



**Polskie Stowarzyszenie Gipsu**



**Instytut Technologii Eksploatacji  
– Państwowy Instytut Badawczy**

**Krzysztof Wojewoda**

**Piotr Rogalski**

## **Identification of materials used in Technology of Interior Drywall Systems 712[06].S1.01**

**Teacher's Guidebook**



**Publisher**

**Instytut Technologii Eksploatacji – Państwowy Instytut Badawczy  
Radom 2010**

Reviewers:

Halina Darecka, M.Sc.

Jolanta Skoczylas, M.Sc.

Editor: Zbigniew Kramek, Ph.D.

Consultant: Krzysztof Baranowski, PSG (Polish Association of Plaster of Paris) Secretary

Proof-reader:

This Guidebook provides methodological guidance for the modular unit program 712[06].S1.01 “Identification of materials used in Technology of Interior Drywall Systems”, being a part of the modular training program for the occupation of a Bricklayer 712[06].

Publisher

Instytut Technologii Eksploatacji – Państwowy Instytut Badawczy, Radom 2010

# TABLE OF CONTENTS

<b>1. Introduction</b>	3
<b>2. Prerequisite skills</b>	4
<b>3. Learning objectives</b>	5
<b>4. Samples of lesson scenarios</b>	6
<b>5. Tasks</b>	10
<b>5.1. Types, properties and gypsum labelling. Gypsum additives</b>	10
5.1.1. Tasks	10
<b>5.2. Types of plasterboards used in the Interior Drywall Systems. Paper based plasterboards. Gypsum fibre boards.</b>	13
5.2.1. Tasks	13
<b>5.3. Steel-profiles and assembly components used in Technology of Interior Drywall Systems</b>	15
5.3.1. Tasks	15
<b>5.4. Materials for finishing works in Technology of Interior Drywall Systems. Insulation materials and sealants used in Technology of Interior Drywall Systems</b>	18
5.4.1. Tasks	18
<b>6. Assessment of students' achievements</b>	20
<b>7. Bibliography</b>	39

# 1. Introduction

We are providing you with a “Teacher’s Guidebook” - “Identification of materials used in Technology of Interior Drywall Systems”, which will help teachers in conducting lessons within the school training in the occupation of Bricklayer (712[06]).

The Guidebook contains:

- prerequisite skills,
- list of occupational skills that a student acquires in the course of the training,
- samples of lesson scenarios,
- recommended tasks which aim at teaching a student practical skills,
- list of literature that students can use in the process of training,

It is recommended that different teaching methods should be used in the process of training with particular focus on:

- demonstration with explanation,
- guiding text method,
- learning through projects,
- practical classes.

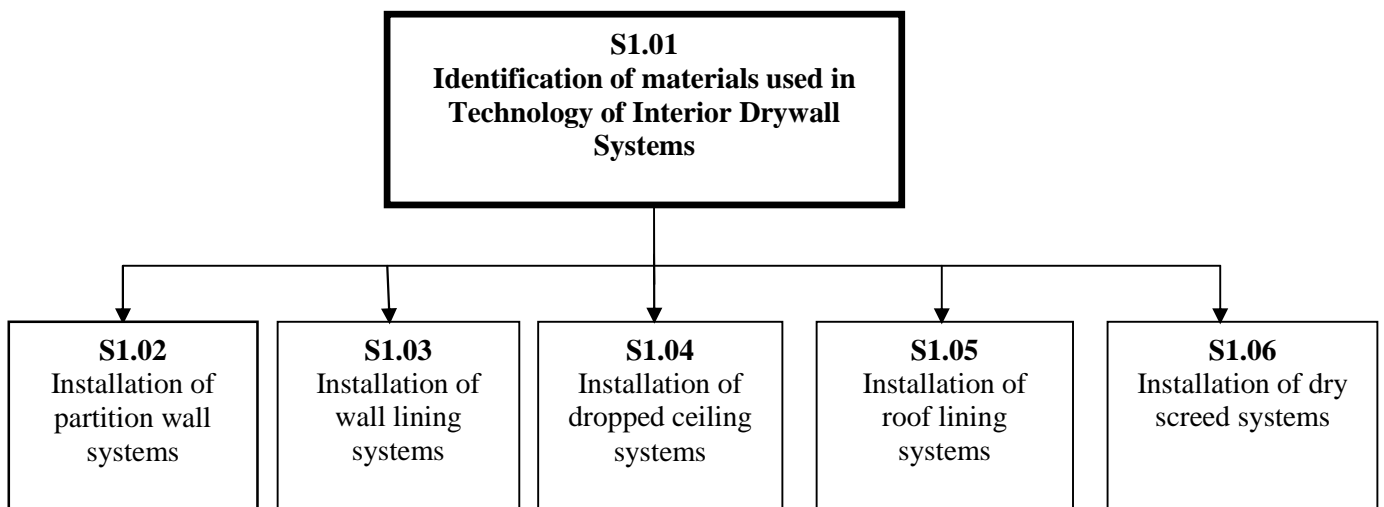
The forms in which students’ work is organised can vary, ranging from students’ independent work to team work.

In order to check students’ knowledge and skills, the teacher can use test tasks included in Chapter 6 and containing different types of tasks.

The said Chapter contains also:

- test plan in a tabular form,
- evaluation scale (points) for tasks and grading scheme,
- proposed grading standards,
- instructions for the teacher,
- instructions for a student,
- answer sheet,
- set of test tasks.

