

# EUROPASS DIPLOMA SUPPLEMENT

## TITLE OF THE DIPLOMA (ES)

*Técnico Superior en Desarrollo y Fabricación de Productos Cerámicos*

## TRANSLATED TITLE OF THE DIPLOMA (EN)<sup>(1)</sup>

*Higher Technician in the Development and Manufacture of Ceramic Products*

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(1) This translation has no legal status.

## DIPLOMA DESCRIPTION

**The holder of this diploma will have acquired the General Competence with regard to:**

Developing ceramic compositions, organising and managing the manufacture of mixtures, shaped ceramic products and ceramic frits, enamels and pigments, ensuring that the manufacturing process is carried out with the required quality and under the established safety and environmental conditions.

**Within this framework, the PROFESSIONAL MODULES and their respective LEARNING OUTCOMES acquired by the holder are listed below:**

### “Ceramic Mixtures Development”

The holder:

- Selects raw materials for the manufacture of ceramic mixtures relating their chemical and physical characteristics with the properties added to the mixture.
- Verifies the properties of raw materials for the manufacture of ceramic mixtures justifying the laboratory techniques to be applied.
- Formulates ceramic mixtures compositions relating the characteristics and properties of the raw materials used with the development of the process and product obtained.
- Checks the properties of ceramic mixtures compositions justifying the application of the corresponding test plans.
- Carries out tests for the development of mixtures made to scale in pilot plants applying specific techniques and procedures.
- Assesses the results of tests carried out in the development of ceramic mixtures made to scale in laboratories or pilot plants, justifying the established analysis procedures.

### “Ceramic Frits, Pigments and Enamels Development”

The holder:

- Verifies the properties of raw materials and additives for the manufacture of ceramic frits, enamels and pigments justifying the laboratory techniques to be applied.
- Formulates ceramic enamels and slips compositions interpreting the specifications of the product and technical information of the process.
- Formulates ceramic frits compositions interpreting the specifications of the product and technical information of the process.
- Formulates ceramic pigments compositions interpreting the specifications of the product and technical information of the process.
- Checks the properties of ceramic frits, enamels and pigments compositions justifying the application of the corresponding test plans.
- Carries out tests for the development of ceramic frits, enamels and pigments made to scale in pilot plants applying specific techniques and procedures.
- Assesses the results of tests carried out in the development of ceramic frits, enamels and pigments made to scale in laboratories or pilot plants, justifying the established analysis procedures.

### “Ceramic Products Development”

The holder:

- Defines technical solutions for the manufacture of ceramic products interpreting the design information and market demand.
- Determines the technical feasibility of the manufacture of ceramic products interpreting the development of processes, stages and procedures to be used.
- Develops the design of new products relating the technical specifications for their reproduction through production means.
- Prepares the documentation of the manufacturing process of ceramic products interpreting the technical design specifications.

### **“Ceramic Mixtures and Shaped Ceramic Products Manufacture”**

The holder:

- Prepares manufacturing processes analysing their typology, properties and functionality of the ceramic products to be obtained.
- Organises the activities for the manufacture of ceramic mixtures justifying the techniques and work methods used.
- Organises the activities for the manufacture of shaped ceramic products justifying the techniques and work methods used.
- Calculates the mass and energy balances of the manufacturing processes of mixtures and shaped ceramic products, relating manufacture needs with energy consumption.
- Proposes solutions for the presence of defects or nonconformities in the manufacture of ceramic products analysing the causes that produce them.
- Applies procedures for the treatment and management of emissions, effluents and residues produced by companies manufacturing mixtures and shaped ceramic products, interpreting environmental legislation.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Ceramic Frits, Pigments and Enamels Manufacture”**

The holder:

- Prepares manufacturing processes of frits and pigments analysing their typology and properties.
- Identifies the properties of ceramic enamels, analysing their behaviour during the manufacturing process and the finished ceramic products.
- Organises the activities for the manufacture of ceramic frits and pigments selecting the techniques and work methods used.
- Organises the activities for the preparation of ceramic slips and enamels selecting the techniques and work methods used.
- Calculates the mass and energy balances of the production processes relating manufacture needs with the necessary resources and energy consumption.
- Proposes solutions for the presence of nonconformities in the preparation of enamels and manufacture of ceramic frits and pigments analysing the causes that produce them.
- Applies procedures for the treatment and/or management of emissions, effluents and residues interpreting environmental legislation.
- Complies with the rules on labour risk prevention and environmental protection, identifying associated risks and measures and equipment to prevent them.

