIN/ANM

5. Prices

Prices reflect the dynamics of the international market and are influenced by factors such as global demand, production costs and economic fluctuations.

Chart – Average FOB prices - USD/t - Last 3 years



Other pigments and preparations based on titanium dioxide (exports)

NCM: 32061990

Rutile-type pigments (imports)
NCM: 32061110

Ilmenite (exports)
NCM: 26140010

Source: Open Data/Ministry of Development, Industry, Trade and Services (MDIC) and COMEXMIN/ANM.
***USD FOB/t** = The seller fulfills its obligations and responsibilities when the goods, cleared for export, are delivered, stowed on board the vessel at the port of shipment, both indicated by the buyer, on the date or within the agreed period.

6. Financial Compensation for the Exploitation of Mineral Resources (CFEM)

In 2025, CFEM, Brazil's mining royalty, from titanium extraction totaled R$ 2.21 million, up 35.2% from 2024 (R$ 1.63 million). It should be noted that CFEM is levied on the sale or transformation of the mineral good, which may cause discrepancies between financial data and actual production volume in the period due to inventory movements.

In this context, Tronox Pigmentos do Brasil accounted for 52.6% of the total collected and Indústrias Nucleares do Brasil for 37.5%, followed by Vanádio de Maracás (3.4%). By state, Paraíba and Rio de Janeiro lead, with smaller shares from Rondônia, Bahia, Goiás and Pará.

State	Total Amount Paid (R$)
PB	1,160,048.09
RJ	826,640.15
RO	79,109.14
BA	75,206.22
GO	45,929.73
PA	19,616.99
Grand Total	**2,206,550.32**

Source: ANM.

Note: CFEM is levied on the sale or transformation of the mineral good and is collected by the establishment responsible for the operation. Collection may therefore concentrate in states other than those where extraction takes place and may reflect sales of inventories built up in previous years.

7. Investments and Mining Rights

Titanium investments are evenly divided between the exploration and mining stages.

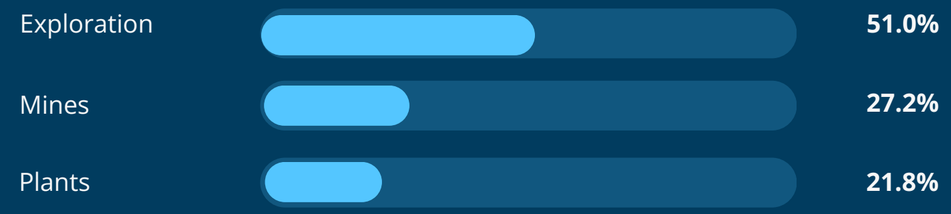
Investments in Mining

In 2025, according to data from the Mineral Exploration Investment Statement (DIPEM) and the Annual Mining Report (RAL), mining investments totaled R$ 43.5 million, 51% in mineral exploration and 49% in the mining phase, a decrease of 31.4% compared to the previous year.

Main States

- BA (32.5%)
- MG (28.0%)
- PE (22.2%)

Investment Breakdown



Mining Rights 2025

Main States

- MG (69 permits)
- RS (18 permits)
- GO (17 permits)

Mineral Exploration

- 186 new exploration permits
- -13.3% compared with 2024
- 16 final exploration reports approved

Mining Applications

- 8 mining applications

Mining Concessions/ PLG

- 4 mining concessions granted
- 3 garimpeira mining permits (PLG) granted

Source: ANM.

8. Relevant Factors

Consolidation of Production in Bahia: Operations of Largo Inc. (Largo Vanádio de Maracás S.A.) have consolidated the municipality of Maracás, Bahia, as the heart of physical titanium production in the country. The company announced an investment of more than US$ 940 million to expand its vanadium and titanium mining complex. This is one of the largest investments in the sector in the state and reinforces the region's importance for the economic development of the mineral chain in Brazil. (Source: Brasil Mineral - Expansion of vanadium and titanium complex in Bahia)

Licensing in Rio Grande do Sul: Officially granted by Ibama, the Installation License (LI) allows Rio Grande Mineração (RGM) to move forward with its ilmenite mining project in São José do Norte (RS). The project has planned investment of R$ 1.7 billion and the potential to create up to 350 direct jobs. This licensing milestone provides greater legal and environmental certainty for the company to proceed with structuring the project. (Source: Brasil Mineral - RGM obtains Installation License in RS)

Discoveries in Paraná and the South Region: Ongoing work by the Geological Survey of Brazil (SGB) has revealed significant titanium potential in regoliths in Paraná and Santa Catarina. In these soils, the SGB identified strategic minerals such as ilmenite, rutile and anatase. These discoveries pave the way for future exploration and consolidate the scientific basis needed to turn the region into a strategic hub in the global supply of this resource. (Source: Brasil 61 - SGB reveals titanium potential in regoliths in the South region)