

The Paraíba Mine

Km 25 da Rodovia PB 065 S/N
 Mataraca – PB
 CEP: 58.292-000 Brasil



The mining operation in Paraíba, Brazil is responsible for the extraction of titanium for Cristal. We are the world's second-largest producer of TiO₂, a brilliant white pigment manufactured from titanium and used to give color to almost all materials. In the case of paints, for example, the TiO₂ provides better coverage, brightness and durability for the formulas, making modern paints more efficient and easier to apply; they also have a low environmental impact. In addition, TiO₂ provides the power of coverage and brightness for plastics and rubber products. Its range of application extends to paper, ceramics, glass, leather, synthetic fibers and the formulation of colors for artistic paints.

The mine is located in Northeastern Brazil, in the municipality of Mataraca, about 1,100 km from the Bahia plant, to which it ships the minerals to be transformed into the TiO₂ pigment. The mining operation occupies 1,050 hectares and comprises a floating plant and dredge, which perform the extraction of the ilmenite (a titanium ore) and of zirconite, rutile and cyanite (used in the ceramic, welding, high precision casting and refractions industries), as well as four fixed production plants.

The mine at Paraíba has ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 and NBR 16001:2012 certifications, and has developed a program for environmental revitalization that is nationally recognized.

Summary of our Performance

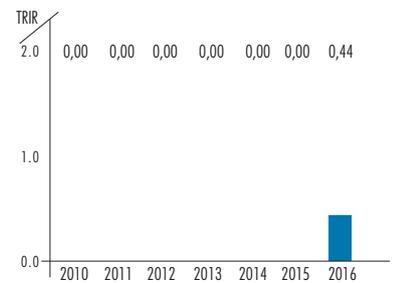
In line with Cristal's mission of sustainable development, Paraíba Mine focuses on the generation of value for its shareholders, a commitment to its neighboring communities and respect for the environment.

Annual PB 2016 Project Capital Investment: R\$ 0,3 million.

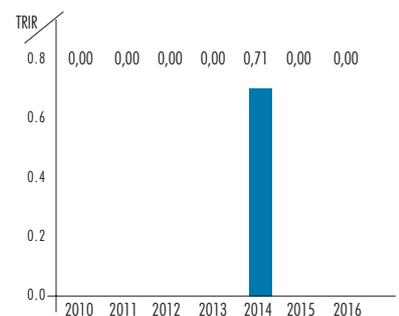
PROVIDING ECONOMIC VALUE

- Approximately 160 full-time employees and contracted help
- Payroll and annual benefits of about R\$ 21,2 million
- Annual investment of approximately R\$ 0,3 million in capital projects
- Around R\$ 1,2 million is spent per year in environmental rehabilitation

Employee–Total Recordable Incident Rate (TRIR)
 Rate of injuries per 100 employees



Contractor–Total Recordable Incident Rate (TRIR)



RESPECTING SOCIAL CONCERNS

We believe that social responsibility requires a proactive effort in support of community needs.

- **Involvement with the Community** – The mine maintains a partnership relationship with the neighboring communities, including:
 - The establishment of a preservation center for forest animals that hosts the Program for Environmental Education to over 9,000 students and 760 professors since its beginning, in 1996.
 - An Open Door Program when the families of the employees visit the mine.
- **Education** – The plant supports education through a partnership with schools and with the mayors' offices in the region's communities, offering basic schooling, secondary schooling and professional classes for employees, their family members and the community in general.
- **Environmental Quality** – One of the initiatives for the sustainability of the site is the program for the production of native plants, which involves the local community in the sharing of best practices and technologies. The planting of seedlings by the community is a part of the process of environmental rehabilitation developed by the mine.
- **Volunteer Work** – Employees are encouraged to participate in volunteer programs developed by representative community associations. Various employees work with environmental protection groups in Mataraca in order to raise awareness in adolescents to environmental issues.

CARING FOR THE ENVIRONMENT

With our company committed to social responsibility, we operate our units in a way that protects the individual and the environment, and preserves the world for future generations. Paraíba Mine is committed to continual improvement in health, safety, the environment, reliability and communication with the community.

- **Environmental Performance** – Zero reportable environmental incidents recorded at the Paraíba mine since 2004.
- **Safety Performance** – From 2009 to 2016, Paraíba Mine recorded two accidents with lost work time, one involved a Cristal employee and the other with a contractor.
- **Prevention** – The plant has a program for ensuring the safe operation and maintenance of its processes, focused on the prevention of accidents.
- **Dune Recovery** – The environmental recovery program developed by the Paraíba mine is nationally recognized, including by IBAMA, which considers it to be a model for the recomposition of dunes. In this task, the mine in Paraíba restores the environmental characteristics, reestablishing the local fauna and flora. As of 2016, 558 hectares were recovered, where 1,664,000 seedlings were planted.

Cristal is one of the largest producers of titanium dioxide and a leading producer of titanium chemicals. Cristal is the world's leading supplier of ultrafine titanium dioxide products and titanium chemicals and is a fast-growing producer of mineral sands and titanium metal powder. Cristal operates eight manufacturing plants in seven countries on five continents and employs nearly 3,400 people worldwide.

Visit www.cristal.com for more information about the company and its products.

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