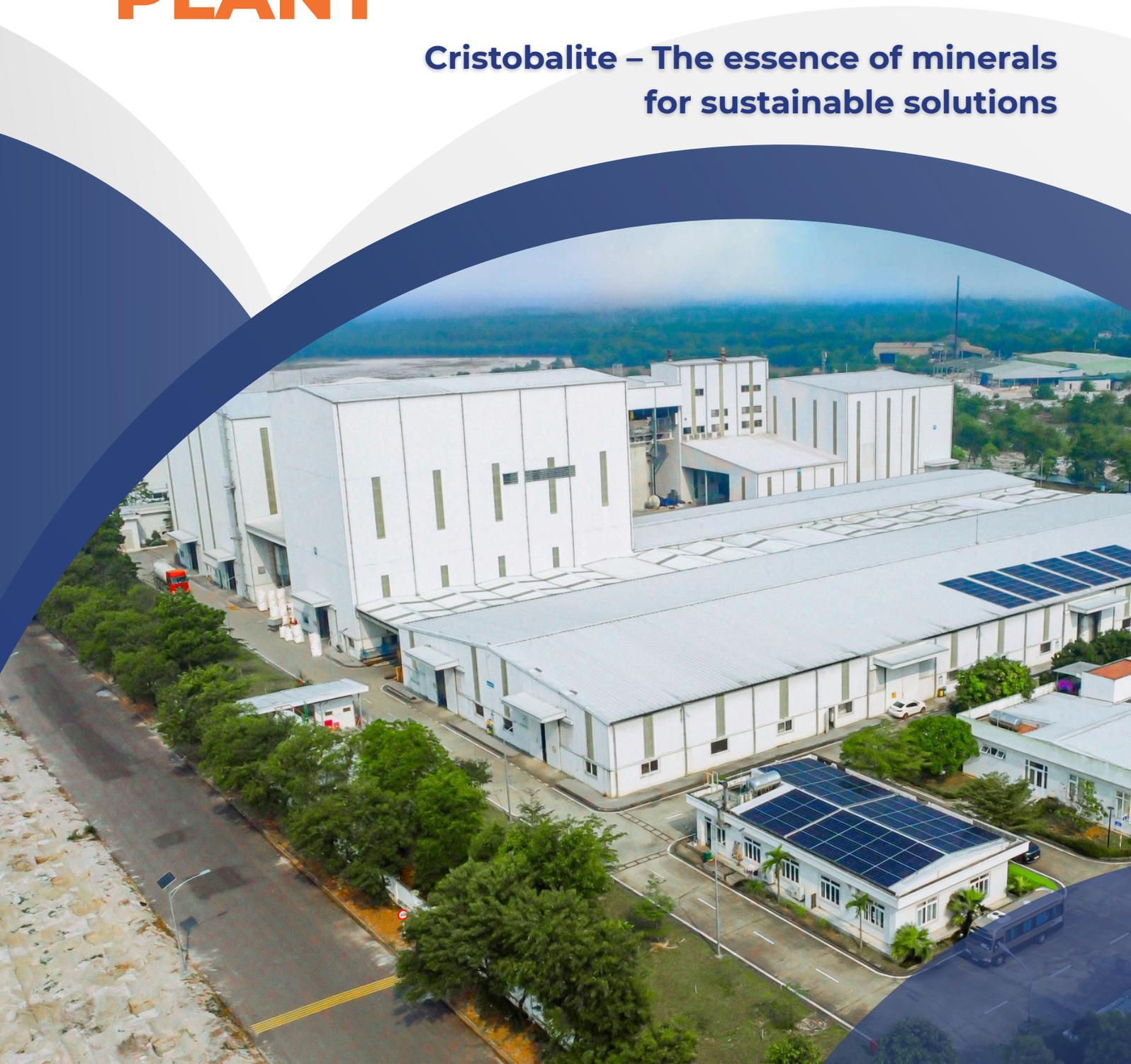


# CRISTOBALITE MATERIAL MANUFACTURING PLANT

**Cristobalite – The essence of minerals  
for sustainable solutions**



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# PART 01

## **PHENIKAA GROUP**

Phenikaa Group is one of Vietnam's leading technology and industrial corporations, pioneering in research, development, and production of high-tech products, new materials, and an ecosystem of education and innovation.

