

# Molymod® MMS-009.v2

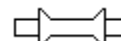
## Student Set for INORGANIC and ORGANIC Chemistry

### CONTENTS: 52 atoms

Qty.	Element	Colour	Holes	Angles & type	Dia. mm	Art. Nr.
6	Carbon (C)	Black	4	109 tetra	23	MA-400
14	Hydrogen (H)	White	1		17	MA-110
1	Boron (B)	Beige	3	120 trigonal planar	23	MA-316
1	Nitrogen (N)	Blue	3	107 pyramidal	23	MA-300
2	Nitrogen (N)	Blue	4	109 tetra	23	MA-401
6	Oxygen (O)	Red	2	105 angular	23	MA-200
1	Oxygen (O)	Red	4	109 tetra	23	MA-402
1	Sulphur (S)	Yellow	2	105 angular	23	MA-201
1	Sulphur (S)	Yellow	6	90 octahedral	23	MA-613
1	Phosphorus (P)	Purple	5	90 120 tribipyr.	23	MA-510
1	Phosphorus (P)	Purple	3	107 pyramidal	23	MA-301
6	Halogen (Cl,F)	Green	1		17	MA-111
2	Metal (Na)	Grey	1		20	MA-102
2	Metal (Ca,Mg)	Grey	2	105 angular	23	MA-202
1	Metal (Be)	Grey	2	180 linear	23	MA-213
1	Metal (Al)	Grey	3	120 trigonal planar	23	MA-317
1	Metal (Si, Cu)	Grey	4	109 tetra	23	MA-404
1	Metal	Grey	6	90 octahedral	23	MA-610
1	** sp <sup>3</sup>	Beige	4	109 tetra	23	MA-408
1	** dsp <sup>3</sup>	Beige	5	90 120 trigonal bipyramid	23	MA-515
1	** d <sup>2</sup> sp <sup>3</sup>	Beige	6	90 octahedral	23	MA-615
3	Lone pair electron cloud			Flat pear-shaped		
Qty.	Links		Total Length			
20	Medium	Grey	31 mm			ML-12
12	Long flex.	Grey	46 mm			ML-13
5	Medium	Purple	31 mm			ML-11
1	Box	Grey	235 x 170 x 35 mm			MB-30
1	Instruction Leaflet					

\*\* Atom-parts The 3 elements shown \*\* represent any element having the structures:  
sp<sup>3</sup>, tetrahedral, dsp<sup>3</sup> trigonal bipyramid, d<sup>2</sup>sp<sup>3</sup> octagonal

Medium grey links are used for single covalent bonds as in water H-O-H



Long grey links are flexible and are used for double (as in oxygen) or triple bonds

Purple medium links are used for contrast in the following cases:

- Co-ordinate/dative covalent bonds, e.g. H<sub>3</sub>N, BF<sub>3</sub>, or metal complex ions.
- Representation of ionic bonds in the empirical formulae of ionic compounds such as Na+...Cl-



**Note:** Some compounds have both covalent and ionic bonds in the same molecule, e.g. Na+...-O-H

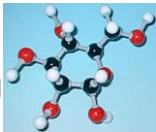
**WARNING! This product is NOT a toy! It is solely designed for educational use and is only suitable for people over 11 years of age. This product contains small parts which may present a choking hazard and should be kept away from small children. Please keep this leaflet for future reference.**

For spare or additional parts please contact your original supplier or, Spiring Enterprises Limited, Billingshurst, Sussex, RH14 9HF Tel: +44 (0) 1403 78 23 87 Fax: +44 (0) 1403 78 52 15

Website: [www.molymod.com](http://www.molymod.com)

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## ORGANIC COMPOUNDS Elementary Selection

