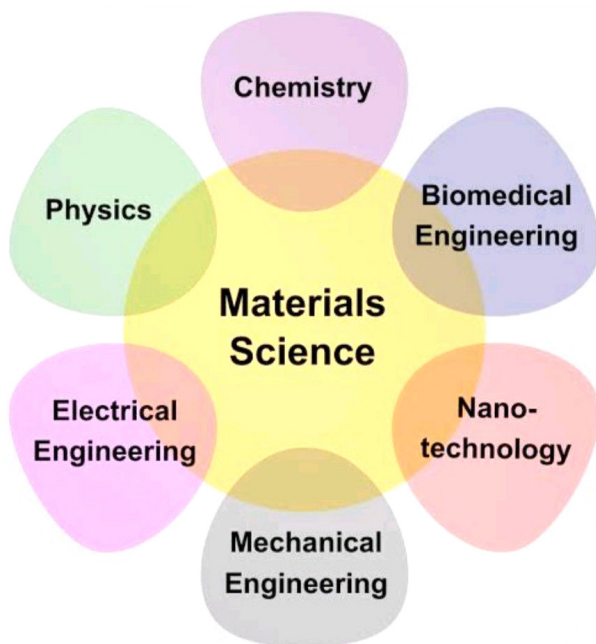


# What does a materials engineer do?

**Materials engineers** are frequently involved in research, manufacturing, and materials development activities for a wide range of industries, although they can also be found advising government bodies and regulatory agencies, teaching students, training researchers, and undertaking management duties like monitoring budgets, estimating costs, and supervising technicians.

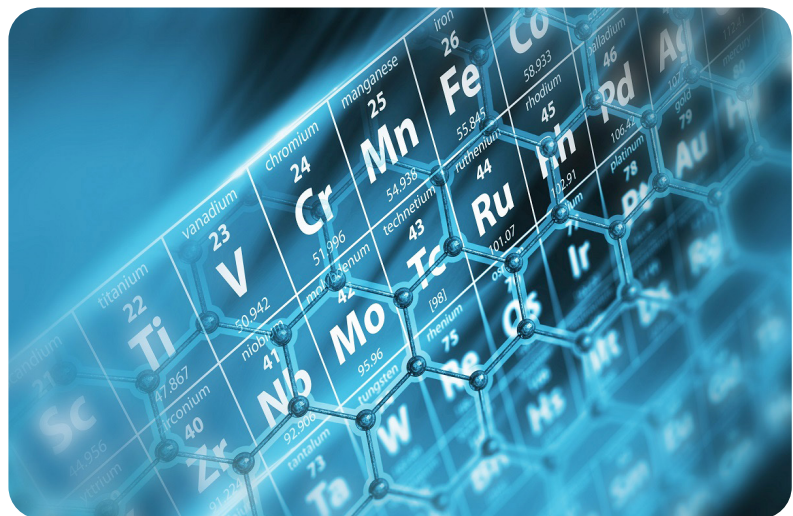


## Materials engineer's duties

The duties of a materials engineer will differ according to working environment and job requirements, but will typically involve the use of mathematic and scientific principles to investigate, understand, modify, and control how substances behave and interact with each other. This knowledge allows engineers to select materials for specific products and develop prototypes, as well as developing materials production and processing procedures. The typical duties of a materials engineer include:


The work of a materials engineer should consider the potential implications for waste or environmental pollution from any product or process, as well as making sure products comply with national and international standards.

- selecting materials for specific uses in relation to their mechanical, electrical, or other properties;
- developing and testing new materials in line with industry or product requirements, such as resistance to corrosion, heat, or chemicals;
- researching existing substances to deliver new materials with improved properties and qualities;
- using computer modelling software to analyse materials data;
- assessing material performance and reaction during use;
- improving materials processing and production techniques, including advising on any changes required to a plant for new processes or materials;
- monitoring plant conditions and supervising production quality control and other staff;
- identifying potential new applications for new and existing materials;
- assessing the potential environmental and health impacts of existing and new materials and products;



- investigating and solving the causes of material failures or manufacturing problems, including problems with the performance of a finished product;
- advising on inspection, maintenance, and repair procedures;
- cooperating and sharing knowledge with colleagues in areas such as purchasing, marketing, technical and scientific support, logistics, manufacturing, and management;
- knowledge sharing through publication of research findings in journals, publications, and online.



**1**  **GROUP WORK** Split up in groups, choose two questions each and go online to find the answers, then discuss your findings with the class.

1. What are the most important properties of materials that engineers must consider when designing products or structures?
2. What are some of the most common types of materials used in engineering applications?
3. What are some of the latest developments in materials science and engineering?
4. What are some of the challenges involved in recycling or disposing of materials?
5. What are some of the environmental concerns associated with certain materials?
6. What are some of the health and safety concerns associated with working with certain materials?
7. What are some of the economic considerations involved in materials selection and development?
8. What career opportunities are available for materials engineers?