**BOND DISSOCIATION ENTHALPIES**

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| --- | --- | --- | --- |
| bond | Hb/kJmol-1 | bond | Hb/kJmol-1 |
| C-H | +413 | H-F | +565 |
| C-Br | +280 | C-F | +425 |
| H-Br | +366 | F-F | +158 |
| Br-Br | +193 | C=O | +805 |
| C-C | +347 | O-H | +464 |
| C=C | +611 | O=O | +498 |
| H-H | +435 | N-H | +391 |

Use the bond enthalpies above to calculate the following enthalpy changes of reaction:

1. 2H2 + O2 🡪 2H2O
2. CH4 + 2O2 🡪 CO2 + 2H2O
3. H2 + Cl2 🡪 2HCl
4. N2 + 3H2 🡪 2NH3

The enthalpy change for the combustion of hydrazine (N2H4) is -623 kJmol-1

The equation for the reaction is N2H4 + O2 🡪 N2 + 2H2O

Calculate the bond enthalpy of a N-N bond.