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Authoritative Content. Immediate Solutions.

- Premier, multi-disciplinary engineering content that complements course material
- Over 4000 interactive tables and graphs to keep students engaged
- Over 800 instructional videos that reinforce key engineering concepts
- Ready-to-use curriculum maps highlight content of particular relevance to courses
- *Schaum’s Outlines* to aid students’ understanding and help them prepare for the FE exam
- Personalized research tools
- General and discipline-specific newsfeeds updated in real time
Search & Browse
Basic & Advanced Search

What's New on AccessEngineering?


Check out 15 new videos illustrating application examples based on the 2015 International Building Code.
Conduct A Basic Search

Enter a keyword or phrase into the search bar on the top of the homepage and click **GO**

**Hint:** The search engine supports advanced search techniques

- Boolean AND, OR, and NOT (e.g., mechanical AND engineering)
- Quotation marks (" "') to find an exact phrase (e.g., “mechanical engineering”)
- Asterisks (*) to match partial words (e.g., thermo*)
Conduct An Advanced Search

1. Click **ADVANCED SEARCH** underneath the search bar

2. Enter keywords or phrases in the text boxes and select search operators

3. Refine your results by content type, subject, and/or title, and click **SEARCH**
Your search for vibration isolation returned 930 results.

Vibration Isolation

The topic of vibration isolation is considered in this video. Figures 3.4.5, 3.4.6, and 3.4.7 are used to investigate the vibration isolation requirements of a system.

Type: Video

Vibration Isolation

VIBRATION ISOLATION Often machines and components which exhibit vibrations have to be mounted in locations where vibrations may not be desirable. Then the machine has to be isolated properly so that it does not transmit vibrations. Transmissibility Active Isolation and Transmissibility. From Eq. (3.138)

Type: Text

Concept of Vibration Isolation

CONCEPT OF VIBRATION ISOLATION The concept of vibration isolation is illustrated by consideration of the 1-DOF systems shown in Figs. 2.20 and 2.12 (also depicted in columns 1 and 2 of Table 38.1). The performance of the isolator may be evaluated by the following characteristics of the response of the system to steady-state sinusoidal vibration...
Apply & Remove Search Filters

Easily target the most relevant material by filtering search results by subject, title, content type, and process type. Multiple filters can be applied to a search.

1. Narrow your search results by clicking an applicable filter on the left-hand side of your search results page.

Each Of These Is A Filter

2. Remove a filter by clicking the name of the filter, e.g., “All Subjects”.
Browse By Subject

Either hover over **SUBJECTS** on The top navigation bar...

...or **BROWSE SUBJECTS** from the Center of the homepage
1. Click **TITLES (A-Z)** on the navigation bar

2. Either browse **ALL** titles in alphabetical order...

3. ...or click the alphabetical range within which the first letter of the title appears
1. On the homepage, scroll down to the **TOOLS & MEDIA** box in the center of the page

2. Click **VIDEOS** to be taken to a search results page showing a list of all videos on the site

The 🎥 icon on the search results page indicates that a search result is a video
1. On the homepage, scroll down to the **TOOLS & MEDIA** box in the center of the page.

2. Click **GRAPHS** to be taken to a search results page showing a list of all graphs on the site.

The ⬇️ icon on the search results page indicates that a search result is a graph.
Personal Accounts

Personal accounts allow you to save searches and receive search alerts, as well as organize, label, annotate, and highlight material of particular interest. Personal accounts are free for all users at the subscribing institution, and they take only a few seconds to create.
Create A Personal Account

Access Engineering

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Create A Personal Account

1. On the right-hand side of the homepage, click REGISTER

2. Complete the form that pops up, and then click SIGN UP
Log Into Your Personal Account

1. On the right-hand side of the homepage, enter the email and password you used when registering for a personal account, and click SUBMIT.

2. After logging in successfully, you will see your email address on the right-hand side of the page, and the upper-most box on the homepage will show your account activity.
Personalized Tools

Note: These features are only available to users who are signed into their personal account.
Starred Items

A starred item acts much like the “bookmark” or “favorite” function within most web browsers by storing links to pages of content for easy retrieval at a later time.

