Water

G i f u i va x 133 – group Turg`unboyev I.I.



Water is a transparent, tasteless, odorless, and nearly colorless chemical substance, which is the main constituent of Earth's hydrosphere, and the fluids of most living <u>organisms</u>. It is vital for all known forms of <u>life</u>, even though it provides no <u>calories</u> or <u>organic</u> <u>nutrients</u>. Its <u>chemical formula</u> is H₂O, meaning that each of its molecules contains one oxygen and two hydrogen atoms, connected by covalent bonds. Water is the name of the liquid state of H₂O at standard ambient temperature and pressure. It forms precipitation in the form of rain and aerosols in the form of fog. <u>Clouds</u> are formed from suspended droplets of water and <u>ice</u>, its solid state. When finely divided, crystalline <u>ice</u> may precipitate in the form of <u>snow</u>. The gaseous state of water is steam or water vapor. Water moves continually through the water cycle of evaporation, transpiration (evapotranspiration), condensation, precipitation, and <u>runoff</u>, usually reaching the sea.



Water covers 71% of the Earth's surface, mostly in seas and oceans. Small portions of water occur as groundwater (1.7%), in the glaciers and the ice caps of Antarctica and Greenland (1.7%), and in the air as vapor, clouds (formed of ice and liquid water suspended in air), and precipitation (0.001%).







Water plays an important role in the <u>world economy</u>. Approximately 70% of the freshwater used by humans goes to agriculture. Fishing in salt and fresh water bodies is a major source of food for many parts of the world. Much of long-distance trade of <u>commodities</u> (such as oil and natural gas) and manufactured products is transported by **boats** through seas, rivers, lakes, canals. Large quantities of water, ice, and steam are used and for <u>cooling</u> and <u>heating</u>, in <u>industry</u> and <u>homes</u>. Water is an excellent <u>solvent</u> for a wide variety of substances both mineral and organic; as such it is widely used in industrial processes, and in cooking and <u>washing</u>. Water, ice and snow are also central to many <u>sports</u> and other forms of <u>entertainment</u>, such as swimming, pleasure boating, boat racing, surfing, sport fishing, diving, ice <u>skating</u> and <u>skiing</u>.

Taste and odor



Pure water is usually described as tasteless and odorless, although humans have specific sensors that can feel the presence of water in their mouths, and frogs are known to be able to smell it. However, water from ordinary sources (including bottled mineral water) usually has many dissolved substances, that may give it varying tastes and odors. <u>Humans</u> and other animals have developed senses that enable them to evaluate the <u>potability</u> of water by avoiding water that is too salty or <u>putrid</u>.

Color and appearance

The apparent color of natural bodies of water (and swimming pools) is often determined more by dissolved and suspended solids, or by reflection of the sky, than by water itself.

Light in the visible <u>electromagnetic spectrum</u> can traverse a couple meters of pure water (or ice) without significant <u>absorption</u>, so that it looks <u>transparent</u> and colorless. Thus <u>aquatic plants</u>, <u>algae</u>, and other <u>photosynthetic</u> organisms can live in water up to hundreds of meters deep, because <u>sunlight</u> can reach them. Water vapour is essentially invisible as a gas.



Through a thickness of 10 meters (33 ft) or more, however, the intrinsic <u>color of water</u> (or ice) is visibly turquoise (greenish-blue). Its <u>absorption</u> <u>spectrum</u> has a sharp minimum at a violet-blue color of light ($1/227 \text{ m}^{-1}$ at 418 nm). The lower, but still significant, absorption of longer wavelengths makes the perceived colour to be nearer to a turquoise shade. The color becomes increasingly stronger and darker with increasing thickness. (Practically no sunlight reaches the parts of the oceans below 1,000 meters (3,300 ft) of depth.) Infrared and ultraviolet light, on the other hand, is strongly <u>absorbed</u> by water.

The <u>refraction index</u> of liquid water (1.333 at 20 °C (68 °F)) is much higher than that of air (1.0), similar to those of <u>alkanes</u> and <u>ethanol</u>, but lower than those of <u>glycerol</u> (1.473), <u>benzene</u> (1.501), <u>carbon disulfide</u> (1.627), and common types of glass (1.4 to 1.6). The refraction index of ice (1.31) is lower than that of liquid water.







Thank you for attention.