With a vision to become a global leader in technology and industry, Phenikaa continuously invests in R&D and expands its business sectors to create sustainable value for society.

## **CRISTOBALITE MATERIAL MANUFACTURING PLANT PHENIKAA HUE**

The Cristobalite Material Manufacturing Plant Phenikaa Hue, a member of Phenikaa Group, was established on December 21, 2016.

Specializing in the production and distribution of Cristobalite, a key material used in various industries such as engineered stone, casting molds, and road marking paints, the plant is equipped with state-of-the-art production lines imported from the Federal Republic of Germany, ensuring high quality and optimal efficiency.

As an integral part of the Phenikaa ecosystem, the Cristobalite Material Manufacturing Plant – Phenikaa Hue is also making its mark on the global stage. Beyond playing a pivotal role in the internal value chain, Phenikaa Hue continuously innovates and enhances product quality to meet the stringent standards of the global market, solidifying the reputation of PHX Crystal Cristobalite.



## Key Figures



**37,500+ m<sup>2</sup>**

Production area at  
Phong Dien Industrial Park

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**100%**

Highly automated production  
system, ensuring superior quality  
and efficiency

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**86,000**  
**tons/year**

Cristobalite production capacity to  
meet diverse market demands

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**2+**

Cristobalite product lines, catering  
to various industrial applications

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# OPERATIONS OF CRISTOBALITE MATERIAL MANUFACTURING PLANT PHENIKAA HUE

The Cristobalite Material Manufacturing Plant specializes in producing and supplying high-quality Cristobalite products, serving diverse industries both domestically and internationally.

With advanced production technology, strict quality control, and a commitment to sustainable development, **Phenikaa Hue** focuses on the following key areas:



## Cristobalite Production & Supply

- Provides high-purity Cristobalite with superior whiteness and excellent thermal durability.
- Applied in various industries: Engineered stone, casting molds, ceramics, glass, paints & coatings, technical plastics, composites, and more.



## Research & Development of New Materials

- Invests in R&D to enhance Cristobalite production technology, meeting international standards while optimizing performance and durability.
- Integrates advanced material solutions into the Phenikaa ecosystem.



## Technology Solutions & Technical Consulting

- Offers optimized material solutions for various industries.
- Provides technical support and formulation consulting tailored to specific customer needs.



## Commitment to Sustainable Development

- Utilizes advanced, eco-friendly production technology.
- Aims for a green economy, minimizing environmental impact throughout the product lifecycle.



With a well-invested, state-of-the-art production system and advanced technology, the plant meets international quality and safety standards while contributing to the sustainable development of both domestic and global industries.

## SCALE & CAPACITY OF THE CRISTOBALITE MATERIAL MANUFACTURING PLANT – HUE



Plant area:  
**37,500 m<sup>2</sup>**



Production capacity:  
**86,000 tons of  
Cristobalite per year**



Advanced technology:  
**Highly automated system  
optimizing efficiency**



Strict quality control:  
**ISO 9001 & ISO 14001 standards**  
ensure international-grade, safe,  
and eco-friendly products



Modern infrastructure:  
**Equipped with advanced  
production lines and large  
storage facilities**



## **ADVANCED PRODUCTION TECHNOLOGY MADE IN GERMANY**

Equipped with cutting-edge technology from the Federal Republic of Germany, our production lines ensure that all products meet international quality standards.

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### **Highly automated production process**

- All production parameters are managed and monitored through an automated control system, ensuring absolute precision.
- Data is analyzed and controlled 24/7 to maintain stable operations.

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### **Closed production line with minimal human intervention**

- Fully automated packaging system to enhance efficiency and consistency.

# INTERNATIONAL CERTIFICATIONS



## ISO 9001:2015 Certification

The Cristobalite Material Manufacturing Plant Phenikaa Hue operates a quality management system that complies with ISO 9001:2015 standards.



