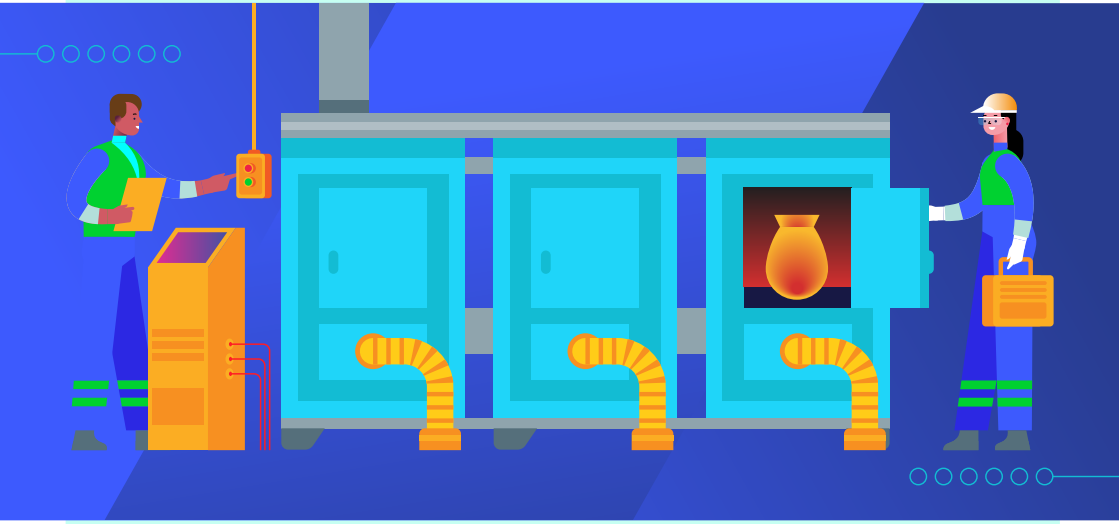
FORESIGHT MODEL FOR THE LABOR MARKET 2024 - 2033

SECTOR: CERAMICS AND RELATED



This study has projected the impacts of the technological innovations and trends on the Ceramics and Non-Metallic Minerals Sector to identify the careers and professional skills vital for the development of Brazilian industry over the next decade.

Observatório Nacional da Indústria

1 ADVANCING NEW TECHNOLOGIES

Emerging technologies that make it possible to customize products and solutions, digitize and automate processes, create and produce complex materials in more efficient, precise and sustainable ways promise to transform the sector in just a few years.

TECHNOLOGIES	MARKET ADHERENCE % IN 5 YEARS Mín.	IN 5 YEARS Máx.	IN 10 YEARS Mín.	IN 10 YEARS Máx.
Robotics and Manufacturing Automation	51%	70%	51%	70%
Advanced grinding and polishing technologies	51%	70%	51%	70%
Sustainable Raw Materials Supply	51%	70%	51%	70%
Environmental Monitoring and Emissions Reduction	51%	70%	51%	70%
Energy-efficient furnace technologies	31%	50%	51%	70%
Waste Valorization and Recycling	31%	50%	51%	70%
Advanced Materials and Nanotechnology	31%	50%	51%	70%
Digital Twins for Process Optimization	31%	50%	51%	70%
Advanced Ceramic Coatings, e.g., PDC	31%	50%	51%	70%
Smart Sensors and Environmental Monitoring	31%	50%	51%	70%
Innovations in Non-Metallic Mineral Processing	31%	50%	51%	70%
Advanced thermal ceramics	11%	30%	31%	50%
3D Printing/Additive Manufacturing	11%	30%	31%	50%
Artificial Intelligence (AI) applied to materials design	11%	30%	31%	50%
Bioceramics for medical applications	11%	30%	31%	50%

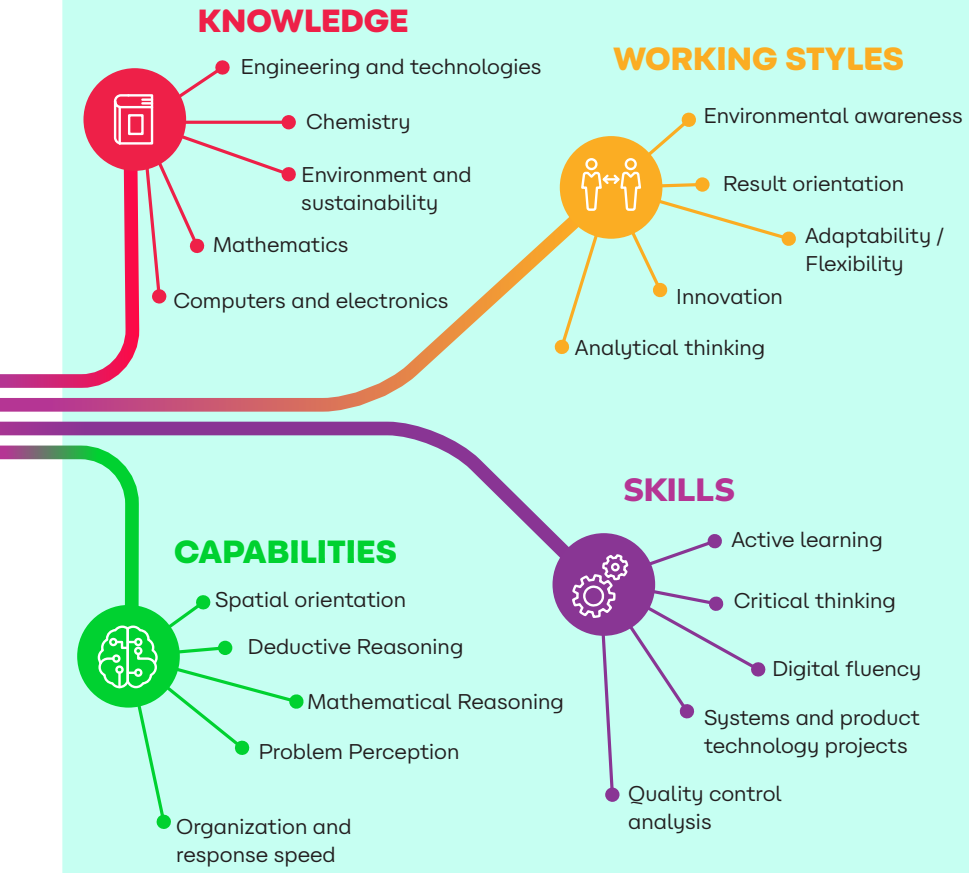
DIGITAL MANUFACTURING, ROBOTICS AND AUTOMATION are examples of mature areas and well-established technologies, with the potential for rapid adoption and diffusion in the ceramics and non-metallic minerals industries.

2 MARKET IMPACT

Professionals skilled in technologies and adaptable to the evolving demands of society, the market and the sector itself will be crucial in this decade, according to the **Foresight Model for the Labor Market**.

3 PROFESSIONAL SKILLS

The wave of technological and organizational innovations will require sector companies to retrain their current workforce and look for new professionals who master materials sciences, digital technologies and the sustainability challenges.



TRADITIONAL SKILLS SUCH AS MASTERY of chemistry, engineering, critical thinking and deductive reasoning will continue to be crucial for creating and improving ceramic materials, their manufacturing processes and applications.