### **“Ceramic Products Manufacturing Processes Control”**

The holder:

- Organises the quality controls in the manufacture of mixtures, shaped ceramic products, frits, pigments and ceramic enamels, interpreting the process specifications and the quality requirements of the product.
- Carries out quality controls in the manufacture of mixtures, shaped ceramic products, ceramic frits, pigments and enamels, applying the procedures required in each case.
- Applies statistical control techniques, justifying the methods used.
- Carries out feasibility tests of the product, interpreting the legislation of a specific product.

### **“Production Scheduling”**

The holder:

- Draws up manufacturing schedules analysing the production capacities of facilities, their possible adaptations and procurement needs.
- Draws up maintenance plans and defines their control parameters, relating means requirements with the need of production.
- Manages the documentation used in the production scheduling, defining and applying an organisation plan and information processing.
- Monitors production relating control techniques with production requirements.
- Determines the plan for the procurement of necessary raw materials and components analysing procurement models.
- Manages the warehouse relating stock needs with storage, handling and internal distribution processes in accordance with production requirements.

### **“Quality Management, Labour Risk Prevention and Environmental Protection”**

The holder:

- Defines actions to make the implementation and maintenance of quality assurance systems easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of business excellence models easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of labour risk prevention systems easier, interpreting their basic concept and factors.
- Defines actions to make the implementation and maintenance of environmental management systems easier, interpreting their basic concept and factors.

- Recognises the main pollution sources that could arise from the activity of companies manufacturing mixtures, frits, enamels, pigments and ceramic products, describing the effects of the polluting agents on the environment.

### **“Advanced Ceramics”**

The holder:

- Identifies the technological properties of ceramic materials describing their advantages and applications.
- Determines the characteristics of special industrial ceramic products analysing their manufacturing processes.
- Organises processes for the preparation of raw materials relating the technologies used and the variables of the process with the properties of materials.
- Organises processes for the manufacture of high-quality, non-traditional ceramic products, relating the technologies used and the variables of the process with the properties of materials.

### **“Project of Ceramic Products Manufacture”**

The holder:

- Identifies the needs of the production sector, relating them with the standard projects that may satisfy them.
- Designs projects related to the competences described in the diploma, including and developing their constituting stages.
- Plans the project implementation, determining the intervention plan and associated documentation.
- Defines the procedures for the monitoring and control of the project implementation, justifying the selection of variables and instruments used.

### **“Professional Training and Guidance”**

The holder:

- Selects job opportunities, identifying the different possibilities of labour integration, and the alternatives of lifelong learning.
- Applies teamwork strategies, assessing their effectiveness and efficiency on the achievement of the company's goals.
- Exercises rights and complies with the duties derived from labour relationships, recognising them in the different job contracts.
- Determines the protective action of the Spanish Health Service in view of the different covered eventualities, identifying the different types of assistance.
- Assesses risks derived from his/her activity, analysing job conditions and risk factors present in his/her labour setting.
- Participates in the development of a risk prevention plan in a small enterprise, identifying the responsibilities of all agents involved.
- Applies protection and prevention measures, analysing risk situations in the labour setting of the Higher Technician in the Development and Manufacture of Ceramic Products.

### **“Business and Entrepreneurial Initiative”**

The holder:

- Recognises skills related to entrepreneurial initiative, analysing the requirements derived from job positions and business activities.
- Defines the opportunity of creating a small enterprise, assessing the impact on the performance setting and incorporating ethic values.
- Carries out the activities for the setting-up and implementation of a company, choosing the legal structure and identifying the associated legal obligations.
- Carries out basic administrative and financial management activities of an SME, identifying the main accounting and tax obligations and filling in documentation.