## Diagram of modular units



## **2. PREREQUISITE SKILLS**

Before starting the modular unit program “Identification of materials used in Technology of Interior Drywall Systems”, a student should be able to:

- use technical building terminology,
- read and construe technical building drawings,
- use technical building documentation,
- identify construction elements of a building,
- organize the workplace in line with rules of ergonomics and safety,
- ensure the proper transportation of building materials,
- use different sources of information.

### **3. LEARNING OBJECTIVES**

Upon completion of the modular unit program, a students should be able to:

- identify paper-based plasterboards (drywalls) used in Technology of Interior Drywall Systems,
- identify gypsum fibre boards used in Technology of Interior Drywall Systems,
- identify steel profiles used in Technology of Interior Drywall Systems,
- identify construction components used in Technology of Interior Drywall Systems,
- identify sealants and insulation materials used in Technology of Interior Drywall Systems,
- specify physical, chemical and mechanical properties of boards used in Technology of Interior Drywall Systems,
- specify parameters of plasterboards used in Technology of Interior Drywall Systems,
- specify parameters of steel profiles used in Technology of Interior Drywall Systems,
- prepare plastering “mud”/joint filler used in Technology of Interior Drywall Systems,
- identify symbols and properties of the materials used in Technology of Interior Drywall Systems and apply quality check methods,
- determine the appropriate application of the materials used in Technology of Interior Drywall Systems,
- observe occupational health and safety rules as well as environmental law requirements while using building materials, apply them economically.

## 4. SAMPLES OF LESSON SCENARIOS

### Lesson scenario 1

Person in charge: .....

Modular training program: Bricklayer 712[06]

Specialisation module: Technology of Interior Drywall Systems 712[06].S1.

Modular unit: Identification of the materials used in Technology of Interior Drywall Systems 712[06].S1.01

Subject: Paper-based plasterboards used in Technology of Interior Drywall Systems.

**General Objective:** Getting familiar with types of paper-based plasterboards used in Technology of Interior Drywall Systems.

**Upon completion of the training, a student is able to:**

- identify the types of paper-based plasterboards used in Technology of Interior Drywall Systems,
- determine properties and parameters of the paper-based plasterboard,
- explain the way in which the appropriate type of paper-based plasterboard is selected for all types of Interior Drywall System Technologies.

**Teaching-learning methods:**

- practical tasks,
- guiding text method.

**Forms of students' work organisation:**

- individual work.

**Methodological aids:**

- sets of tasks developed by the teacher for students,
- instruction how to use the guiding text method,
- task,
- samples of paper-based plasterboards,
- guiding questions,
- drawing instruments.

**Time:** 120 minutes.

**Lesson plan:**

**Task for a student:**

The aim of the task is to identify different types of paper-based plasterboards and diagnose their application.

**PRELIMINARY STAGE**

Activities related to the organisation and management of the lesson, giving the lesson subject, familiarising students with the guiding text method.

## **PROPER STAGE**

### **INFORMATION GATHERING**

1. How is the paper-based plasterboard constructed?
2. Which basic properties of paper-based plasterboards determine their use?
3. What kinds of plasterboards are used in Technology of Interior Drywall Systems?
4. What are the main rules of selecting a paper-based plasterboard for a given use?
5. What is the structure of particular types of partition walls?

### **PLANNING**

1. Determine the time needed for the task completion.
2. Establish the sources where you can find information on paper-based plasterboards.

### **ARRANGEMENTS**

1. The teacher and students establish the sequence of activities.
2. Students are provided with the resources indispensable for task completion.
3. The teacher determines criteria of the completed work.

### **TASK PERFORMANCE**

1. Write a list of materials used for making a paper-based plasterboard.
2. Draw the plasterboard cross-section and label its components.
3. Identify the types of paper-based plasterboards and explain when they are used.
4. Identify plasterboard properties which determine their application.
5. Write a list of applications for particular paper-based plasterboard types.

### **CHECKING**

1. Were paper-based plasterboard types identified correctly?
2. Were the rules of particular paper-based plasterboard type selection determined correctly?

## **FINAL STAGE**

Students and the teacher together indicate which stages of the task turned out to be most difficult for them. The teacher sums up the whole task and points out the new important skills which were developed in the course of the task performance as well as shortcomings which occurred.

### **Homework**

In available sources find drawings or photographs depicting different applications of paper-based plasterboards. Bring the materials you have found and present them in the classroom.

### **The way to receive feedback from students after the classes have ended:**

- anonymous evaluation sheets concerning the way of conducting the classes, difficulties encountered during the task, acquired skills and reference materials used,
- analysis of students' activity during the classes.



## Lesson scenario 2

Person in charge: .....

Modular training program: Bricklayer 712[06]

Specialisation module: Technology of Interior Drywall Systems 712[06].S1.

Modular unit: Identification of the materials used in Technology of Interior Drywall Systems  
712[06].S1.01

Subject: Types and application of the steel profiles used in Technology of Interior Drywall Systems.

**General objective:** Identification and application of steel profiles used in Technology of Interior Drywall Systems.

**Upon completion of the training, a student is able to:**

- identify the types of steel profiles used in Technology of Interior Drywall Systems,
- determine properties and parameters of steel profiles,
- explain the way in which the appropriate type of steel profiles is selected for all types of Interior Drywall Systems.

**Teaching-learning methods:**

- practical tasks,
- guiding text method.

