Alkene reactions: bromine evidence

Teacher / technician

YEAR 11 / LESSON 93 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Written and model-based lesson; no laboratory procedure is implied.

Coverage and delivery

Shared core: 4.12 and 4.27–4.28, bromine addition and the alkane/alkene test. Recorded-evidence workshop.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, working in 15 pairs

Item	Per pair / setup	Class total
Booklet / writing tools	1 per learner	30 sets
Model kit / periodic table	1 set per pair	15 sets

Immediate safety

Desk activity only; keep small model pieces away from mouths.

Preparation and delivery

Read alongside the student method

YEAR 11 / LESSON 93 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

1. Provide 30 booklets and 15 model kits or reusable atom counters; no chemicals are needed.

2. Use 10 minutes retrieval, 25 independent/pair tasks, 15 explanation and 10 corrections. Keep first attempts visible.

3. Issue only the written reference cards; do not issue bromine or hydrocarbons for this lesson.

4. A separate live demonstration requires its own approved method, dilution, ventilation and waste controls; this paper task does not authorise one.

5. Check all carbon valencies, formula subscripts and equation coefficients. Label any supplied numbers as practice data, not class observations.

Close of lesson

• Return shared equipment and retain corrected reasoning.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

YEAR 11 / LESSON 93 / CHEMISTRY + SCIENCE (DOUBLE AWARD)

- Orange (yellow/orange depending on dilution).
- Decolourisation under the controlled comparison conditions.
- $CH_2Br–CH_2Br$, 1,2-dibromoethane in the syllabus model; one Br on each former double-bond carbon.
- Atoms add across C=C; no hydrogen atom is replaced.
- $C_2H_4+3O_2 \rightarrow 2CO_2+2H_2O$.
- Other substances can consume bromine; the comparison supports unsaturation within a restricted hydrocarbon set, not full identification.

References and provenance

Pearson Chemistry specification

RSC microscale unsaturation background

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.