

Your Home – Rooms Full of Chemistry

from **Celebrating Chemistry**



Your home is all built on chemistry. Think of the materials used to construct it—from rocks and minerals composed of chemicals to compounds developed in the laboratory by chemists. Several materials have been highlighted below from all the possibilities in these household rooms. Read on, and then try exploring on your own—elsewhere in the illustrations, or around your own home!

Garage

BRICKS

Bricks are made from drying or baking water and clay in an oven, or in the sun. Because they are strong and durable, they are used in places exposed to high temperatures, like a fireplace, or in rough conditions, like the outside of a home.

PAINT

All paints have two things in common: a pigment, like colored powder, and a binder, which holds the mix together and allows the paint to coat a surface smoothly. Other chemicals can turn paint into a water-repelling sealant or make it longer-lasting.

CONCRETE

Concrete is a mixture of cement, sand, and gravel or crushed stone. When water is added to the mix, a chemical reaction called hydration occurs. Builders pour the paste-like mixture into molds and as time passes it becomes rock-hard. A home's foundation, walkway, and front porch are a few examples of where concrete can be found.



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PIPES

The pipes that carry water throughout most homes are made of a reddish-colored element called copper. Copper is a good choice because it is strong but flexible. It keeps hot water hot and cold water cold all the way through the house. Today, nearly all builders have switched to polyvinyl chloride, or PVC, because it is much less expensive, and just as effective.

PORCELAIN

Porcelain is a hard substance made by heating materials, often including a kind of clay called kaolinite, at very high temperatures. It is also used for ceramic tiles, toilets, and countertops in the bathroom because of its strength, durability, and its resistance to high temperatures.

Bathroom



FIBERGLASS

Fiberglass is made of extremely fine fibers of glass. The fibers are melted and held together with a chemical that allows them to be shaped into a form that can be used for many home products. Some shower stalls have walls and doors that are made of fiberglass. Certain types of home insulations are made of fiberglass, too.

GROUT AND CAULK

Grout and caulk are thick liquids usually made up of a polymer, water, cement, sand, and sometimes a pigment for color. When grout hardens or dries, it makes a very hard seal. Grout and caulk are most often used in the bathroom and kitchen. Grout is found between tiles on the floor and caulk is found around sinks and tubs. This is because it does a good job of keeping water from seeping into walls, where the water can rot wood and mold can grow.



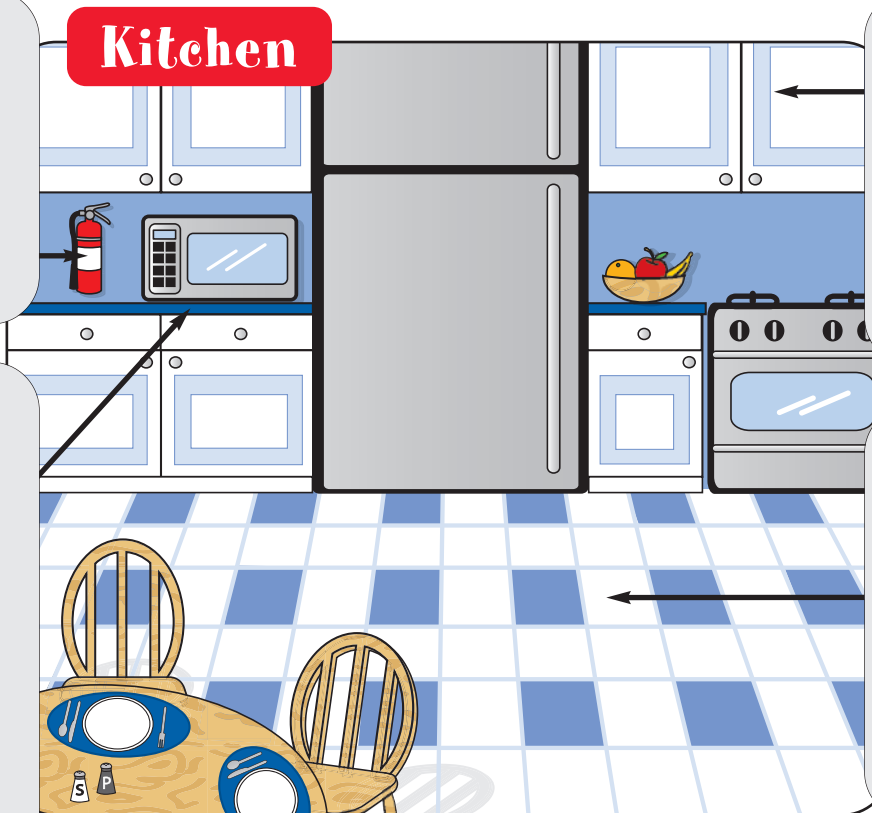
FIRE EXTINGUISHER

There are different types of fire extinguishers, but the “dry chemical” type is the kind that is found in most homes. Dry chemical fire extinguishers contain chemicals like sodium bicarbonate and potassium bicarbonate. Fire extinguishers are a very important part of a kitchen.

COUNTERTOPS

The most common materials used for countertops include engineered stone, natural stone, and laminate. Engineered stone is made of mixed colored pebbles, polymers, and a chemical called epoxy, which holds it all together. Granite is a natural stone found deep in the Earth’s surface. Laminate has three layers (kraft paper, decorative paper layer, and a clear surface layer) fused together under high pressure and temperature. They all provide work space in the kitchen.

Kitchen



CABINETS

Most cabinets today are made of either solid wood or a type of human-made wood product. Wood is a natural polymer called cellulose. The human-made wood products consist of broken-down wood mixed with wax and another natural material called resin. These products can be as strong as wood in many cases, but are less expensive.

FLOORING

One type of kitchen flooring is linoleum. Linoleum is made from combining linseed oil (which comes from flax seeds) with wood flour, cork dust, tree resins, ground limestone, and coloring. It is used because it is water-resistant and easy to clean, which makes it a good cover for the kitchen floor. PVC flooring is commonly being used in place of linoleum.



Bedroom

WINDOWS

Newer homes usually have windows with two layers, or panes, of glass. The space in between the panes is sometimes filled with a gas or gases such as argon or krypton. These gases are nontoxic, odorless, and slow moving, which makes it even harder for heat to move through windows. This helps keep a house warm in the winter and cool in the summer.

LIGHT BULBS

There are different types of metals found in light bulbs to help the flow of electricity. There is a thin metal wire called a filament. It is usually made of a chemical element called tungsten. Tungsten will glow when excited with electricity, and does not melt like many other metals do. The bulb, which covers the filament, is often filled with a non-toxic gas like argon to keep the tungsten from burning away.



DRYWALL

Drywall is the most common material used to form the surfaces of walls and ceilings. It is made from a mineral compound called gypsum rock. The chemical name of gypsum is calcium sulfate dihydrate. The rock is ground into powder, then compressed and sandwiched between two sheets of heavy paper. It is easier to put up compared to applying layers of plaster paste, the previous method of covering wall surfaces.

CARPET

Most carpets found in homes are made from synthetic polymers like nylon, olefin, polyester, and acrylic. They are more durable—and thus resistant to wear and tear—and are easier to clean versus carpet made from natural materials, such as wool or cotton.