**Forms of students' work organisation:**

- individual work.

**Methodological aids:**

- sets of tasks developed by the teacher for students,
- instruction how to use the guiding text method,
- task,
- samples of steel profiles,
- guiding questions,
- drawing instruments.

**Time:** 120 minutes.

**Lesson plan:**

**Task for a student:**

The aim of the task is to identify different types of steel profiles and determine their applications.

### PRELIMINARY STAGE

Activities related to the organisation and management of the lesson, giving the lesson subject, familiarising students with the guiding text method.

### PROPER STAGE

#### INFORMATION GATHERING

1. How are steel profiles constructed?

2. Which basic properties of steel profiles determine their use?
3. What kinds of steel profiles are used in Technology of Interior Drywall Systems?
4. What are the main rules of selecting steel profiles for a given use?
5. What are the rules of the steel profile treatment and assembly?

#### PLANNING

1. Determine the time needed for the task completion.
2. Establish the sources where you can find information on steel profiles.

#### ARRANGEMENTS

1. The teacher and students establish the sequence of activities.
2. Students are provided with the resources indispensable for the task completion.
3. Teacher determines criteria of the completed work.

#### TASK PERFORMANCE

1. Write a list of materials used for making steel profiles.
2. Draw the profile cross-sections and label them.
3. List types of profiles and their applications.
4. Determine the rules of the profile treatment and assembly.

#### CHECKING

1. Were steel profile types identified correctly?
2. Were the rules of particular steel profile selection determined correctly?

#### FINAL STAGE

Students and the teacher together indicate which stages of the task turned out to be most difficult for them. The teacher sums up the whole task and points out the new important skills which were developed in the course of the task as well as shortcomings which occurred.

#### Homework

In available sources find drawings or photographs depicting different applications of steel profiles. Bring the materials you have found and present them in the classroom.

#### **The way to receive feedback from students after the classes have ended:**

- anonymous evaluation sheets concerning the way of conducting the classes, difficulties encountered during the task performance, acquired skills and reference materials used,
- analysis of students' activity during the classes.

## 5. TASKS

### 5.1. Types, properties and labelling of gypsum. Gypsum additives

#### 5.1.1. Tasks

##### Task 1

Identify prepared gypsum samples and match them with their names.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with what gypsum is made of and what it looks like,
- 2) get familiar with the types of gypsum (reference material in Chapter 4.1.1),
- 3) get familiar with properties of different types of gypsum,
- 4) identify particular samples of different types of gypsum,
- 5) present the completed task,
- 6) assess correctness of the selected names for gypsum types.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- cards with names of different gypsum types (dihydrate, alabaster, hemihydrate, anhydrite, soluble (CaSO<sub>4</sub> III)).
- gypsum samples.

##### Task 2

On the basis of given words/headings present subsequent stages of gypsum production.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with gypsum properties (reference material from Chapter 4.1.1.),
- 2) organize the workplace for performing the task,
- 3) put in order the elements received from the teacher,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- a drawing showing the gypsum production stages,
- drawing paper pad, sizeA4,
- drawing instruments,
- reference material from Chapter 6 of Student's Handbook.

### **Task 3**

In the cross-section drawing of a family house mark these elements which can be made with the use of gypsum-based building materials.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) remember elements of a building,
- 2) get familiar with application of gypsum (reference material from Chapter 4.1.1.),
- 3) organize the workplace for task completion,
- 4) arrange the elements received from the Teacher,
- 5) present the completed task,
- 6) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- a diagrammatic drawing of a house cross-section.

### **Task 4**

Using the water provided in a container and a separate bag of gypsum mixture prepare gypsum plaster.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with components of gypsum plaster (reference material from Chapter 4.1.1.)

- 2) get familiar with ways of gypsum plaster preparation (reference material from Chapter 4.1.1.),
- 3) organize the workplace for task completion,
- 4) prepare components for gypsum plaster preparation,
- 5) prepare equipment for gypsum plaster preparation,
- 6) make gypsum plaster,
- 7) present the completed task,
- 8) assess correctness of task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- water and ready-made gypsum mix,
- a tub and a small metal trowel.

## **5.2. Types of drywalls used in Technology of Interior Drywall Systems. Paper-based plasterboards. Gypsum fibre boards.**

### **5.2.1. Tasks**

#### **Task 1**

On the basis of a drawing presented by the teacher describe the process of paper-based plasterboard production.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with the structure of a paper-based plasterboard (reference material from Chapter 4.2.1.),
- 2) get familiar with stages in the production process of paper-based plasterboards (reference material from Chapter 4.2.1.),
- 3) organize the workplace for task completion,
- 4) describe particular drawings depicting stages of the paper-based plasterboard production process,
- 5) present the completed task,
- 6) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- drawing instruments,
- a diagram of the production process

#### **Task 2**

Using a drawing presented by the teacher, identify the types of plasterboard edges of the paper-based plasterboards and write the correct name next to each edge.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with descriptions of paper-based plasterboards edge types (reference material from Chapter 4.2.1),
- 2) organize the workplace for task completion,
- 3) complete the drawing provided by the teacher,
- 4) present the completed task,

5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- drawing paper pad, size A4,
- drawings of paper-based plasterboard cross-sections,
- drawing instruments,
- reference material from Chapter 6 of Student's Handbook.