<p><b>Ethane</b></p> $\begin{array}{c} \text{H} & \text{H} \\   &   \\ \text{H}-\text{C} & -\text{C}-\text{H} \\   &   \\ \text{H} & \text{H} \end{array}$	<p><u>Ethene</u></p> $\begin{array}{c} \text{H} & & \text{H} \\ & \backslash & / \\ & \text{C}=\text{C} \\ & / & \backslash \\ \text{H} & & \text{H} \end{array}$
<p><u>Ethyne</u></p> $\text{H}-\text{C}\equiv\text{C}-\text{H}$	<p><u>Ethanol</u></p> $\begin{array}{c} \text{H} & \text{H} \\   &   \\ \text{H}-\text{C} & -\text{C}-\text{O}-\text{H} \\   &   \\ \text{H} & \text{H} \end{array}$
<p><u>Butanone</u></p> $\begin{array}{c} \text{H} & \text{O} & \text{H} & \text{H} \\   &    &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\   & &   &   \\ \text{H} & & \text{H} & \text{H} \end{array}$	<p><u>Ethanoic acid</u></p> $\begin{array}{c} \text{H} & \text{O} \\   &    \\ \text{H}-\text{C} & -\text{C}-\text{O}-\text{H} \\   \\ \text{H} \end{array}$
<p><u>Ethyl ethanoate</u></p> $\begin{array}{c} \text{H} & \text{O} & \text{H} & \text{H} \\   &    &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{O}-\text{C} & -\text{C}-\text{H} \\   & &   &   \\ \text{H} & & \text{H} & \text{H} \end{array}$	<p><u>Trans 1, 2-dichloroethene</u></p> $\begin{array}{c} \text{H} & \text{Cl} \\   &   \\ \text{C} & =\text{C} \\   &   \\ \text{Cl} & \text{H} \end{array}$
<p><u>Dimethyl ether</u></p> $\begin{array}{c} \text{H} & \text{H} \\   &   \\ \text{H}-\text{C} & -\text{O}-\text{C}-\text{H} \\   &   \\ \text{H} & \text{H} \end{array}$	<p><u>Lactic acid</u></p> $\begin{array}{c} \text{O} & \text{OH} & \text{HO} & \text{O} \\    & & &    \\ \text{H}-\text{C} & -\text{OH} & \text{HO}-\text{C} & -\text{H} \\   &   &   &   \\ \text{H}-\text{C} & -\text{H} & \text{H}-\text{C} & -\text{H} \\   & &   & \\ \text{H} & & \text{H} & \end{array}$
<p><u>Aminoethane</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} \\   &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{N} \\   &   &   \\ \text{H} & \text{H} & \text{H} \end{array}$	<p><u>Cyclohexane</u></p> $\begin{array}{c} \text{CH}_2-\text{CH}_2 \\   &   \\ \text{CH}_2 & \text{CH}_2 \\   &   \\ \text{CH}_2-\text{CH}_2 \end{array}$
<p><u>Butane</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} & \text{H} \\   &   &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\   &   &   &   \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array}$	<p><u>Ethylene diamine</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} & \text{H} \\ & \backslash & / & \backslash & / \\ & \text{N} & -\text{C} & -\text{C} & -\text{N} \\ & / &   &   & / \\ \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \end{array}$
<p><u>Iso-butane</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} \\   &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\   &   &   \\ \text{H} & \text{H} & \text{H} \\   \\ \text{H} \end{array}$	<p><u>Glycerol</u></p> $\begin{array}{c} \text{H} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H} \end{array}$
<p><u>1-chloropropane</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} \\   &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\   & &   \\ \text{Cl} & & \text{H} \end{array}$ 	<p><u>D-(+)-Glucose</u></p> $\begin{array}{c} \text{H} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H}-\text{C}-\text{OH} \\   \\ \text{H} \end{array}$
<p><u>2-chloropropane</u></p> $\begin{array}{c} \text{H} & \text{H} & \text{H} \\   &   &   \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\   &   &   \\ \text{H} & \text{Cl} & \text{H} \end{array}$	<p><u>Alanine</u></p> $\begin{array}{c} \text{COOH} \\   \\ \text{NH}_2-\text{C}-\text{H} \\   \\ \text{CH}_3 \end{array}$
<p><u>Cis 1, 2-dichloroethene</u></p> $\begin{array}{c} \text{H} & \text{H} \\   &   \\ \text{C} & =\text{C} \\   &   \\ \text{Cl} & \text{Cl} \end{array}$	<p><u>Benzene</u> (a) Kekule Structure made by using alternate single and double bonds.</p> $\begin{array}{c} \text{H} & & \text{H} \\ & \backslash & / \\ & \text{C}=\text{C} \\ & / & \backslash \\ \text{H}-\text{C} & & \text{C}-\text{H} \\ & \backslash & / \\ & \text{C} & -\text{C} \\ & / & \backslash \\ \text{H} & & \text{H} \end{array}$

