

Ozonolysis Effects on Rubber Strength

<https://gemini.google.com/app/27a4b3bd95b9b496>

Response: **Statement 1:** Ozone reduces the mechanical strength of rubber. **Statement 2:** Ozone reacts with double bonds present in rubber.

Both statements are **true**, and **Statement 2 is the correct explanation for Statement 1**.

Explanation:

- **Statement 1 is True:** Exposure to atmospheric ozone causes rubber (such as natural rubber / polyisoprene) to crack under strain (ozone cracking), which severely reduces its mechanical strength and durability.
- **Statement 2 is True:** Natural rubber consists of repeating units containing carbon-carbon double bonds (-C=C-). Ozone (O_3) undergoes ozonolysis with these unsaturated double bonds, forming ozonides that cleave the polymer chains.
- **Explanation Relationship:** The cleavage of polymer backbone chains due to ozonolysis at the -C=C- double bonds leads to surface cracking and loss of elasticity/structural integrity, which directly causes the reduction in mechanical strength.

In the standard Sri Lankan G.C.E. A/L Chemistry MCQ format (Questions 31–50 type):

- Option **(1)** is correct (both statements are true, and Statement 2 correctly explains Statement 1).
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