molymod®

Art.Nr. MMS-001

Introductory Organic Molecular Model Set

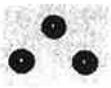
Made in England and distributed by Spiring Enterprises Ltd.,
Billingshurst, West Sussex, England RH14 9EZ

Contents *48 Atom-parts & 62 links*

Quantity	Colour	Element	No Holes	Type	Art Nr
20	White	Hydrogen	1-hole	s	MA-110
12	Black	Carbon	4-holes	sp^3 tetrahedral 109.5°	MA-400
7	Red	Oxygen	2-holes	sp^3 angular 105°	MA-200
6	Green	Halogen	1-hole	s	MA-111
2	Blue	Nitrogen	3-holes	sp^3 pyramidal 107°	MA-300
1	Yellow	Sulphur	2-holes	sp^3 angular 105°	MA-201
Links				Total length	
26	Grey	Medium (standard)		32 mm	ML-12
10	Grey	Long flexible		44 mm	ML-13
26	White	Short white		12 mm	ML-10
1	Cream	Link remover tool			SLRT1

Some Elementary Chemistry for Beginners

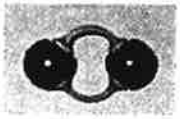
An **ATOM** is the smallest particle of an element ***Photo*** Models of three separate atoms
Real atoms are very small and cannot be seen under a microscope.
One hundred million atoms, side by side would measure only 2.5 cm



An **ELEMENT** is a substance in which all the atoms are the same.
There are 92 different elements on this planet of which oxygen, hydrogen and carbon are important ones.

An **Atomic Symbol** is a letter or letters which represent one atom. e.g C for one atom of carbon,

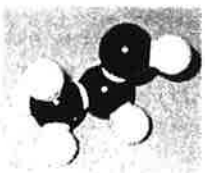
The **Valency** of an element is the number of bonds from one atom of it. e.g Carbon valency 4



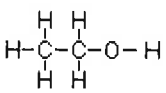
A **Molecule** is a group of two or more atoms joined together to make one particle.
Photo: One molecule of hydrogen containing two hydrogen atoms.
Photo: One molecule of oxygen containing two flexible links to make a double bond.
Most substances exist as molecules.

A **Compound** is a substance which consists of the atoms of two or more different elements joined together ***Photo*** Methane consisting of four hydrogen and one carbon.
Thousands of different compounds can be obtained from just a few different elements by joining them In different ways, numbers and types.

Molecular Formula. This shows the exact number C_2H_6O of atoms of each element joined in one molecule. ***Photo*** One molecule of ethyl alcohol containing 2 carbon , 6 hydrogen and 1 oxygen atoms



Structural formula. This is plan view of the arrangement of atoms in a molecule. Symbols and lines are used to represent the atoms and links. The relative position Of each atom to its neighbour can be seen. e.g ethyl alcohol

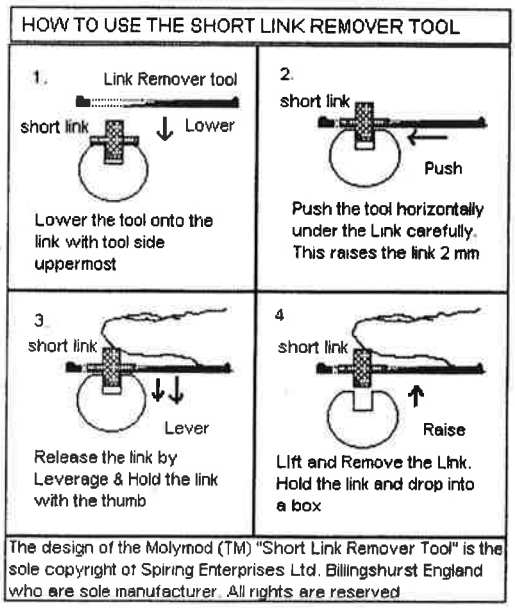


Molymod ® structures. Plastic balls represent atoms and the connectors represent Valency bonds. The medium link is used for single bonds as in hydrogen molecule. The longer flexible link is used for double or triple bonds.