## ISO 45001:2018 Certification

The plant adheres to ISO 45001:2018 requirements, ensuring an occupational health and safety management system.



## ISO 14001:2015 Certification

The Cristobalite Material Manufacturing Plant Phenikaa Hue operates a quality management system that complies with ISO 9001:2015 standards.



## ISO 14067:2018 Certification

It demonstrates the ability to measure product carbon footprint and move toward sustainability and carbon neutrality.



## SA 8000 Social Responsibility Standard

Committed to social responsibility, the plant ensures quality, workplace safety, environmental protection, and occupational health for all employees.

**PART**  
**03**



**CRISTOBALITE BY PHENIKAA HUE – PREMIUM MINERAL SOLUTION FOR INDUSTRY**

Cristobalite produced by Phenikaa Hue is a high-purity, transformed crystalline form of quartz with superior whiteness, exceptional hardness, and excellent heat resistance. Thanks to its outstanding properties, Cristobalite has become the preferred choice across multiple industries.

**Cristobalite – A High-Performance Material Solution**

Cristobalite is synthesized from pure quartz in a rotary kiln at approximately 1,470°C, creating a stable crystalline structure with exceptional physical and mechanical properties:

**High whiteness**

→ Enhances aesthetic appeal

**Superior hardness**

→ Scratch-resistant and long-lasting

**Thermal stability & chemical inertness**

→ Withstands harsh environments and ensures safe use

## Industrial applications of cristobalite



### Engineered Stone Industry

Increases whiteness, hardness, and scratch resistance, making it an ideal component for premium quartz-based artificial stone.

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### Paints & Coatings

Acts as a high-whiteness, chemically stable filler that improves durability, UV resistance, and coverage.

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### Casting & Refractory Materials

Features a low thermal expansion coefficient, ensuring dimensional stability and high precision in casting molds.

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### Rubber & Composite Plastics

Enhances mechanical strength, hardness, and chemical resistance in composite and technical plastic products.

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### Ceramics & Glass

Improves mechanical properties, increasing durability and heat resistance.



## Why choose Cristobalite from Phenikaa Hue?



### 01 Superior Quality

Phenikaa Hue guarantees high purity, stringent quality control, and internationally certified products (ISO 9001:2015, ISO 45001:2018, ISO 14001:2015, ISO 14067:2018, SA 8000). Our Cristobalite is uniform in size, optimized in color, and ensures durability and aesthetic excellence.



### 02 Competitive Pricing

With the advantage of domestic production, we offer cost-effective pricing and attractive discount policies to optimize business costs.



### 03 Stable Supply

Production capacity: 86,000 tons of Cristobalite per year.  
Reliable sourcing & logistics: Backed by high-quality mineral reserves and a professional logistics team, we ensure a stable supply with fast and flexible delivery, both domestically and internationally.



### 04 Trusted Brand

As a member of Phenikaa Group, we continuously enhance product quality, adopt sustainable mining practices, and uphold environmental responsibility, earning the trust of our customers.



### 05 Dedicated Customer Service

Our team of experts provides tailored solutions, in-depth technical support, and the best after-sales care and warranty policies.



## PRODUCTS



### **PHX Crystal Cristobalite Grit 0.1-0.4mm – Core Material for Industry**

- Granular form with a particle size of 0.1-0.4mm, suitable for various industrial applications.
- Primarily used in engineered stone, casting molds, ceramics, and refractory materials.
- Ensures high hardness, thermal stability, and purity, enhancing the quality of finished products.



### **PHX Crystal Cristobalite Powder 0.045mm – High- Performance Filler**

- Ultra-fine powder with micron-sized particles, improving smoothness and uniformity in products.
- Applied in paints, composite plastics, rubber, coatings, cosmetics, and technical polymers.
- Features chemical inertness, high brightness, and excellent UV resistance, enhancing durability and aesthetics.

