**Synthetic Materials from Natural Resources**

**Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.**

**Begin research with: *Britannica, World Book Web, Gale Science in Context***

|  |  |
| --- | --- |
| **Synthetic Material** | **Starting Resources** |
| Rayon | * <https://www.teachengineering.org/view_activity.php?url=collection/wpi_/activities/wpi_focus_on_fabrics/focus_on_fabrics.xml>   + (Summary, Introduction/Motivation, Vocabulary, Procedure, Worksheet C) * <http://www.fibersource.com/f-tutor/rayon.htm> * <http://www.madehow.com/Volume-1/Rayon.html> * <http://www.nrdc.org/international/cleanbydesign/files/CBD-Fiber-Selection-FS.pdf> |
| Nylon | * <https://www.teachengineering.org/view_activity.php?url=collection/wpi_/activities/wpi_focus_on_fabrics/focus_on_fabrics.xml>   + (Summary, Introduction/Motivation, Vocabulary, Procedure, Worksheet C) * <http://www.fibersource.com/f-tutor/nylon.htm> * <http://www.wisegeek.org/how-is-nylon-made.htm#didyouknowout> * <http://www.nrdc.org/international/cleanbydesign/files/CBD-Fiber-Selection-FS.pdf> |
| Polyester | * <https://www.teachengineering.org/view_activity.php?url=collection/wpi_/activities/wpi_focus_on_fabrics/focus_on_fabrics.xml>   + (Summary, Introduction/Motivation, Vocabulary, Procedure, Worksheet C) * <http://www.fibersource.com/f-tutor/polyester.htm> * <http://www.madehow.com/Volume-2/Polyester.html> * <http://www.nrdc.org/international/cleanbydesign/files/CBD-Fiber-Selection-FS.pdf> |
| Biofuels: Ethanol & Biomass/Biodiesel | * Infinite Potential Book- page 78-79, 88-89 * <http://www.energy4me.org/energy-facts/energy-sources/biofuels/> * <http://www.nrel.gov/learning/re_biofuels.html> * <http://biofuel.org.uk/> |
| Industrial Glass/Gorilla Glass | * <http://www.corninggorillaglass.com> * <http://youtu.be/13B5K_lAabw> |
| Petroleum Products  (if your material comes from petroleum) | * Old CPO Textbook – 20.3 (page 370 - 2nd edition) * Infinite Potential Book- page 64-65 * <http://www.energy4me.org/energy-facts/energy-sources/petroleum/> * <http://www.classroom-energy.org/oil_natural_gas/progress_through_petroleum/index.html> * <http://www.scientificamerican.com/article/china-push-into-synthetic-natural-gas-has-pollution-consequences/> |
| Plastics | * Old CPO Textbook – 20.3 (page 339 – 2nd edition) * <http://www.epa.gov/osw/conserve/materials/plastics.htm> * <http://plastics.americanchemistry.com/Education-Resources/Plastics-101> * <http://www.slideshare.net/biotechvictor1950/plastic-impacts-on-the-natural-environment> |
| Penicillin | * <http://www.pbs.org/wgbh/aso/databank/entries/dm28pe.html> * <http://www.cellsalive.com/pen.htm> * <http://www.nlm.nih.gov/exhibition/fromdnatobeer/exhibition-interactive/illustrations/penicillin-alternative.html> |
| D3O | * <http://www.explainthatstuff.com/energy-absorbing-materials.html> * <http://www.d3o.com/materials/how-d3o-technology-works/> * <http://www.d3o.com/> * <http://science.howstuffworks.com/liquid-body-armor.htm> * <https://en.wikipedia.org/wiki/D3o> |

Fabrics:

Nylon

Rayon

Polyester

\*\*Natural Resource Comparisons – Cotton, Silk, Wool, Linen

Alternative Fuels:

Ethanol

Biomass

Biodiesel

\*\* Natural Resource Comparisons – Coal, Natural Gas, Crude Oil, Petroleum

Medicine:

Penicillin V

\*\* Natural Resource Comparisons – Penicillin G (Natural), Herbal Remedies

Food:

Genetically Modified Organisms / Synthetic Biology

\*\* Natural Resource Comparisons – Organic Foods

Other:

Plastics

\*\* Natural Resource Comparisons – Wood? Metal?

Industrial Glass/Gorilla Glass

\*\* Natural Resource Comparisons – Not as strong glass?