### **Task 3**

In a Table provided by the teacher where advantages of different types of paper-based plasterboards are described, match each description with the name of the plasterboard type and its possible application in finishing works.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with types of paper-based plasterboards (reference material from Chapter 4.2.1),
- 2) organize the workplace for task performance,
- 3) complete the table provided by the teacher,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- drawing of a table,
- descriptions of particular plasterboard applications.

## **5.3. Steel profiles and assembly components used in Technology of Interior Drywall Systems**

### **5.3.1. Tasks**

#### **Task 1**

Identify types of steel profiles used in Technology of Drywall Systems.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with types of steel profiles used in Technology of Interior Drywall systems (reference material from Chapter 4.3.1.),
- 2) organize the workplace for task completion,
- 3) identify types of steel profiles provided by the teacher and give their symbols,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- samples of steel profiles,
- drawing instruments.

#### **Task 2**

Complete a table provided by the teacher with the missing data. The table presents 11 types of profiles. The missing descriptions should be completed with selected parameters or missing symbols.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with descriptions of types of steel profiles (reference material from Chapter 4.3.1),
- 2) organize the workplace for task performance,
- 3) complete the table provided by the teacher,
- 4) present the completed task,
- 5) assess correctness of the task completion.



Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- drawing paper pad, size A4,
- prepared table with types of steel profiles,
- drawing instruments,
- reference material from Chapter 6 of Student's Handbook.

### **Task 3**

Identify accessories provided by the teacher which are used in Technology of Interior Drywall Systems and describe in what place they can be used (a wall, ceiling, attic).

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with types of accessories used in Technology of Interior Drywall Systems (reference material, Chapter 4.3.1),
- 2) get familiar with application of accessories in Technology of Interior Drywall Systems
- 3) organize the workplace for task performance,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- accessories used in Technology of Interior Drywall Systems,
- drawing instruments,
- drawing paper pad.

### **Task 4**

From among the tools prepared, choose the one which will let you cut a steel profile to a desired length.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with types of tools and equipment used in Technology of Interior Drywall Systems (reference material from Chapter 4.3.1),
- 2) get familiar with application of particular tools used in Technology of Interior Drywall Systems

- 3) organize the workplace for task performance,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- tools (scissors, a measuring tape) and a UW profile,
- steel profile.

## **5.4 Materials for finishing works in Interior Drywall Systems. Sealants and insulation used in Technology of Interior Drywall Systems**

### **5.4.1. Tasks**

Match descriptions of joint compound (“mud”) with descriptions of application in Interior Drywall System installations.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with types of “mud” used in Technology of Interior Drywall Systems (reference material from Chapter 4.4.1),
- 2) get familiar with application of particular “mud” types used in Technology of Interior Drywall Systems (reference material from Chapter 4.4.1),
- 3) organize the workplace for task performance,
- 4) match the types of “mud” with their applications,
- 5) present the completed task,
- 6) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student’s Handbook,
- drawing instruments,
- descriptions of “mud” and separate descriptions of “mud” paste applications,

### **Task 2**

Complete the table provided by the teacher with missing data. The Table presents descriptions of floor bases for screeds and adhesives in such a way as to let you match the descriptions with possible applications of both products.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with descriptions of types of screed and adhesives (reference material from Chapter 4.4.1),
- 2) organize the workplace for task performance,
- 3) complete the table provided by the teacher,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- a prepared table with descriptions of floor bases for screeds and adhesives,
- drawing paper pad, size A4,
- drawing instruments,
- reference material from Chapter 6 of Student's Handbook,

### **Task 3**

From a roll of mineral glass wool cut off such a fragment as to fill a space between two frame profiles in a partition wall covered by a paper-based plasterboard on one side only.

Tips for task performance:

Before starting the task, the teacher should discuss its scope and the way to do it. Students must be familiar with safety rules at work.

The way to do the task:

A student should:

- 1) get familiar with technical descriptions of mineral glass wool (reference material from Chapter 4.4.1),
- 2) organize the workplace for task performance,
- 3) construe the technical documentation for a partition wall insulation,
- 4) present the completed task,
- 5) assess correctness of the task completion.

Recommended teaching-learning methods:

- demonstration with explanation, practical classes

Teaching aids:

- reference material from Chapter 6 of Student's Handbook,
- technical documentation for insulation,
- tools and materials indispensable to perform the task,

## 6. ASSESSMENT OF STUDENTS' ACHIEVEMENTS

### Examples of testing and assessment tools

#### TEST 1

#### A two-level test for the modular unit "Identification of materials used in Technology of Interior Drywall Systems".

The Test consists of 20 tasks of two difficulty levels:

- tasks 2, 5, 7,8, 9, 10, 11,12, 13, 14, 15, 16, 17, 18, 20 represent the basic level,
- tasks 1, 3, 4, 6, 19 represent the above-basic level.

#### Points awarded for task completion: 0 or 1 point

For each correct answer a student scores 1 point. A wrong or no answer score 0 points. For some tasks, e.g.: 2, 7, 8, 11, 13, 14, 16, 18, 20 – 0.5 point can be given if the answer consists of several points.

#### The following grading standards are proposed – a student will be awarded the following school grades:

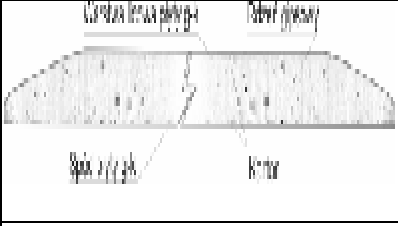

- poor – if at least 7 tasks at the basic level have been done satisfactorily,
- satisfactory – if at least 10 tasks at the basic level have been done satisfactorily,
- good – for satisfactory completion of 14 tasks, including at least 3 at the level above the basic one
- very good – for completion of 16 tasks, including at least 4 from the above-basic level.