1. Navigate to any content page

2. Click on the 🌟 next to the name of the chapter

3. When the 🌟 becomes filled, the page gets stored in your list of starred items in your personal account

► A star can be removed by either re-clicking the star or deleting it from your page
Labels

Labels are used to sort and classify content.

1. From any content page, hover over **APPLY LABEL**

2. Either click the box next to the applicable label, or click **ADD LABEL** if there's no applicable label

3. To create a new label, type the name of the label, click **ADD**, and then click **RETURN TO PREVIOUS PAGE TO APPLY LABEL(S)**

   Continued on next slide...
4. When you’ve returned to the content page, hover over APPLY LABEL again.

5. Click the box next to the new label.

6. A dialog box will appear after you click the box to confirm the page has been saved to the applicable label.
1. Drag the blue crosshairs around the graph to the desired data point

2. Click DROP PIN below the graph to place a push pin on the desired data point and automatically save it to your personal account

3. You can annotate a pin by hovering over the pin and clicking ANNotate on the text box that appears

Pins are saved to **MY ACCOUNT** and can be deleted from your **MY ACCOUNT** page
1. Highlight a block of text of particular interest on any content page

2. Click the pencil icon

3. Type your note in the text box that appears, and click SAVE

4. Your annotated text is now highlighted, and your notes will appear when you hover over the text

Annotations are saved to MY ACCOUNT and can be downloaded into a .csv file
Curriculum Maps

Curriculum Maps are organized sets of resources that include textbook sections, tables, videos, and examples to help teach core concepts in engineering. These Maps make it easy for faculty to decide which resources to assign their students within core courses.
Search Curriculum Maps
Curriculum Maps

Map Name

Course: Heat Transfer

Authors
Don W. Green, Editor-in-Chief, Perry’s Chemical Engineers’ Handbook, 8th Edition, and Emeritus Distinguished Professor of Chemical and Petroleum Engineering, University of Kansas
Marylee Southard, Associate Professor, Chemical Engineering, University of Kansas

Course Topics
- Conductive Heat Transfer
- Convective Heat Transfer
- Heat Transfer with Phase Change
- Radiative Heat Transfer
- Heat Transfer Equipment Design

Subtopic
Conductive Heat Transfer

Relevant Materials Pertaining To The Subtopic

<table>
<thead>
<tr>
<th>Relevant Material</th>
<th>Type</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Transfer by Conduction</td>
<td>Text</td>
<td>Conduction heat-transfer basics</td>
<td>Perry’s Chemical Engineers’ Handbook</td>
</tr>
<tr>
<td>Nomenclature and Units</td>
<td>Table</td>
<td>Methods of estimation of thermal conductivity</td>
<td>Perry’s Chemical Engineers’ Handbook</td>
</tr>
<tr>
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<td>Text</td>
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<td>Perry’s Chemical Engineers’ Handbook</td>
</tr>
</tbody>
</table>
What is DataVis?

- DataVis is an interactive, web-based data visualization tool that transforms the way students learn about material properties.
- Users can instantly visualize property data in interactive dot-plots and scatterplots across a wide range of materials.
- DataVis includes a curated dataset of 200 materials and 65 properties.
Begin your DataVis project

Sample DataVis Projects

<table>
<thead>
<tr>
<th>Exploring Basic Material Properties</th>
<th>Properties for Aerospace Structures</th>
<th>Influence of Material Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>This project explores the fundamental material properties of Density, Specific Gravity, Elastic Modulus: Tension and Yield Strength. Designed by Kathleen Kitto, Western Washington University.</td>
<td>This case study looks at properties for Aerospace applications. Designed by Kathleen Kitto, Western Washington University.</td>
<td>This project investigates the influence of material properties in basic analysis and design for a first course in Strength of Materials. Designed by Luke Lee, University of the Pacific.</td>
</tr>
</tbody>
</table>
Compare properties across multiple materials

