

Properties of Matter

1. Complete the following text.

Clue: **Below** boiling **except** fluids highly liquid solid state

Note the preposition **below** and the connector **except**.

Changes of state / form

0°C - **melting point** of ice. 100°C - _____ **point** of water.

Ice is _____, water is _____, steam is gaseous. Steam and water are _____.

Steam, water, ice, oxygen, neon: all these are fluids _____ ice. Sometimes the properties of a substance change when it changes its _____. For example, if the temperature of oxygen falls _____ -183°C, it changes from a colorless gas to a bluish liquid, which is _____ magnetic.

2. Complete the following text.

Clue: dissolve element form gas hard properties salt salty substance

Which are the verbs?

Is there a connector?

A substance may be an **element**, a **compound** or a **mixture**.

An element, such as copper or iron cannot be broken down into simpler substances. When elements combine to form compounds, there is a chemical reaction. Some _____ of the elements change during the reaction. For example, the _____ chlorine (Cl) is a poisonous yellow _____. Sodium, on the other _____, is a soft silvery-white metal which reacts violently with water. However, if these elements combine, they _____ sodium chloride, or _____. This is a harmless white _____. A mixture of a sand and salt is yellowish-white and it tastes both _____ and gritty. If we put the mixture in water, the salt will **dissolve**, because it is **soluble**, but the sand will not _____, because it is **insoluble**.

3. Answer these questions:

1. What is the boiling point of oxygen?
2. Are sodium and chlorine harmless?
3. What is the difference between a compound and a mixture?

4. Choose the right word in a sentence:

- a) A conductive / conductivity material can be used to conduct electricity.
- b) If a material is easy to stretch under stress, we call it elastic / elasticity.
- c) If you want to improve durable / durability of a machine, clean it regularly.
- d) Hard / hardness is an important property of steel.
- e) Concrete is used for building because of its strong / strength.

5. Word formation: Form the nouns.

Soft _____, deep - _____, long - _____, wide - _____, dissolve - _____.

6. Discuss these questions in pairs:

1. What is your favourite material for clothing? Do you prefer natural or synthetic materials? Why? What material are you wearing right now?
2. Do you know some modern hi-tech materials? (e.g. Gore-tex)? Which ones? Where are they used? What are their **advantages** over traditional materials?
3. Give examples of things which were originally **made of** natural materials and now are made of plastics. Why are plastics now used? Are there any **disadvantages**?

7. Form nouns of some properties of materials. Note the stressed syllables in **bold type**.

	Adjective	Noun	Verb
pružnost	elastic (stress on the 2nd)	elasticity (stress on the 3rd)	
křehkost (nepružnost)	brittle (rocks, bones, glass)	brittle....	
křehkost (ztráta síly) lack of solidity/strenth	fragile [frædʒaɪl] (bones, glass)	frag..... [frə'dʒɪlɪti]	
síla	strong	str.....	
tuhost (neohebnost)	rigid	rigid...	
tažnost, kujnost	malleable [mæliəbl], ductile	malleability [ˈbɪlɪti]	
plastičnost, tvárnost	ductile	ductil.....	
vodivost	conductive	conductiv...	
žáruvzdornost	heat-resistant	heat-resistan..	
zápalnost, hořlavost	combustible	combustib.....	combust
vznětlivost	(in)flammable, zápor=non-!	(in)flammab.....	inflamm [eɪ]
zápalnost	ignitable [ɪg'naitəbl], igneous rocks (vyvřelé)	ignitability [ɪg'naitə'bɪlɪti] ignition (zážeh)	ignite [ɪg'nait]
jedovatost, toxicita	toxic	toxic...	
reaktivita	reactive	reactiv...	react
netečnost	inert	inert....	
lehkost	light	light...	
těžkost	heavy	heav.....	
savost, absorpčnost	absorbent	absorben..	
viskozita, lepkavost	viscous	viscos...	
hustota	dense	dens...	
trvanlivost, odolnost	durable	durab.....	
odolnost proti korozi	corrosion resistant	corrosion resistan..	

8. Complete the following text.

Clue: brittle opaque[əu'peɪk] passes rough[raʃ] soft
transparent translucent flexible hard while

Which are the verbs? Is there a connector?

Properties of matter

A breakable material is _____ or fragile; but if it does not break easily, it is **tough**[taʃ] .

A _____ material is difficult to scratch, whereas a _____ material is easy to scratch.

A _____ material bends easily, e.g. rubber, _____ a **rigid** material does not bend easily.

Some materials produce little friction when they are rubbed - they have **smooth** surface.

Other materials have a _____ surface and produce a lot of friction; e.g. sandpaper.

You can see through _____ materials such as water. You cannot see through _____ materials, such as dirty water, but light _____ through them.

You cannot see through _____ glass or other materials and the light cannot pass through them.

Combustible materials burn easily. If gasses burn easily, they are **(in)flammable**[ɪn'flæməbl].

Some people also have an inflammable temper. Phosphorus is self-**ignitable** in the light.

HOMEWORK : Science and Technology: Fill in the gap with the correct word.

Science and Technology

Fill in the gap with the correct word.

1. are being carried out to find a cure for cancer.
Experiences Experiments Trials Research
2. Microscopesvery small objects many times to make them visible.
magnify enlarge expand increase
3. Radio signals are now oftenby satellite.
received delivered transmitted dispersed
4. Computers are able to vast amounts of data very quickly.
process digest convert adapt
5. Solar power stations are able to the energy of the sun.
harm maximise drive harness
6. Other energy sources include wind and wave power.
renewable recyclable returnable reusable
7. In some types of power station steam is used toturbines.
force turn drive rotate
8. Mercury is aat room temperature
fluid liquid solid gas
9. Hydrogen and oxygen are the two that make up water.
compounds atoms molecules elements
10. Allis composed of atoms.
stuff material substance matter
11. The of lead is greater than that of aluminium.
rigidity weight density volume
12. When water is heated itmore quickly.
evaporates condenses melts solidifies
13. The of iron and oxygen produces rust.
reaction separation decomposition composition
14. Chemists study the composition of natural
substances machines mixtures alloys
15. The of water is 100°C.
melting point boiling point point of condensation freezing point

J.Harbord: *Topic-based Vocabulary*.