#### Test plan

#### Answer key

(Translator's remark: P = basic level; PP = the above-basic level)

Nr zadania	Operational task (assessment of student's achievements)	Kategoria celu	Poziom wymagań	Correct answer
1.	Determine what type of gypsum is used for the production of paper-based plasterboards	B	PP	c
2.	Identify basic construction components produced from gypsum.	B	P	plasterboards, hollow bricks, blocks, decorative elements.
3.	Determine whether gypsum is an ecological material	C	PP	a
4.	Identify gypsum properties which limit its application.	C	PP	b

5.	Draw a cross-section of a paper-based plasterboard.	B	P	
6.	Determine the function of cardboard in a plasterboard.	B	PP	c
7.	Identify symbols used for paper-based plasterboard labelling.	B	P	a) Type „A” -standard, b) Type „H2” -impregnated, c) Type „F” – fire-proof, d) Type “DFH2” –fire-proof and impregnated
8.	Identify symbols of paper-based plasterboard types according to their edges.	B	P	- PRO-of low and parallel tapering - KS-of tapered edge, - KPOS-of half-round edge, - KP-of straight line edge.
9.	Identify transportation rules for paper-based plasterboards.	B	P	b
10.	Identify components from which the structures for building drywalls are made in the Interior Drywall System technology.	A	P	c
11.	Identify the basic types of steel profiles.	A	P	- CW profile, - UW profile, - UA profile, - CD profile, - UD profile.
12.	Identify symbols of basic dimensions of steel profiles.	B	P	h-height b-width s-steel sheet thickness
13.	Identify steel profiles.	B	P	a) a CW profile, b) a UW profile.
14.	Identify steel profiles	B	P	a) a CD profile, b) a UD profile.
15.	Draw a cross-section of a UA profile.	B	P	
16.	Identify assembly accessories	B	P	a) nonius hanger, b) rotary hanger
17.	Identify accessories used in drywall assembly	B	P	a) cross connector,

				b) longitudinal connectors to CD 60, c) ES adjusting bracket.
18.	Identify basic types of joint compound (“mud”).	A	P	a) structural used with a tape, b) finishing, c) two-functional, d) structural used without a tape.
19.	Identify mineral glass wool parameters which are important for Drywall System Technology.	C	PP	b
20.	Identify basic tools used for Drywall assembly.	B	P	a) for cutting (knife and saws), b) for mixing (trowel, slow-rotation mixer), c) for installation and fixing (a profile pole, a spirit or laser level) d) for screwing (electric drilling machine), e) for joint filling (trowel, hawk).

## Testing procedure

### Instructions for the teacher

1. Establish a test-date at least a week in advance.
2. Discuss with students the aim of testing and assessment.
3. Familiarize students with types of tasks included in the test and with the rules of awarding points.
4. Conduct a mock test in which students will be asked to provide answers to the task types as the ones included in a real test.
5. Discuss with students the way in which answers shall be given (answer sheet).
6. Ensure conditions for students independent work.
7. Hand out the question and answer sheets to students, inform them about the time limit for doing the test.
8. Create proper atmosphere during the whole test (relieve tension, encourage for checking one’s potential).
9. A few minutes before the end of the test, remind students of the time left for the test completion.
10. Collect answer sheets and test sheets.
11. Check the results and enter them into a report sheet.
12. Analyze the results obtained and choose these tasks which posed most difficulty to students.
13. Establish the reasons why students had problems to acquire the knowledge and skills.
14. Work out conclusions for further work in order to avoid teaching failures – unsatisfactory results of the test conducted.

### **Instruction for students**

1. Read the instruction carefully.
2. Sign the answer sheet with your name and surname.
3. Get familiar with test tasks.
4. The test consists of 20 tasks of different difficulty levels. It includes tasks of the following types: open, gap-fill, multiple-choice and True/False.
5. Give your answers on the enclosed answer sheet only. Put a cross (X) in the right column or write the correct answer. If you make a mistake, put a circle around the incorrect answer and then put a cross (X) next to the correct answer.
6. The test consists of 2 parts containing tasks of different difficulty levels: tasks 2, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20 – represent the basic level, whereas tasks: 1, 3, 4, 6, 19 – represent the above-basic level.
7. Work on your own because only then you will get satisfaction of completing the task.
8. When you find answering a question difficult, leave it for a later time and return to it when you have time.
9. You have 90 minutes to complete the test.

Good luck !

### **Materials for a student:**

- instruction,
- set of test tasks,
- answer sheet.





9. Paper-based plasterboards are:
- a) transported horizontally, stored in a vertical position or stacked horizontally,
  - b) transported vertically with the use of a special cart, stored horizontally,
  - c) transported in such a way as to avoid any damage,
  - d) transported on a special yoke and stored on the substrate.

10. What are the structures for the use in plasterboard partitions made of?
- a) brick or other small-size materials,
  - b) fluid concrete,
  - c) steel profiles,
  - d) wood.

11. Identify basic types of steel profiles used in Technology of Interior Drywall Systems:
- a) .....
  - b) .....
  - c) .....
  - d) .....
  - e) .....

