

GUJARAT TECHNOLOGICAL UNIVERSITY

RUBBER TECHNOLOGY (40)

POWDER & PARTICULATE RUBBER TECHNOLOGY(PP)

SUBJECT CODE: 2744002

SEMESTER: IV

Type of course: Major Elective - V

Prerequisite: NA

Rationale: NA.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (M)			
ESE	OEP	PA			RP					
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Introduction & comparison	5	10
2	Availability & Manufacture of Powdered Rubber: Preparation, Partitioning Agents, Comparison of Commercial Grades.	7	10
3	Compounding , Mixing & Moulding: Preparation of Powdered Rubber compound, Processing Techniques, Dispersion ,Moulding, adhesives and dough etc.	7	10
4	Advantages of Powdered and Particulate Rubbers : Mixing Cycle Comparison, Power Consumption Comparison, Temperature Comparison etc.	7	15
5	Extrusion & Compaction: Handling of Compounds, Different extrusion techniques, Different Extruders for direct extrusion etc.	7	15
6	Effect of Powder Technology : Effect on Mixing Cycle Times, Energy Savings, Plant Maintenance Costs , Continuous production , Polymer Blends etc.	7	10
7	Economics & Environmental Considerations : Comparison, Different area for Energy Savings, Cost Savings in several areas of production etc.	7	15
8	Testing: Standard Testing, Assessment of dust in solid rubber chemicals, comparison with other forms of rubbers etc.	7	15

Reference Books:

1. Powdered and Particulate Rubber Technology by Colin W. Evans
2. Handbook of Elastomers Edited by Dr. A.K.Bhowmick & Dr. Howard L. Stephens.

Course Outcome:

After learning the course the students should be able to:

1. Understand the Availability & Manufacture of Powdered Rubber.
2. Identify & able to do Comparison of Commercial Grades.
3. Able to understand the effect of Powder Technology.
4. Learn about the advantages of Powdered and Particulate Rubbers.
5. Learn about how to do cost savings in several areas of production etc..
6. Importance of Partitioning Agents.

7. Learn about Assessment of dust in solid rubber chemicals, comparison with other forms of rubbers.

Major Equipment:

Mixing Mill, Extruder, Moulds etc.

List of Open Source Software/learning website:

- <http://www.environmental-expert.com/>
- <http://www.scientific.net/>
- <http://www.degruyter.com/>

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.