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| **Keyword** | **Definition** |
| **Material** | The polymers, metals, glasses and ceramics that we use to make all sorts of objects and structures. |
| **Properties** | Physical or chemical characteristics of a chemical. The properties of a chemical are what make it different from other chemicals. |
| **Polymer** | A material made of very long molecules formed by joining lots of small molecules called monomers together. |
| **Natural** | A material that occurs naturally but may need processing to make it useful such as silk, cotton, leather and asbestos. |
| **Synthetic** | A material made by a chemical process, not naturally occurring. |
| **Ceramic** | Solid materials such as pottery, glass, cement and brick. |
| **Metal** | Elements on the left side of the periodic table. Metals have characteristic properties: they are shiny when polished and they conduct electricity. Some metals react with acids to give salts and hydrogen. Metals are present as **positive** ions in salts. |
| **Mixture** | Two or more different chemicals mixed but not chemically joined together. |
| **Flexible** | A flexible material bends easily without breaking. |
| **Rubber** | A material that is easily stretched or bent. Natural rubber is a polymer obtained from latex, the sap of the rubber tree. |
| **Strong** | A material that is hard to pull apart or stretch |
| **Tension** | A material is in tension when forces are trying to stretch or pull it apart |
| **Compression** | A material is in compression when forces are trying to push it together and make it smaller |
| **Stiff** | A material that is difficult to bend or stretch |
| **Hard** | A material that is difficult to dent or scratch |
| **Density** | A dense material is heavy for its size. Density is mass divided by volume. |
| **Accuracy** | How close a quantitative result is to the true or ‘actual’ value. |
| **Repeatable** | A quality of a measurement that gives the same result when repeated under the same conditions. |
| **Reproducible** | A quality of a measurement that gives the same result when carried out under different conditions, for example, by different people or using different methods or equipment |
| **Fibres** | Long, thin, threads that make up materials such as wool and polyester. Most fibres used for textiles consist of natural or synthetic polymers. |
| **Macroscopic** | Large enough to be seen without the help of a microscope |
| **Nanometre (nm)** | A unit of length 100 million times smaller than a metre. Or a million times smaller than a centimetre. |
| **Long chain molecules** | Polymers are long chain molecules. They consist of long chains of atoms. |
| **Monomer** | A small molecule that can be joined to others like it in long chains to make a polymer. |
| **Polymerise** | The joining together of lots of small molecules called monomers to form a long-chain molecule called a polymer. |
| **Vulcanisation** | A process for hardening natural rubber by making cross-links between the polymer molecules |
| **Cross-links** | Links or bonds joining polymer chains together |
| **Durable** | A material is durable if it lasts a long time in use. It does not wear out (like tyres) |
| **Plasticiser** | A chemical, usually a small molecule, added to a polymer to make it more flexible |
| **Branched chains** | Chains of carbon atoms with short side branches |
| **Crystalline polymers** | A polymer with molecules lined up in a regular way as in a crystal |
| **Melting point** | The temperature at which something melts |
| **Crude oil** | A dark, oily liquid found in the earth, which is a mixture of hydrocarbons |
| **Hydrocarbon** | A compound of hydrogen and carbon only |
| **Fraction** | A mixture of hydrocarbons with similar boiling points that have been separated from crude oil by fractional distillation. Each fraction contains a mixture of hydrocarbons of different chain lengths. |
| **Fractional distillation** | The process of separating crude oil into groups of molecules with similar boiling points called fractions |
| **Chemical synthesis** | Making a new chemical by joining together simpler chemicals |
| **Nanotechnology** | The use and control of matter on a tiny scale |
| **Nanoparticles** | A very tiny particle, who’s size can be measured in nanometres |
| **Surface area** | How much exposed surface a solid object has |