12. Identify basic dimensions of steel profiles:
- a) h-.....,
  - b) b-.....,
  - c) s-.....

13. Identify the profiles depicted in these drawings and give their letter symbols:

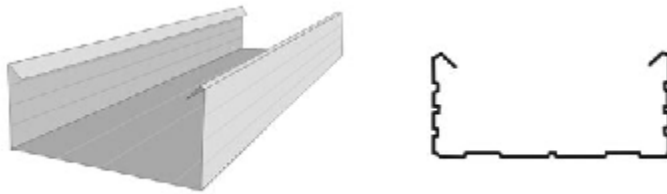


a) .....



b).....

14. Identify the profiles depicted in the drawings below and give their letter symbols:



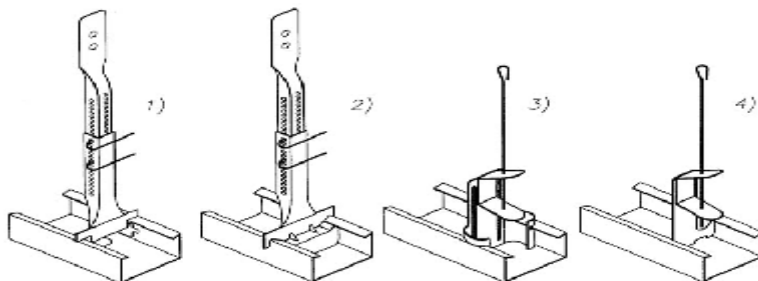
a) .....



b) .....

15. Draw a cross-section of the UA profile and give its symbol.

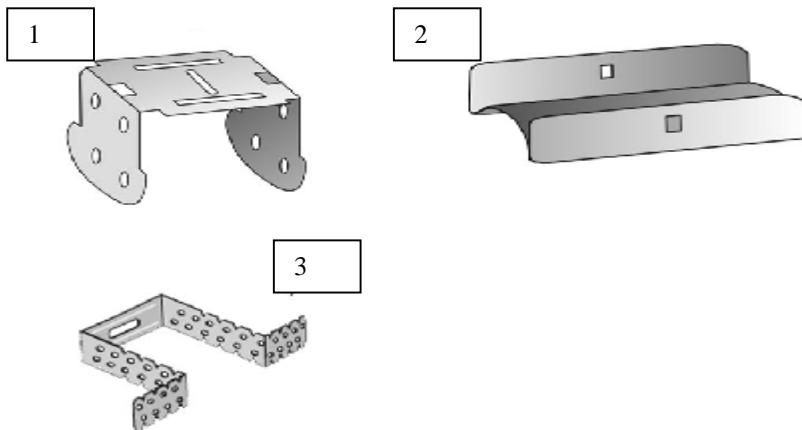
16. Identify accessories used in the assembly of drywall systems:



a) 1), 2).....

b) 3), 4).....

17. Identify accessories used in the assembly of drywall systems.



- a) 1- .....
- b) 2- .....
- c) 3- .....

18. Identify basic types of joint compound (“mud”):

- a) .....
- b) .....
- c) .....
- d) .....
- e) .....

19. The most important parameters of mineral wool used in drywall systems are:

- a) high moisture resistance, good acoustic insulation,
- b) good acoustic insulation, good thermal insulation, fire-resistance,
- c) poor acoustic insulation, good mechanical strength, stable dimensions and shapes.

20. Identify basic tools needed to complete the assembly of drywall systems:

- a) .....
- b) .....
- c) .....
- d) .....
- e) .....

# ANSWER SHEET

Name and surname .....

## Identification of materials used in Technology of Interior Drywall Systems

Mark the correct answer, write in a missing phrase or an answer.

Question number	Answers				Points scored	
1	a	b	c	d		
2						
3	a		b			
4	a	b	c	d		
5						
6	a	b	c	d		
7	a) b) c) d)					
8	a) b) c) d)					
9	a	b	c	d		
10	a	b	c	d		
11	a)	b)	c)	d)	e)	
12	a		b		c	
13	a			b		
14	a			b		

<b>15</b>						
<b>16</b>	a)		b)			
<b>17</b>	a)		b)		c)	
<b>18</b>	a)	b)	c)	d)	e)	
<b>19</b>	a		b		c	
<b>20</b>	a)	b)	c)	d)	e)	
<b>Total</b>						

## TEST 2

### Two-level test for the modular unit “Identification of materials used in Technology of Interior Drywall Systems”.

The Test consists of 20 tasks of two difficulty levels:

- tasks 1, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20 represent the basic level,
- tasks 2, 3, 4, 5, 17 represent the above-basic basic level.

#### Points awarded for task completion: 0 or 1 point

For each correct answer a student scores 1 point. A wrong or no answer score 0 points. For some tasks, e.g.: 1, 2, 10, 15, 16, 18 – 0.5 point can be given if the task is complex.

#### The following grading standards are proposed – a student will be awarded the following school grades:






- poor – if at least 7 tasks at the basic level have been done satisfactorily,
- satisfactory – if at least 10 tasks at the basic level have been done satisfactorily,
- good – for satisfactory completion of 14 tasks, including at least 3 at the level above the basic one
- very good – for completion of 16 tasks, including at least 4 from the above-basic level.

