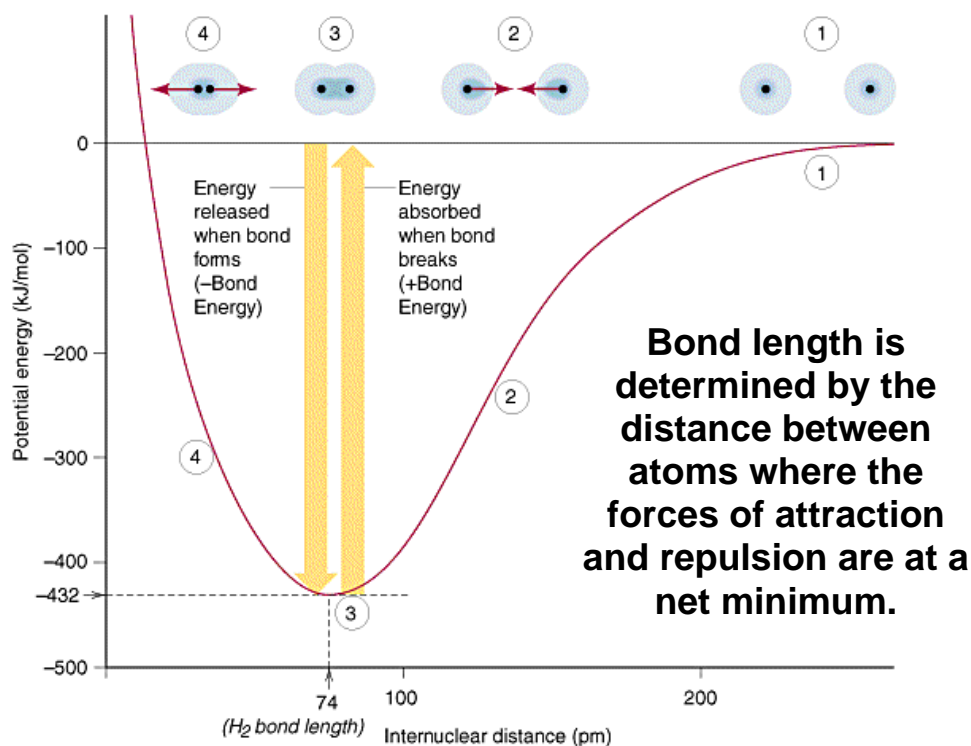


Covalent Bonds

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Data Table: Strength & Length

Bond	Bond Energy (Strength) (kJ/mole)	Bond Length (pm)	Bond	Bond Energy (Strength) (kJ/mole)	Bond Length (pm)
Single Bonds					
H - H	432	74.2	N - Cl	200	179
H - F	565	91.8	N - N	167	145
H - Cl	428	127.4	N - O	201	140
H - C	411	109	N - F	283	136
H - N	386	101	O - O	142	148
H - O	459	96	O - F	190	142
C - C	346	154	O - Cl	203	149
C - F	485	135	S - H	339	135
C - Cl	327	177	S - F	327	159
C - O	358	143	S - Cl	253	199
C - N	305	147	S - Br	218	227
C - Br	276	193	S - S	266	204
Multiple Bonds					
C = C	602	134	C ≡ C	835	120
C = O	799 (in CO ₂)	120	C ≡ O	1072	113
C = N	615	132	C ≡ N	887	116
N = N	418	125	N ≡ N	942	109.8
N = O	607	121	P ≡ P	481	189
O = O	494	120.7	As ≡ As	380	244
S = S	425	188.7	S = O	523	143



Note: Exact bond length and energy is dependent on the particular molecule in which it is measured. All of the above values are given for comparison purposes only.