



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Post Graduate

Branch: Rubber Technology

Course / Subject Code : ME01088061

Course / Subject Name : Powder & Particulate Technology

w. e. f. Academic Year:	2024-25
Semester:	1 st Semester
Category of the Course:	PEC

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Understand the availability and manufacturing process of powdered rubber & the impact of powder technology.
02	Identify and compare various commercial grades.
03	Learn methods for cost savings across various production areas.
04	Recognize the significance of partitioning agents.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
03	00	02	04	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Introduction & comparison	04	10
2.	Availability & Manufacture of Powdered Rubber: Preparation, Partitioning Agents, Comparison of Commercial Grades.	05	10
3.	Compounding, Mixing & Molding: Preparation of Powdered Rubber compound, Processing Techniques, Dispersion, Molding, adhesives and dough etc.	06	10



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4.	Advantages of Powdered and Particulate Rubbers: Mixing Cycle Comparison, Power Consumption Comparison, Temperature Comparison etc.	06	15
5.	Extrusion & Compaction: Handling of Compounds, Different extrusion techniques, Different Extruders for direct extrusion etc.	06	15
6.	Effect of Powder Technology: Effect on Mixing Cycle Times, Energy Savings, Plant Maintenance Costs , Continuous production , Polymer Blends etc.	06	10
7.	Economics & Environmental Considerations: Comparison, Different area for Energy Savings, Cost Savings in several areas of production etc.	06	15
8.	Testing: Standard Testing, Assessment of dust in solid rubber chemicals, comparison with other forms of rubbers etc.	06	15
Total		45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	10	20	10	10	10

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) 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.

Suggested Course Practical List: If any

Practical based on above topics.



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List of Laboratory/Learning Resources Required:

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