

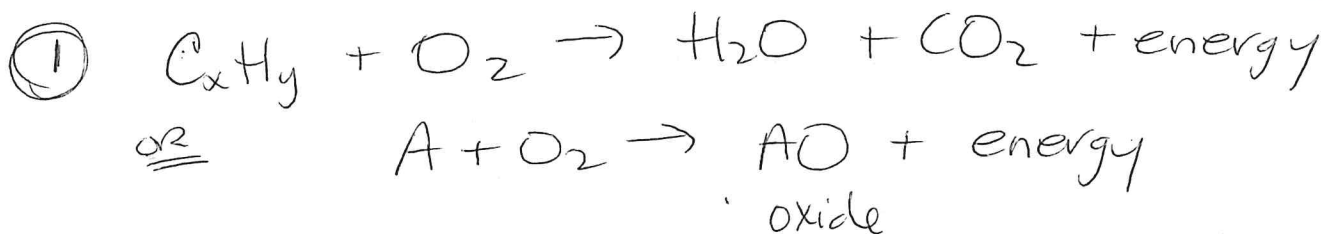
ANSWERS

Other Common Reactions: Combustion and Corrosion

6.9 - Combustion is a chemical reaction in which a fuel reacts quickly (burns) with oxygen. The products are usually an oxide and energy.

1. Write the general equation for **combustion** and a specific example.
2. a) Describe the Aug 2, 2008 **combustion disaster!**
b) Should we store large amounts of propane within city limits?
3. a) Define '**hydrocarbon**'.
b) Define 'complete combustion' and give an example.
c) Define 'incomplete combustion' and give an example.
4. a) What are the characteristics of CO (**carbon monoxide**)?
b) Why should you have a CO detector in your house?
c) Soot indicates which kind of combustion? What is soot?

Application: #4,5 page 251. \Rightarrow After Corrosion answers.



② ^{C₃H₈} Propane storage depot in Toronto caught fire +
a) exploded. Damaged houses.

b) Should we store within city? - You decide.

③ hydrocarbon - Molecular compounds that contain only carbon + hydrogen.

complete combustion = combustion in which only CO₂ + H₂O are products

incomplete combustion = occurs when O₂ is limited and CO + C is produced as well as CO₂ + H₂O

all metals corrode except gold + platinum

6.10 - Corrosion is the breakdown of a metal as a result of a chemical reaction with the environment.

- a) Corrosion of aluminum is beneficial - why? ~~aluminum oxide is stronger~~
b) Corrosion of copper is pretty and beneficial - why? and ~~than Al.~~

2. Rust is the result of iron corrosion.

Rust - What 2 factors are necessary for rust.....and

Drivers don't like the salt on the roads because it causes our cars to rust. Is this true? Explain.

3. Identify & Explain 3 ways to prevent rusting (because most of the time we don't want it!)

A) B) C)

Application: → Keep scrolling

Why do surgeons use stainless steel for joint replacements?

Pg. 254

#5, 6, 7

silver - "tarnishes"

- a) aluminum oxide is ~~stronger~~ ~~material than Al~~ binds to metal + protects from further corrosion! Protective
- b) Copper corrodes → develops a green colour when it corrodes. Pretty + corrosion-resistant!
(i.e.: rooves good for 75 years)

② Rust ⇒ when iron corrodes. It is not strong. It is porous + flakes ∴ exposes more iron to corrode. ∴ things "rust away"

2 factors need for Rust → ① $O_2 + H_2O$

↳ ② Electrolytes - salt
→ speeds it up.

③ Prevent rust.

↳ Protective coating i.e. paint But doesn't cause it.
↳ Corrosion resistant materials i.e. plastic, additives in steel, galvanize - zinc on stainless steel

④ a) Combustion Application
Carbon monoxide (CO) - odorless, colorless gas that is highly toxic.

b) You should have a CO detector in your house to prevent CO poisoning. It's odorless. A poorly ventilated furnace can produce CO.

c) $S_{\text{tot}} = \underline{C} \Rightarrow$ means incomplete combustion. Wastes energy.

Application p 251

4 - Clean furnace means complete combustion \therefore no waste hydrocarbon + no wasted energy. Efficient!
"Burn" all carbon

5. Hydrogen fuel better than gasoline for environment.
 $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ + water
by products are water

Corrosion. Application

Stainless steel for hip replacements because it will not corrode inside the body.

5 Car needs to be clean + dry before rust-proofing because you don't want

Water trapped underneath with iron:
It will rust.

b. car bodies last longer in Caribbean
than Canada. Why?

No drier but no salt on icy
roads. Salt speeds up corrosion.

7. Galvanized steel for outside uses.
Why?

Zinc coating (that's what galvanized
means) corrodes. Zinc oxide stays on
top & is resistant to corrosion.

∴ is protective