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# DITMEP

## Digital Tools for Manufacturing training and Education Programmes

Project nº 2020-1-DE02-KA226-VET-008289

### **PROGRAMME OF THE COURSE ON PREVENTION OF OCCUPATIONAL HAZARDS IN COMPOSITE MANUFACTURING**

#### **WP3**

**Written by**

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Project consortium



## PROGRAMME OF THE COURSE ON PREVENTION OF OCCUPATIONAL HAZARDS IN COMPOSITE MANUFACTURING

This course has been developed within the framework of the DITMEP Project – **Digital Tools for Manufacturing training and Education Programmes**. Project nº **2021-1-DE02-KA226-VET-008289**

More information on the DITMEP project is available at [www.ditmep.eu/](http://www.ditmep.eu/)

Document information	
Short description	This document describes the training programme on prevention of occupational hazards in composite manufacturing that will be developed by the DITMEP project. The programme is designed to support blended-learning activities in EQF level 3, either as part of vocational education and training, or as part of non-formal trainings.
Next steps	The contents will be complemented with interactive activities, based in gamification and augmented Reality, to encourage learner's participation. This programme will be deployed in an online e-learning space for implementing blended-learning approach in risk prevention courses at EU level.
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## STRUCTURE OF THE PROGRAMME

**Title:** Presentation of the content unit in the program. It must clearly describe the content unit, indicating the area of skills and / or knowledge to which it is addressed.

**Content:** Programme modules and teaching units.

This section expands the information on the title, providing **more detail on the content** covered.

**Objectives:** Objectives that are expected to be achieved by the students and expressed in the form of contextualized competences: **What** should the person in training achieve, **how** should they do it and **why**.

### Presentation of content in the online course

Proposed format for transmitting the course content: texts and other associated content: videos, infographics, tables... It will be sought that the materials include varied formats as far as possible, avoiding long texts.

### Learning outcomes

Detail of the knowledge and skills that are essential to achieve the objective; the trainee must prove that they have achieved these learning outcomes.

### Evaluation method for each LO

What people in Training must do, and at what level, to demonstrate that they have achieved the Learning Outcome.

This includes if there are any conditions that need to be taken into account in the assessment (for example supervision, timing, use of support material, group presentation...)

### Activities proposal

Detail of the type of activity that is proposed to be included in the course, to verify the acquisition of Learning Results using the evaluation criteria. For example: multiple answer question with self-correction, exercise sent to the teacher, oral presentation to the class group...

### Other associated materials

Materials provided to expand information or carry out activities. The basic content of the course will be provided in pdf format (including content + proposed activities?). This basic material may be complemented with other materials: documents, images, links, videos...

**CONTENTS OF THE PROGRAMME ON PREVENTION OF OCCUPATIONAL HAZARDS IN  
COMPOSITE MANUFACTURING:**

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**DETAIL OF THE CONTENTS:****Block 1: General risks****Unit 1: Basic concepts on safety and health**

## Content

- Occupational risks
  - What is an occupational risk
  - Risk factor's
- Damages arising from work
  - Work accidents
  - Occupational diseases
  - Fatigue
  - Job dissatisfaction
- General principles of preventive action
  - Precautionary measures
  - Corrective measures
- Regulatory framework
- Rights and duties of working personnel

## Objectives

Know terminology related to the prevention of occupational risks, as well as its objectives and general principles.

Know the rights and obligations in preventive matters of companies and workers.

## Presentation of content in the online course

- Text with images.
- Links to regulations.

## Learning outcomes

- Know what the objective of preventive action is
  - Risk assessment
  - Taking preventive measures
  - Application of corrective measures
  - Training and information to the worker
  - Risk signalling
- Get familiar with the terminology used in PRL

## Evaluation method for each LO

- Identify the objectives of a preventive action using the terminology of the prevention of occupational risks, on a proposal for a single response test.

## Activities proposal

- Single-response multiple choice.
- Alphabet soup with definitions of important concepts in PRL (occupational risk, accident, incident, occupational health...).

## Unit 2: General risks and their prevention

### Content

- Risks linked to security conditions
  - Workplaces and surfaces
  - Tools and machinery
  - Electricity and fire
  - Storage, transport, and handling
  - Signaling
- Risks linked to the environment at work
  - Chemical agents
  - Physical agents
  - Biological agents
- Psychosocial Risks
  - Workload
  - Fatigue
  - Job Dissatisfaction

### Objectives

Know the types of risks that can occur in a workplace and their classification to understand the subsequent riskassessment of a polyester workshop.

