



SUBSTANCES & PARTICLES 1

It is very important that the A level chemist knows whether a substance has a molecular, ionic, giant covalent, metallic or monatomic structure, and whether the individual particles themselves are atoms, ions or molecules.

Structure type	Particles	Which substances
Monatomic	atoms	Group 0 elements
Simple molecular	molecules	Most non-metal elements (except Group 0), most compounds made from non-metals combined
Giant covalent	atoms	Diamond, graphite, silicon, silicon dioxide
Ionic	ions	Most compounds made from metals and non-metals combined
Metallic	ions & delocalised electrons	Metals

For each of the following substances, identify the structure type of the particles it contains.

Substance	Formula	Structure type					Particles
		Monatomic	Simple molecular	Giant covalent	Ionic	Metallic	
sulfur	S ₈						
magnesium	Mg						
hydrogen sulphide	H ₂ S						
neon	Ne						
ammonia	NH ₃						
ammonium chloride	NH ₄ Cl						
calcium bromide	CaBr ₂						
silicon dioxide	SiO ₂						
silver nitrate	AgNO ₃						
sodium hydroxide	NaOH						
magnesium oxide	MgO						
nitrogen dioxide	NO ₂						
xenon	Xe						
bromine	Br ₂						
copper carbonate	CuCO ₃						
aluminium	Al						
ethane	C ₂ H ₆						
glucose	C ₆ H ₁₂ O ₆						
sodium sulphide	Na ₂ S						
methylamine	CH ₃ NH ₂						