#### Test plan

#### Answer key

(Translator’s remark: P = basic level; PP = above-basic level)

Nr zadania	Operational task (assessment of a student’s achievements)	Kategoria celu	Poziom wymagai	Correct answer
1.	Identify the types of the building gypsum produced.	A	P	a) fine grain gypsum GB-D, b) coarse grain gypsum GB-G,
2.	Identify application of particular gypsum types in building industry.	C	PP	a) fine grain gypsum GB-D, binding material for plaster mix, decorative material, b) coarse grain gypsum GB-G, production of pre-fabricated elements, plaster mix and gypsum concrete.
3.	Decide whether gypsum materials are permitted as construction components in low-rise buildings.	B	PP	a
4.	Identify the types of strength that the plasterboard components are characterized by;	B	PP	a) gypsum – compression resistance b) cardboard- tensile strength
5.	Determine how to enhance plasterboard fire-resistance and moisture resistance.	C	PP	b

6.	Identify the range of typical lengths of produced plasterboards.	B	P	c
7.	Identify properties of a plasterboard Type F.	B	P	b
8.	Identify properties of plasterboards Type H2.	B	P	increased resistance to moisture.
9.	Identify properties of plasterboards Type DFH2.	B	P	D
10.	Identify plasterboard edges.	B	P	a) PRO, b) NS c) KS, d) KPOS.
11.	Say how to treat the edges of a cut plasterboard.	B	P	Trimmed edges should be beveled at an angle of 45 <sup>0</sup>
12.	Define conditions in which plasterboards should be stored.	B	P	Ensuring protection against wetting and moisture.
13.	Identify how to store plasterboards.	B	P	b
14.	Identify the shape of UA steel profiles.	B	P	
15.	Identify the shapes of steel profiles	B	P	a) CW stud  b)poziomy 
16.	Identify the shape of ceiling steel profiles.	B	P	a) CD channel  b) UD channel 



17.	Identify the steel sheet thickness of the UA profile.	B	PP	a
18.	Identify applications of basic accessories used in Technology of Drywall Systems.	C	P	a) nonius hanger- b) rotary hanger- c) cross connector d) ES-adjusting bracket e) longitudinal connectors to CD60
19.	Identify applications of joint compounds (“mud”).	C	P	- for structural and finishing joint filling and finishing, - for filling plasterboard junctions.
20.	Identify materials used for thermal and acoustic insulation in drywall systems.	B	P	Mineral wool.

## **Testing procedure**

### **Instructions for the teacher**

1. Establish the date for carrying out the test at least a week in advance.
2. Discuss with students the aim of testing and assessment.
3. Familiarize students with types of tasks included in the test and with the rules of awarding points.
4. Conduct a mock test in which students will be asked to provide answers to the task types as the ones included in a real test.
5. Discuss with students the way in which answers shall be given (answer sheet).
6. Ensure conditions for students independent work.
7. Distribute question and answer sheets to students, inform them about the time limit for doing the test.
8. Create proper atmosphere during the whole test (relieve tension, encourage for checking one's potential).
9. A few minutes before the end of the test, remind students of the time left for the test completion.
10. Collect answer sheets and question sheets.
11. Check the results and enter them into a report sheet.
12. Analyze the results obtained and choose these tasks which posed most difficulty to students.
13. Establish the reasons why students had problems to acquire the knowledge and skills.
14. Work out conclusions for further work in order to avoid teaching failures – unsatisfactory results of the test conducted.

### **Instructions for students**

1. Read the instruction carefully.
2. Sign the answer sheet with your name and surname.
3. Get familiar with test tasks.
4. The test consists of 20 tasks of different difficulty levels. It includes tasks of the following types: open, gap-fill, multiple-choice and True/False.
5. Give your answers on the enclosed answer sheet only. Put a cross (X) in the right column or write the correct answer. If you make a mistake, put a circle around the incorrect answer and then put a cross (X) next to the correct answer.
6. The test consists of 2 parts containing tasks of different difficulty levels: tasks 1, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20 – represent the basic level, whereas tasks: 2, 3, 4, 6, 17 – represent the above-basic level.
7. Work on your own because only then you will get satisfaction of completing the task.
8. When you find answering a question difficult, leave it for a later time and return to it when you have time.
9. You have 90 minutes to complete the test.

Good luck !

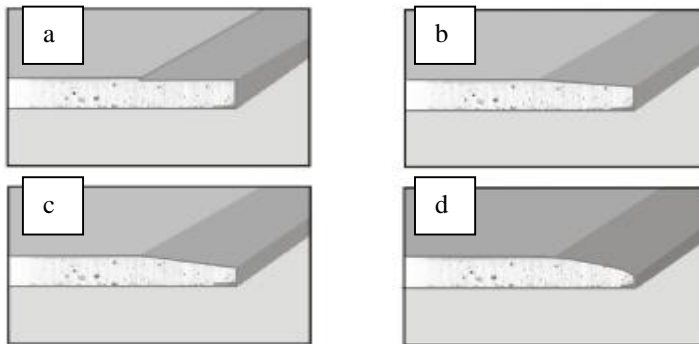
### **Materials for a student:**

- instruction,
- set of test tasks,
- answer sheet.

## SET OF TEST TASKS

1. Name building gypsum variations and give their symbols:
  - a) .....
  - b) .....
  
2. Identify building industry applications of particular building gypsum variations:
  - a) .....
  - b) .....
  
3. Are gypsum materials permitted as construction components in low-rise buildings?
  - a) yes,
  - b) no
  
4. What resistance are plasterboard elements characterized by?
  - a) gypsum - .....
  - b) cardboard - .....
  
5. A plasterboard's fire resistance and moisture-resistance can be enhanced by:
  - a) adding gypsum to cement,
  - b) applying glass fibre additives,
  - c) applying cellulose additives,
  - d) soaking with special chemicals.
  