### **“On the Job Training”**

The holder:

- Identifies the company's structure and organization, relating them to the production and marketing of the products obtained.
- Applies labour and ethic habits in his/her professional activity according to the characteristics of the job position and the procedures established by the company.
- Carries out tests for the development of mixtures, frits, enamels and pigments made to scale in laboratories or industrial plants applying specific techniques and procedures.
- Supervises production lines of mixtures, shaped ceramic products, ceramic frits, pigments and enamels, applying the techniques and work methods of the company.
- Carries out manufacture controls in the production of mixtures, shaped ceramic products, ceramic frits, pigments and enamels, interpreting manufacturing processes and the quality requirements of the product.
- Applies statistical processes control techniques in the productions of mixtures, shaped ceramic products, ceramic frits, pigments and enamels, justifying the methods used.
- Carries out organisation and scheduling activities of production for the manufacture of mixtures, shaped ceramic products, ceramic frits, pigments and enamels, applying the techniques and methods of the company.
- Applies procedures for the treatment and/or management of emissions, effluents and residues produced by companies manufacturing mixtures and shaped ceramic products, interpreting environmental legislation.

## RANGE OF OCCUPATIONS ACCESSIBLE TO THE HOLDER OF THE DIPLOMA

The Higher Technician in Development and Manufacture of Ceramic Products works in the sector focused on the manufacture of ceramic mixtures, frits, pigments, enamels, tiles, terracotta materials for construction, refractory materials, ceramic dishware, bathroom fittings, decorative items and ceramic for technical use.

The most relevant occupations or jobs are the following:

- Research and product development laboratory technician
- Technical support agent in companies manufacturing ceramic mixtures, enamels and pigments.
- Production scheduling and control technician in ceramic companies
- Production scheduling and control technician in companies manufacturing ceramic pigments and enamels
- Quality management technician in ceramic companies
- Quality management technician in companies manufacturing ceramic pigments and enamels
- Quality control laboratory technician in ceramic companies
- Quality control laboratory technician in companies manufacturing ceramic pigments and enamels
- Environmental management technician in ceramic companies
- Environmental management technician in companies manufacturing ceramic pigments and enamels

## AWARD, ACCREDITATION AND LEVEL OF THE DIPLOMA

**Name of the body awarding the diploma on behalf of the King of Spain:** Spanish Ministry of Education or the different Autonomous Communities according to their areas of competence. The title has academic and professional validity throughout Spain.

**Official duration of the education/ training leading to the diploma:** 2000 hours.

### Level of the diploma (national or international)

- NATIONAL: Non-University Higher Education
- INTERNATIONAL:
  - Level 5 of the International Standard Classification of Education (ISCED5).
  - Level 5 of the European Qualifications Framework (EQF5).

**Entry requirements:** Holding the Certificate in Post-Compulsory Secondary Education (Bachillerato) or holding the corresponding access test.

**Access to next level of education/training:** This diploma provides access to University studies.

**Legal basis.** Basic regulation according to which the diploma is established:

- Minimum teaching requirements established by the State: Royal Decree 1797/2008, of 3 November, according to which the diploma of Higher Technician in the Development and Manufacture of Ceramic Products and its corresponding minimum teaching requirements are established.

**Explanatory note:** This document is designed to provide additional information about the specified diploma and does not have any legal status in itself

**COURSE STRUCTURE OF THE OFFICIALLY RECOGNISED DIPLOMA**

<b>PROFESSIONAL MODULES IN THE DIPLOMA ROYAL DECREE</b>	<b>CREDITS ECTS</b>
<b>Ceramic Mixtures Development.</b>	9
<b>Ceramic Frits, Pigments and Enamel Development.</b>	10
<b>Ceramic Products Development.</b>	8
<b>Ceramic Mixtures and Shaped Ceramic Products Manufacture.</b>	17
<b>Ceramic Frits, Pigments and Enamels Manufacture.</b>	13
<b>Ceramic Products Manufacturing processes Control.</b>	5
<b>Production Scheduling.</b>	8
<b>Quality Management, Labour Risk Prevention and Environmental Protection.</b>	9
<b>Advanced Ceramics.</b>	5
<b>Project of Ceramic Products Manufacture.</b>	5
<b>Vocational Training and Guidance.</b>	5
<b>Business and Entrepreneurial Initiative.</b>	4
<b>On the Job Training.</b>	22
	TOTAL CREDITS
	<b>120</b>
<b>OFFICIAL DURATION (HOURS)</b>	<b>2000</b>

\* The minimum teaching requirements shown in the table above comprise 55% official credit points valid throughout Spain. The remaining 45% corresponds to each Autonomous Community and can be described in the **Annex I** of this supplement.

## INFORMATION ABOUT THE EDUCATION SYSTEM

