

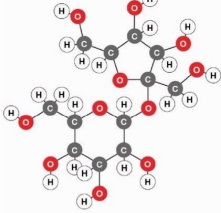

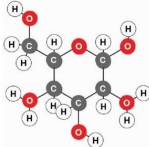


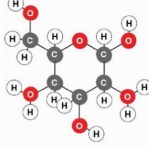
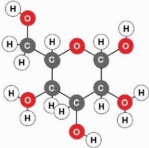
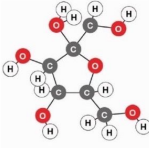




# Materials for Survival

Atom Key: H Hydrogen C Carbon O Oxygen Na Sodium Ca Calcium Si Silicon Fe Iron Al Aluminum

Process	Matter inputs	Matter outputs
<p><b>Photosynthesis</b></p> <p><i>Produces sugar within the chloroplasts of all plant and algae cells</i></p>	 $H_2O$ Water	 $CO_2$ Carbon dioxide
<p><b>Hydrolysis</b></p> <p><i>One of the reactions in our digestive system that breaks down larger food molecules to enable absorption into blood</i></p>	 $C_{12}H_{22}O_{11}$ Sucrose	 $H_2O$ Water
<p><b>Cellular respiration</b></p> <p><i>Within all the cells of our body</i></p>	 $C_6H_{12}O_6$ Glucose	 $H_2O$ Water
	 $O_2$ Oxygen	 $C_6H_{12}O_6$ Glucose
	 $C_6H_{12}O_6$ Glucose	 $C_6H_{12}O_6$ Fructose
	 $O_2$ Oxygen	 $CO_2$ Carbon dioxide

Atom Key: H Hydrogen C Carbon O Oxygen Na Sodium Ca Calcium Si Silicon Fe Iron Al Aluminum

Process	Matter inputs	Matter outputs
<p><b>Water electrolysis</b></p> <p><i>Produced with electric and a small amount of electrolyte</i></p>	<p>H<sub>2</sub>O Water</p>	<p>O<sub>2</sub> Oxygen</p> <p>H<sub>2</sub> Hydrogen</p>
<p><b>Glass production</b></p> <p><i>Produced in a glassworks furnace</i></p>	<p>SiO<sub>2</sub> Silicon dioxide</p> <p>Na<sub>2</sub>CO<sub>3</sub> Sodium carbonate</p> <p>CaCO<sub>3</sub> Calcium carbonate</p>	<p>SiO<sub>2</sub> Silicon dioxide</p> <p>Na<sub>2</sub>O Sodium oxide</p> <p>CaO Calcium oxide</p> <p>CO<sub>2</sub> Carbon dioxide</p>
<p><b>Cement (dry powder) formation</b></p> <p><i>When the matter outputs are mixed with water it will harden to form concrete within 24-48 hours.</i></p>	<p>SiO<sub>2</sub> Silicon dioxide</p> <p>CaO Calcium oxide</p> <p>Al<sub>2</sub>O<sub>3</sub> Aluminum oxide</p>	<p>Ca<sub>3</sub>O<sub>5</sub>Si Tricalcium silicate</p> <p>Ca<sub>2</sub>O<sub>4</sub>Si Calcium Silicate</p> <p>Ca<sub>3</sub>Al<sub>2</sub>O<sub>6</sub> Tricalcium aluminate</p>
<p><b>PET plastic production</b></p> <p><i>Produced in a polycondensation processing plant</i></p>	<p>C<sub>8</sub>H<sub>6</sub>O<sub>4</sub> Terephthalic acid</p> <p>C<sub>2</sub>H<sub>6</sub>O<sub>2</sub> Ethylene glycol</p>	<p>(C<sub>10</sub>H<sub>8</sub>O<sub>4</sub>)<sub>n</sub> Polyethylene terephthalate</p> <p><small>n = multiple repeating units in a chain</small></p> <p>H<sub>2</sub>O Water</p>
<p><b>Iron production for making steel*</b></p> <p><i>Produced in an electric arc furnace</i></p>	<p>Fe<sub>2</sub>O<sub>3</sub> Iron Oxide</p> <p>H<sub>2</sub> Hydrogen</p>	<p>Fe Iron</p> <p>H<sub>2</sub>O Water</p>

\* Steel is a mixture of two or more elements. The iron atoms (Fe) shown in the matter outputs make up 96% or more of the atoms in steel. Carbon atoms (C) make up 0.5% to 2% of it. These additional atoms can be introduced from a variety of matter inputs when iron is melted to make steel.