

GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: RUBBER TECHNOLOGY
SUBJECT NAME: Powder & Particulate Technology

SUBJECT CODE:3714010
M.E. 1stSEMESTER

Type of course: Program Elective-II (M.E.Rubber Technology)

Prerequisite:

Rationale:

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 (I)	
3	0	2	4	70	30	30	20	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 :	7	15

	Comparison, Different area for Energy Savings, Cost Savings in several areas of production etc.		
8	Testing: Standard Testing, Assessment of dust in solid rubber chemicals, comparison with other forms of rubbers etc.	7	15

Reference Books:

- Powdered and Particulate Rubber Technology by Colin W. Evans
- 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:

- Understand the Availability & Manufacture of Powdered Rubber.
- Identify & able to do Comparison of Commercial Grades.
- Able to understand the effect of Powder Technology.
- Learn about the advantages of Powdered and Particulate Rubbers.
- Learn about how to do cost savings in several areas of production etc..
- Importance of Partitioning Agents.
- Learn about Assessment of dust in solid rubber chemicals, comparison with other forms of rubbers.

List of Experiments:

Tutorials/Presentation/Practicals based on above topics.

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/>