- Choose to construct a dot plot or scatter plot visualization to compare multiple properties
- Compare up to five visualizations in a slide
Find a property value for a single material

Find a property value for a material

Concrete: Steel Reinforced

Density

2400 kg/m³
Source: Matbase, matbase.com

Compare Density for all materials

### Tabular Data

<table>
<thead>
<tr>
<th>Select</th>
<th>Range</th>
<th>Star</th>
<th>Material</th>
<th>Classification</th>
<th>Density (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td>In</td>
<td>☆</td>
<td>Concrete: Steel Reinforced</td>
<td>Composite</td>
<td>2400</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td>☆</td>
<td>Acetal Copolymer</td>
<td>Polymer</td>
<td>1420</td>
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<tr>
<td></td>
<td>In</td>
<td>☆</td>
<td>Acrylonitrile Butadiene Styrene (ABS): Molded</td>
<td>Polymer</td>
<td>1060</td>
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<tr>
<td></td>
<td>In</td>
<td>☆</td>
<td>Alloy Cast Iron Overview</td>
<td>Metal</td>
<td>7190</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td>☆</td>
<td>Alumina (Al2O3): 96%</td>
<td>Ceramic</td>
<td>3800</td>
</tr>
</tbody>
</table>
Access customizable sample projects

Sample DataVis Projects

These active learning projects have been created by faculty to teach material properties using DataVis. You can use them as-is, or copy and customize them for your own courses.

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</tr>
<tr>
<td>Open Project</td>
<td>Open Project</td>
<td>Open Project</td>
</tr>
</tbody>
</table>

**Sum it Up**

Explore the Scatter Plot of Specific Stiffness - use Specific Gravity for the X Axis and the Elastic Modulus (E) for the Y Axis. Use the sliders to explore materials that have high values for Elastic Constant in Tension and Low Specific Gravity. What patterns do you notice? Note - you can always switch back and forth between log and linear views.

Next consider the dot plot of Fracture Toughness. Switch to log view. And a dot plot of Mass Production Relative Costs.

Given all properties considered in this project (and cost), select a material for an airplane fuselage, a wing, and a landing gear. You will have to use other pages in this project to answer this question.

For bonus points, use your own explorations of other materials to justify your answers.
Add related content to your projects

Density
The overall weight of any aerospace structure (airplanes, drones, satellites) determines how efficiently it will operate over its lifetime. The weight of its structure determines how much weight can be transported and for how long or far (distance). So thinking about weight brings us to thinking about density, although they are not the same. The weight of a part is a function of engineering design considerations and involves many more considerations than just density.

If you have not done so, review the Exploring Basic Mat Properties project to understand the materials science behind basic material properties.

Explore density values on the Density Table related content link (lower left). Explore densities of steels on the Matweb link. Google “density of steel” and then “steel density”. What do you notice? In the Density Tables, cork has a low density. Why would cork be a poor choice for the skin of a satellite or a blade of a jet turbine in an engine?

Composite materials are popular choices for many aerospace applications. Explore the link - Composite Materials in AccessEngineering. Describe at least three reasons why composites are often used in drones/quadcopters.

Review the link for Spacecraft Structures. What’s fundamentally different in designing a drone or airplane from designing a spacecraft?

Now, let’s explore the least dense materials. What’s the least dense material? How do you think and why? Add/related content. What patterns do you see in differences in density between elements C and H and other elements?

Select materials which have density data.

Add/Edit Related Content
Search AccessEngineering to identify related content

- Density Table - Various Materials
  https://accessengineeringlibrary.com/browse/marks-standard-handbook
- Matweb - Steels
Share your projects with your colleagues or students

Copy the text below to share your DataVis projects

Props for Aerospace Structures

Properties for Aerospace applications by Kathleen Kitto, Western Washington University

https://accessengineeringlibrary.com/datavis/material-properties/#/document/7d19969d-2a95-48b2-bc3e-d3bb3f471c10? page=1