



SNS COLLEGE OF TECHNOLOGY



[An Autonomous Institution]

Coimbatore - 35

19BAT612– Operations Management

UNIT-5 DYNAMIC PURCHASING

SELECTION OF MATERIALS

Presented by

Ms. A. Hanis Sultana

Assistant Professor,

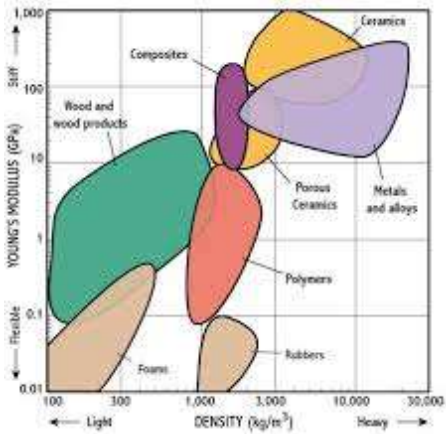
Department of Management Studies



Recall

Selection of Materials





A.Hanis Sultana, AP/MBA - 19BAT612 - Operations Management

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Materials Selection

- The designer of any product, other than software must get involved with material selection.
- Only occasionally will the exact grade of material be specified by the customer.
- Even then the designer must understand the material to be able to design the product.

Decisions, decisions!

So many materials, so much information.

How do we decide?

How do we begin to choose?



First we need to look at the function of the product
product analysis

Product Analysis



- Just what it says – analyse the product!
- What does it do?
- How does it do it?
- Where does it do it?
- Who uses it?
- What should it cost?



Case Study – a bike

- What is the function of a bike – obvious?
- How does the function depend on the type of bike?
 - Racing
 - Mountain bike
 - Commuter
 - Childs



Component or system?

- 1st problem is.....

Is it one component or a system of components working together?

A spanner is a component, a cordless screwdriver is a system.

System Analysis

When we analyse a system we need to break the system down into individual components and then analyse each one.





System Analysis – the bike

The bike breaks down into various parts:

- Frame
- Forks
- Wheels
- Saddle



System Analysis – the bike (2)

We now need to look at the following for each part:

- Requirements (mechanical, ergonomic, aesthetic etc.)
- Function
- How many are going to be made?
- What manufacturing methods are we going to use?

Frame Materials



- Steel –
Strong, stiff, heavy, but cheap
- Aluminium –
weaker, lighter, more expensive than steel
- Composite (CFRP) –
strong, stiff, very light, but expensive to buy and to fabricate

Cycle Frame



Frame Design Detail



Assessment



Which of the following is not a property of engineering materials?

- a) Mechanical properties
- b) Chemical properties
- c) Polymorphism
- d) Electrical properties

c) Polymorphism

Summary

A hand holding a blue marker is shown writing the word 'SUMMARY' in blue capital letters on a white surface. A blue underline is drawn beneath the word. The background of the slide features a blurred image of a hand holding a green ball with holes, possibly a golf ball, against a dark background with a red diagonal line.

- Materials Selection
- Product Analysis

References



- <https://www.corrosionpedia.com/definition/6939/material-selection>
- https://depts.washington.edu/matseed/mse_resources/Webpage/Bicycle/Material%20Selection%20Process.htm



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