

Coal - C - combustion: 6.5 Calories / gram



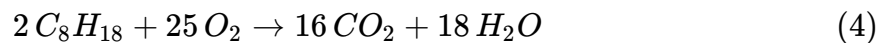
Atomic weight of...

- 1 mole of coal = 1 mole of C = **12g**
- 1 mole of carbon dioxide = **1 mole of C*(12 g /mole of C) + 2 moles * (16 g / mole of O)= 44 g / mole of CO₂.**

We want grams of CO₂ / Calorie:

$$\frac{[\quad] \text{g } CO_2}{[\quad] \text{g } C} * \frac{1 \text{g } C}{6.5 \text{cal}} = [\quad] \text{g of } CO_2 / 1 \text{ Calorie.} \quad (2)$$

Gasoline (av. octane) - C₈H₁₈ - combustion: 10.8 Calories / gram



1 mole of C₈H₁₈ weighs 8*(12 g/mole of C)+18*(1 g/ mole of H)=96+18=114 g / mole. So...

Atomic weight of...

- 2 moles of octane molecules = **?? 2 moles * 114 g/ mole of octane = 228 grams**
- 16 moles of carbon dioxide molecules = **16 moles * 44 g / mole of CO₂ = 704 g**

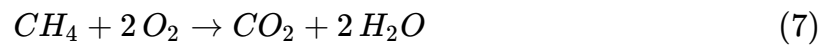
So, **704 g** of CO₂ are produced for every **228 g** of gasoline

We want grams of CO₂ / Calorie:

$$\frac{[704] \text{g } CO_2}{[228] \text{g } gasoline} * \frac{1 \text{g } gasoline}{10.8 \text{Cal}} = [\quad] \text{grams of } CO_2 / 1 \text{ Calorie.} \quad (5)$$

$$\frac{704 * 1}{228 * 10.8} = 0.29 \text{g of } CO_2 / 1 \text{ Calorie.} \quad (6)$$

Natural gas (methane) - CH_4 - combustion: 13.3 Calories / gram



Atomic weight of...

- 1 methane = ? =
- 1 carbon dioxide = ?

So, ____ g of CO_2 are produced for every ____g of methane :

We want grams of CO_2 / Calorie: