Tárgytematika / Course Description

Polymer Techniques

AJNM_ATTA002

Tárgyfelelős neve / Teacher's name: dr. Dogossy Gábor

Félév / Semester: 2022/23/1

Beszámolási forma / Assesment: Vizsga

Tárgy heti óraszáma / Teaching hours(week): 2/1/0

Tárgy féléves óraszáma / Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

To introduce students to common polymer production technologies used in the engineering industry, their machines, technological parameters and tools. Application of the acquired knowledge in practice in the context of a project.

TANTÁRGY TARTALMA / DESCRIPTION

Classification of polymer production technologies. Technological characteristics of extrusion (production parameters, tooling, downstream equipment). Technological characteristics of injection moulding (production parameters, tooling). Specific injection moulding technologies. Technological characteristics of vacuum moulding. Aditive manufacturing technologies. Non-destructive testing methods.

PROJECT TASK

Recycling of polymers

Task:

- From bottle cap (or other polymer product) produce specimens and evaluate the mechanical and physical properties of the produced product.
- Use shredder to chop the caps to small parts
- Use twin-screw extruder to make granulate from chopped parts
- Use injection molding machine to produce specimens
- Use extrusion plastometer to determine the flow properties of the extrudate
- Use tensile test machine to measure the static mechanical properties of the speciemens
- Use Charpy impact test machine to evaulate the dynamic peoperties of the specimens

Group work details:

- The project shall be solved as a Group work, with each group consisting of 5 students.

Deliverable:

- PPT slideshow, with all students:
  - present the original product
  - present the used equipments and machines
  - present the used parameters every used methods
  - present the results of measurements

- Length of presentation:
  - 20 minutes per group
  - 10 minutes question time

Evaluation criteria:

- Technical contents (40%)
- Results analysis and quality of discussions (30%)
- Presentation style (30%)

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Evaluation:	**Item**	**Weight**
	Project:	50%
	Short Exam:	50%
	TOTAL:	100%

Note: a minimum of 40% of the maximum possible points have to be reached in each evaluation discipline in order to pass this subject successfully. Failure to reach this minimum limit in any of the evaluation disciplines will lead to a FAIL grade for the subject.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

- Lectures in the course of the subject in the SZELEARNING system
- Belofsky H: Plastics:product design and process engineering Hanser/Gardner, Cincinnati, 1995
- Shoemaker J: Moldflow design guide, A resource for plastics engineers Hanser, Munich, 2006