### Presentation of content in the online course

- Texts.
- Boards.
- Images.

### Learning outcomes

- Know the risks inherent to the performance of the work.
- Know types of general risks and their preventive measures.

### Evaluation method for each LO

- Identify the general risks inherent to the job, adequately answering a multiple choice question.
- Identify preventive measures to avoid general risks, adequately answering a multiple choice question.

### Activities proposal

- Multiple choice question with single answer.

## Unit 3: Prevention and safety against COVID 19

### Content

- Risks linked to COVID-19
  - Risks of infectious disease transmission
  - Preventive measures

- Action protocols

## Objectives

What is and how is COVID 19 transmitted, general measures to avoid transmission and specific measures that companies must take.

Know the existence of action protocols in case of contagion.

## Presentation of content in the online course

- Text.
- Images.

## Learning outcomes

- Know the prevention measures for the transmission of COVID and other infectious diseases that should be applied in the workplace.
- Know the existence of action protocols in case of contagion.

## Evaluation method for each LO

- Properly select prevention measures for the transmission of COVID-19 and infectious diseases in a multiple-choice question.

## Activities proposal

- Multiple choice question with single answer.

## Other associated materials

- Link to main bodies responsible for the establishment of preventive measures in each country.

**Block 2: Specific Risks in composite manufacturing**Unit 4: Risks associated with workplaces and surfaces.

## Content

- Main risks.
- Preventive measures: Order and Cleanliness.

## Objectives

Identify the risks associated with the workspace and the impact of order and cleanliness as a preventive measure.

## Presentation of content in the online course

- Text associated with photos and drawings of different polyester workshops (ordered and untidy). In messy or dirty spaces, the possible negative impact on work will be reflected (drawing of an operator having an accident with a corrosive product out of place... etc.)

### Learning outcomes

-Know the risks associated with the workspace in a polyester workshop. Assume the need to keep the workspace neat and clean to minimize risks.

### Evaluation method for each LO

-Associates risks due to poor maintenance of order and cleanliness on the image of a workspace and identifies possible preventive measures, responding appropriately to multiple choice questions.

### Activities proposal

-Multiple choice question about an image.

### Other associated materials

-List of main risks associated with incorrect maintenance of workspaces in a polyester workshop.  
-Photos / drawings of ordered and disordered spaces.

## Unit 5: Risks associated with the use of tools.

### Part A

#### Content

-Types of tools.  
-Risks and preventive measures.

#### Objectives

Identify the tools used in a polyester workshop and what they are used for, know the risks, and indicate preventive measures.

#### Presentation of content in the online course

-Table with images of the tools with text explaining the name, what is the use. Organized by type: manual and electrical.  
-Another table associating each tool with risks and preventive measures.

### Learning outcomes

-Be able to identify the tools, the risks involved in their use, and know the preventive measures to minimize risks.

### Evaluation method for each LO

-Associates images of tools with use (text) risk (text) and preventive measure (image with text).

### Activities proposal

-Images and text association question.

### Other associated materials



-List of risks that will be associated with the machines. Photos of different machines.

## Part B

### Content

- Main machinery used.
- Risks and preventive measures.
- Collective corrective measures.

### Objectives

Identify the machinery, its correct use, the importance of following the operating and safety instructions.

Analyze if there are collective protection measures, what they are and what they are worth.

### Presentation of content in the online course

- Images of the machines and clicking on it opens a box indicating the name and what is its use.
- Table with risks and preventive and corrective measures.

### Learning outcomes

- Being able to identify the types of machinery used in the workshop, what they are used for, the risks and preventive measures.

### Evaluation method for each LO

- For each type of machine, identify the associated risks selected from a list. The same question is asked for cutting, load moving, drying and sanding machines.

### Activities proposal

- Images and text association question Image of each machine and a drop-down to select the risks related to its use.

### Other associated materials

- List of risks that will be associated with the machines.
- Photos of different machines.

## Unit 6: Risks associated with the use of chemical products.

### Content

- Types of products.
- Risks linked to the environment at work.
- Main preventive measures.
- Labels and Safety Data Sheets.
- Product storage and handling.

### Objectives

- Know what products are used and what they are for.
- Identify the chemical components of each product
- Know the dangers inherent in the use of products and preventive measures.
- Know the main risks (burns, explosion, inhalation of vapors, contact...).

- Interpret the safety data sheets, identifying the information they provide on the properties and effects of chemical substances and mixtures during their use.
- Know the pictograms.
- Phrases H and P.