6. What is the range of typical plasterboard lengths?
  - a) 1.5 – 3 m,
  - b) 2 - 3 m ,
  - c) 2 – 4 m,
  - d) 4 - 5 m.
  
7. What are the properties of the plasterboard Type F?
  - a) moisture resistance,
  - b) fire resistance
  - c) higher mechanical strength,
  - d) impregnation.
  
8. What are the properties of the plasterboard Type H2?  
.....  
.....
  
9. Plasterboards Type FDFH2 are characterized by the following properties:
  - a) higher tensile strength,
  - b) fire-resistance,
  - c) higher compression resistance,
  - d) higher fire-resistance and are impregnated.

10. Give symbols for particular plasterboard edges:



- a- .....
- b- .....
- c- .....
- d- .....

11. How should cut plasterboard edges be treated?

.....  
.....

12. In what conditions should plasterboards be stored?

.....  
.....

13. Plasterboards should be stored:

- a) vertically,
- b) placed flat on a substrate,
- c) leaning against vertical barriers,
- d) so as not to damage them,

14. Draw the shape of a UA steel profile.

15. Identify the following steel profiles.



a) .....



b) .....

16. Draw cross-sections of the following steel profiles:

a) CD60

b) UD

17. The thickness of the steel sheet for UA profiles should be:

- a) at least 1.8 mm,
- b) 1 – 2 mm,
- c) 0.5 – 1.5 mm,
- d) above 2.6 mm.

18. Identify applications of particular basic accessories.

- a) nonius hanger - .....,
- b) rotary hanger - .....,
- c) cross connector - .....,
- d) ES adjusting bracket - .....,
- e) longitudinal connector to CD60 – .....

19. What purposes is the joint compound (“mud”) used for?

- a) .....,
- b) .....

20. What materials are used for thermal and acoustic insulation in drywall systems?

# ANSWER SHEET

Name and surname .....

## Identification of materials used in Technology of Interior Drywall Systems

Mark the correct answer, write in a missing phrase or an answer.

Question number	Answer				Points scored
1.	a)		b)		
2.	a)		b)		
3.	a		b		
4.	a)		b)		
5.	a	b	c	d	
6.	a	b	c	d	
7.	a	b	c	d	
8.					
9.	a	b	c	d	
10.					
11.					
12.					
13.	a	b	c	d	
14.					
15.	a)		b)		
16.	a) CD channel		b) UD channel		

<b>17.</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	
<b>18.</b>	a)	b)	c)	d)	e)
<b>19.</b>	a)		b)		
<b>20.</b>					
<b>Total</b>					

## 7. BIBLIOGRAPHY

1. Baranowicz W.: Wytyczne w zakresie ochrony przeciwpożarowej oraz wzór instrukcji bezpieczeństwa pożarowego dla obiektów szkół. MEN, Warszawa 1997
2. Specialist magazines of companies specializing in Drywall systems.
3. Jerzak M.: Bezpieczeństwo i higiena pracy w budownictwie. PWN, Warszawa 1980
4. Ketler K.: Murarstwo, cz. 2, REA, Warszawa 2002
5. Labour Code (currently binding)
6. Mac S., Leowski J.: Bezpieczeństwo i Higiena Pracy. Podręcznik dla szkół zasadniczych. WSiP, Warszawa 1999
7. Maj T.: Organizacja Budowy. WSiP, Warszawa 2009
8. Martinek W., Szymański E.: Murarstwo i tynkarstwo. WSiP, Warszawa 1999
9. Popek M., Wapińska B.: Podstawy budownictwa. WSiP, Warszawa 2009
10. Poradnik majstra budowlanego. Praca zbiorowa. Arkady, Warszawa 1997
11. Regulation of the Minister of Building and Building Materials of 28.03.1972 on occupational safety and work hygiene at building, assembly and dismantling works (Journal of Laws, No 13, item. 93)
12. Regulation of the Minister of Labor and Social Policy of 26.09.1997 on general safety and hygiene at work. Journal of Laws no 129, item 844
13. Regulation of the Minister for Internal Affairs of 3.11.1992 concerning fire-protection of buildings and other building structures and areas. Journal of Laws No. 92, item 460; Journal of Laws No 102/95, item 507
14. Regulation of the Council of Ministers of 28.07.1998r. on the definition of the circumstances and reasons for accidents at work and the method of documenting them, as well as the scope of information included in the register of accidents at work . Journal of Laws no 115, item 744
15. Szymański E., Wrześniowski Z.: Materiały budowlane. WSiP, Warszawa 1997
16. Szymański E.: Materiałoznawstwo budowlane. WSiP, Warszawa 1999
17. Wasilewski Z.: BHP na placu budowy. Arkady, Warszawa 1989
18. Wojewoda K.: Magazynowanie, składowanie i transportowanie materiałów budowlanych. Zeszyt 3. Podręcznik dla ucznia. REA, Warszawa 1999
19. Wolski Z.: Roboty podłogowe i okładzinowe, WSiP, Warszawa 1998
20. Zastosowanie płyt kartonowo-gipsowych w budownictwie, materiał instruktażowy dla szkół budowlanych, Polskie Stowarzyszenie Gipsu, Warszawa 2004

*Bibliography should be updated as new publications appear on the market.*