## Technical properties of Cristobalite

No.	Products Standard	CPH 0.1-0.4 mm	CPH 0.045 mm	Method
1	Moisture content (%)	≤ 0.3	≤ 0.3	Moisture Balance MOC-120H
2	Contamination: Garbage, wood, rubber, silicon, mica...	None	None	Observation
3	pH	≤ 9	≤ 9.5	ISO 787/9
4	Black dots /100 g	0.4mm ≤ 3 dots 0.3-0.4mm ≤ 15 dots	None	Power Testing System PT2C
5	Density (g/cm <sup>3</sup> )	≥ 2.30	≥ 2.30	TCVN 9069:2012
6	L (Black->White)	≥ 97	≥ 98	CM-3600A

**Note: This Cristobalite quality standard has been effective since January 1, 2023.**

Chemical composition	Percent (%)	Test Method
SiO <sub>2</sub>	99.66	XRF Rigaku Supermini20
Fe <sub>2</sub> O <sub>3</sub>	0.013	XRF Rigaku Supermini20
Al <sub>2</sub> O <sub>3</sub>	0.111	XRF Rigaku Supermini20
K <sub>2</sub> O	0.010	XRF Rigaku Supermini20
CaO	0.009	XRF Rigaku Supermini20
Na <sub>2</sub> O	0.140	XRF Rigaku Supermini20
TiO <sub>2</sub>	0.034	XRF Rigaku Supermini20

**The table of chemical analysis of Cristobalite**

## Packaging, Transportation and Storage

- PHX Crystal Cristobalite Grits 0.1-0.4mm: 1 ton / 1.3 tons / 1.35 tons per bag
- PHX Crystal Cristobalite Powder 0.045mm: 1 ton / 1.2 tons / 1.3 tons per bag
- **Storage: Keep in a covered warehouse.**

**PART**

**04**



**SUSTAINABLE DEVELOPMENT COMPREHENSIVE ENVIRONMENTAL PROTECTION**

At Phenikaa Hue, sustainable development is not only a long-term goal but also a guiding principle in every operational activity and growth strategy. The ESG model—focusing on Environmental, Social, and Governance pillars—is comprehensively implemented in alignment with international standards to create lasting value for the business, community, and environment.



**Environmental: Minimizing impact – Moving towards carbon neutrality**

Phenikaa Hue pioneers the development of an environmentally friendly mineral processing plant through concrete actions:

- Operating a modern exhaust gas treatment system in compliance with QCVN 19:2009/BTNMT
- Implementing a closed-loop wastewater treatment and recycling system
- Prioritizing the safe recycling of solid waste to ensure environmental protection
- Applying ISO 14001:2015 across the entire production chain
- Managing greenhouse gases in accordance with ISO 14064 and ISO 14067, aiming to measure the carbon footprint of each product
- Working toward ISO 50001 & ISO 14068 to optimize energy use and reduce carbon emissions
- Utilizing a solar power system to partially replace grid electricity and reduce dependence on fossil fuels.





### **Social: People-Centric – Community-Connected**

Phenikaa Hue places strong emphasis on creating a safe, fair, and socially responsible working environment:

- Implementing ISO 45001:2018 to protect occupational health and safety
- Complying with SA 8000 to ensure humane working conditions and employee rights
- Maintaining a clean, modern workspace with effective risk control



Actively supporting the local community through philanthropy and social welfare programs



### **Governance: Transparency – Efficiency – Sustainable Growth**

Phenikaa Hue is committed to building a professional, sustainable, and trustworthy governance model:

- We apply ISO 9001:2015 and the Kaizen – 5S system to enhance quality, optimize operations and drive continuous improvement.
- We strictly comply with international standards, ensuring transparency, integrity, and legal compliance in all activities.
- Our governance aligns with the ESG model, integrated into our green growth strategy and emission reduction goals.



Transparent and competitive welfare policies support employees through consistent engagement and long-term development.

### **ESG – A strategic path toward a greener future**

Phenikaa Hue is a pioneer in applying the ESG model in the operation of its mineral production plant, progressively fulfilling its commitment to sustainable development. From technological innovation to environmental protection and active community engagement, we are creating long-term value within the global supply chain.

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SCAN ME