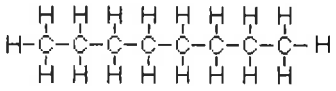
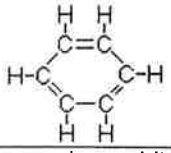
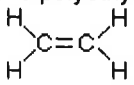
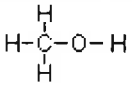
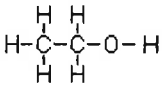
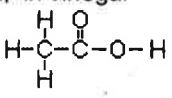
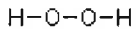
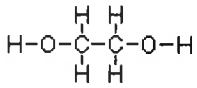
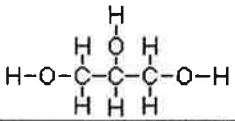
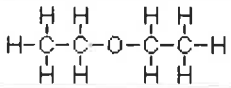
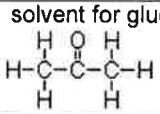
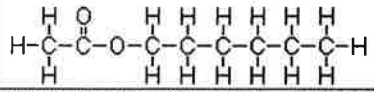
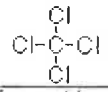
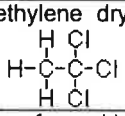
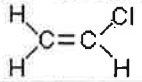
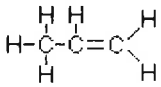
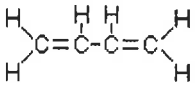
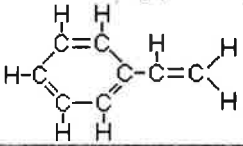
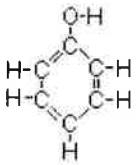
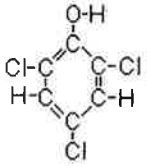
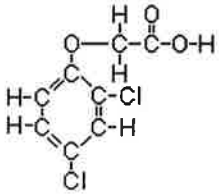
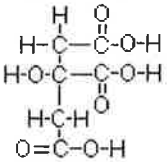
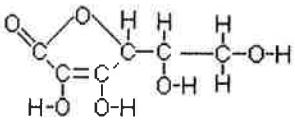
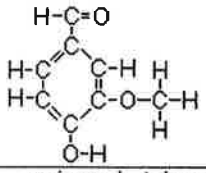
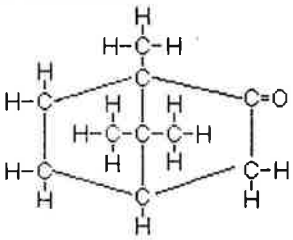
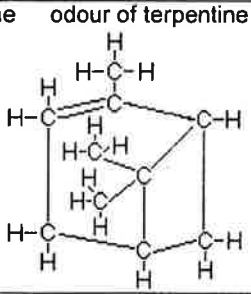
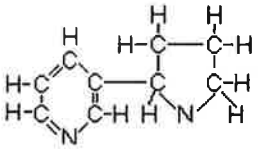
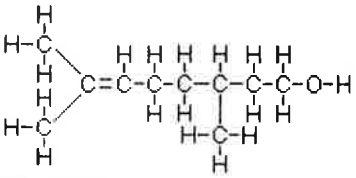
Compact models can be made using the very short white links, but it is not possible to make double or triple bonds just using the short link.

The Short Link Remover Tool should be used for extracting the short Link from an atom-part. Please read and examine the instructions Before using the short link tool.

Note: Although It is usual in elementary model making for each bond to be satisfied by connecting to an atom-part, at an advanced level of model making there are structures where an unsatisfied bond can have a special significance by representing a lone pair of electrons.



molymod® Molecular Models **A Selection of Molecular Models for You to Make**

Methane In Natural Gas a fuel CH_4	Ethane In natural gas a fuel C_2H_6	Propane In natural gas a fuel C_3H_8
Octane C_8H_{18} 	Benzene C_6H_6 	Ethylene C_2H_4 used to make polyethylene plastic 
Methanol In methylated spirit 	Ethyl alcohol in beer, wine, spirit, liquers 	Acetic acid, in vinegar 
Hydrogen peroxide bleaching agent 	Ethylene glycol car antifreeze 	Glycerol , cosmetics, making nitroglycerine 
Ether an anaesthetetic & solvent 	Acetone solvent for glue & varnish 	Amyl acetate pear drops nail varnish 
Carbon tetrachloride stain remover 	Trichloroethylene dry-cleaning fluid 	Vinyl chloride for making P.V.C. plastic 
Propylene for making plastic 	Butadiene for making artificial rubber 	Styrene for making plastic polystyrene 
Phenol for making antiseptics & disinfectants 	Trichlorophenol (T.C.P.) antiseptic 	2-4-D Selective weedkiller 
Citric acid sour taste in lemons 	Vitamin C in fruits 	Vanillin flavour of vanilla ice-cream 
Camphor in medicines 	Pinene odour of terpentine 	Nicotine poison in tobacco 
Citronellol odour in roses 	Aspirin (acetyl salicylic acid)