Reactants

1 mole of C_2H_5OH and 3 moles of O_2 contain:

1 mole of C-C bonds = 1 x 347 = 347 kJ/mol
5 moles of C-H bonds = 5 x 413 = 2065 kJ/mol
1 mole of O-O bonds = 1 x 146 = 146 kJ/mol
1 mole of H-H bonds = 1 x 432 = 432 kJ/mol
3 moles of O=O bonds = 3 x 495 = 1485 kJ/mol

Profiles?

Energy required to break bonds = 347 + 2065 + 146 + 432 + 1485
= 4475 kJ/mol

Products

2 moles of CO_2 and 9 moles of H_2O

4 moles of C=O bonds = 4 x 745 = 2980 kJ/mol
6 moles of H-O bonds = 6 x 464 = 2784 kJ/mol

Energy released when new bonds form = 2980 + 2784
= 5764 kJ/mol

$$\Delta H = energy\ required\ to\ break\ bonds - energy\ released\ when\ new\ bonds\ form$$
$$\Delta H = 4475 - 5764$$
$$\Delta H = -1289 \frac{kJ}{mol} (exothermic)$$

Bibliography:

I will correctly reference sources in my final copy ☺

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