- Properly store each product used, in a place specially designed for this purpose, taking into account the incompatibilities between them to avoid their passage to the workshop environment or accidents due to accidental spillage or spillage.
- Handle concentrated products with great care. Pay special attention when mixing and transferring products are carried out in well-ventilated places.

#### Presentation of content in the online course

- Explanatory text of chemical risks and consequences with examples (links to press releases, images, videos).
- List of products indicating their application and risk (in accordion format).
- Explanatory text on safety labelling.
- Table with the hazard statements (H phrases) and precautionary statements (P phrases).
- Image with arrows indicating the meaning of the parts of the label.
- Interactive infographic: safety data sheet with pop-up explanations in different sections. SELECT FILE.
- Text combined with pictogram images. Product type storage incompatibility table (includes pictograms and text).

#### Learning outcomes

- Identify the chemical components contained in the reagents used in the manufacture of polyester parts.
- Know the risks of using the necessary products in the activity.
- Know the effects of chemical products on the health of the worker.
- Knows how to interpret a safety data sheet and product labels, identifying the indications and pictograms related to safety in their use.
- Interpret the pictograms and safety phrases related to storage and handling.

#### Evaluation method for each LO

- Can identify the chemical product contained in resins and catalysts and solvents by answering a test question.
- Know the risks of using the different reagents and the effects on the worker's health.
- Adequately interpret the meaning of the pictograms on a label, selecting the appropriate answer in a multiple-choice question.

Adequately interpret the meaning of the pictograms on a label, selecting the appropriate answer in a multiple-choice question.

### Activities proposal

- Question of association of images and text. Image of each reagent and three drop-downs to select the chemical components it contains, the risks of its use, and the effects on health.
- Multiple choice question about an IMAGE: Pictogram images that must be related to with their meaning (text).
- Question of association of IMAGES (pictograms) and TEXT (safety phrases).

### Other associated materials

- List of ISSGA technical notes.
- Examples of safety data sheets (resin, catalyst, and solvent).
- Examples of product labels.
- Press releases / videos of accidents caused by incorrect storage.

## Unit 7: Personal protection elements (PPEs)

### Content

- Definition and objective of PPE.
- How they are selected, category of PPE and marking of PPE.
- Obligations of the company and working personnel in relation to PPE.
- Specific types of PPE for workers in the sector.

### Objectives

Identify the necessary PPE for the development of the activity or under the extractor hood, using personal protective clothing: gloves, glasses, masks, boots and suitable clothing.

### Presentation of content in the online course

- Text combined with images of personal protective equipment. PPE is presented according to the part of the body that they must protect head, eyes, ear, respiratory tract, hands, torso, as well as PPE for protection against falls from a height.

### Learning outcomes

- To be able to select the personal protective equipment according to the task to be carried out.
- Be aware of the importance of the correct use of PPE.

### Evaluation method for each LO

- Augmented reality tool: select the appropriate protective equipment for each type of activity carried out in the workshop (resin preparation, sanding, fiber handling), choosing from the images of different PPE.

### Activities proposal

-In a changing room with PPE, the students must choose the corresponding PPE according to the activity to be carried out in the workshop. Three scenarios are considered: resin preparation, sanding, fiber handling.

### Other associated materials

- Photos of PPEs
- Sheets of different PPEs downloadable.

## Unit 8: Signage of a polyester workshop

### Content

- Signage: when and how it is used.
- Types of signals: optical, acoustic, and olfactory.
- Panel signs: characteristics (shapes, colors, dimensions).

### Objectives

That the students can interpret the safety, warning and obligation signs that will be used in a polyester workshop.

### Presentation of content in the online course

- Text presenting the different types of existing signals: optical, acoustic, and olfactory.
- Panel signs classified by type, shape, and color: warning (yellow triangles), prohibition (red circles); obligation (blue circles); firefighting (square and rectangular red); rescue and distress (rectangular or green square).

### Learning outcomes

- Interpret the meaning of the safety, warning, and obligation signs in the workshop.
- Properly position panel signs in a workspace.

### Evaluation method for each LO

- Associate images of panels with meaning (text).
- Augmented reality tool: select the signs to be placed in each part of the workshop on a plan of the workspace.

### Activities proposal

- Question of relation of image with text: list of images of signage panels and list of texts describing their meaning that must be related with arrows.
- Augmented reality: in a workshop plan the students must place the signs on the panels for the different workspaces, taking into account the entrances and exits, as well as the machines and activities that are carried out.

### Other associated materials

- Images of signs by type (obligation, warning, prohibition and evacuation, safety).





