Molecule model names and functions

Small molecules made with only C, O, H and N are varied in structure and function.
This lists only a sample, and those where all the holes in the atoms are filled.

Chemical formula	Molecule name State at room temp	Function
H_2	hydrogen (gas)	• most abundant chemical in the universe • reactive and highly flammable • important for acid/base reactions as an H atom
O_2	oxygen (gas)	• 20% of atmosphere • most abundant element in earth's crust • made by plants • we and other living things need it to survive • very reactive
N_2	nitrogen (gas)	• most abundant gas in atmosphere • very stable (with three bonds) • in proteins of living things • bacteria fix nitrogen from the air into food chain
CO_2	carbon dioxide (gas)	• we make it as we use energy, and exhale it • made organic things burn in oxygen, releasing energy • used by plants to make sugars (food) • dissolved in drinks to make sodas • used to make cakes and bread rise • traps heat in the atmosphere - a greenhouse gas
H_2O	water (liquid)	• liquid at room temperature - unusual for its size - as weaker bonds form between water molecules • abundant on earth in all three states of matter • essential for life • ice is less dense than water - also unusual, from weak bonds holding molecules apart - enabling aquatic life to survive under a layer of ice • many things dissolve in it, so can transport nutrients in the body and minerals around earth
NH_3	ammonia (gas)	• has a distinctive smell • used as a cleaner • important in the chemical industry for making fertilizers, plastics and pharmaceuticals
H_2O_2	hydrogen peroxide (liquid)	• powerful oxidizing agent - reacts with organic compounds • used as a bleach (non chlorine)
CH_4	methane (gas)	• fossil fuel • flammable gas used in cooking and heating • burns with a blue flame in oxygen, or yellow flame with less oxygen • adding CH2 groups to make a longer chain makes other gases used as fuels (ethane, propane and butane) then liquid gasoline

CH_3OH	methanol (liquid)	• flammable • a poison as the body breaks it down into toxins (formic acid and formaldehyde)
CH_3CH_2OH	ethanol (liquid), also called alcohol	• an alcohol, like methanol, and longer molecules with additional CH2 groups added to the chain • flammable • in wine, beer and other alchololic drinks and interacts with nerve cells in the brain • naturally made in our bodies by gut bacteria
CH_2O	formaldehyde (gas)	• sterilizes and preserves organic things by linking protein chains together • in wood smoke and used for the preservation of smoked foods
CH_3COH	acetaldehyde (liquid)	• in the smell of ripe fruit • made in our body from ethanol
$HCOOH$	formic acid	• in the venom of stinging ants and caterpillars • damages proteins in the body
CH_3COOH	acetic acid	• main component of vinegar, and responsible for its smell • made by bacteria, some of which are used in making sourdough bread
CH_2CH_2	ethylene (ethene)	• made by plants and causes fruit ripening • strings of it form polyethylene plastic
NH_2CH_2COOH	glycine	• one of the amino acids, which string together to make proteins in living things
$C_6H_{12}O_6$	glucose	• a sugar • used as a fuel in living things • larger carbohydrates (sugars and starches) are broken down into glucose for energy