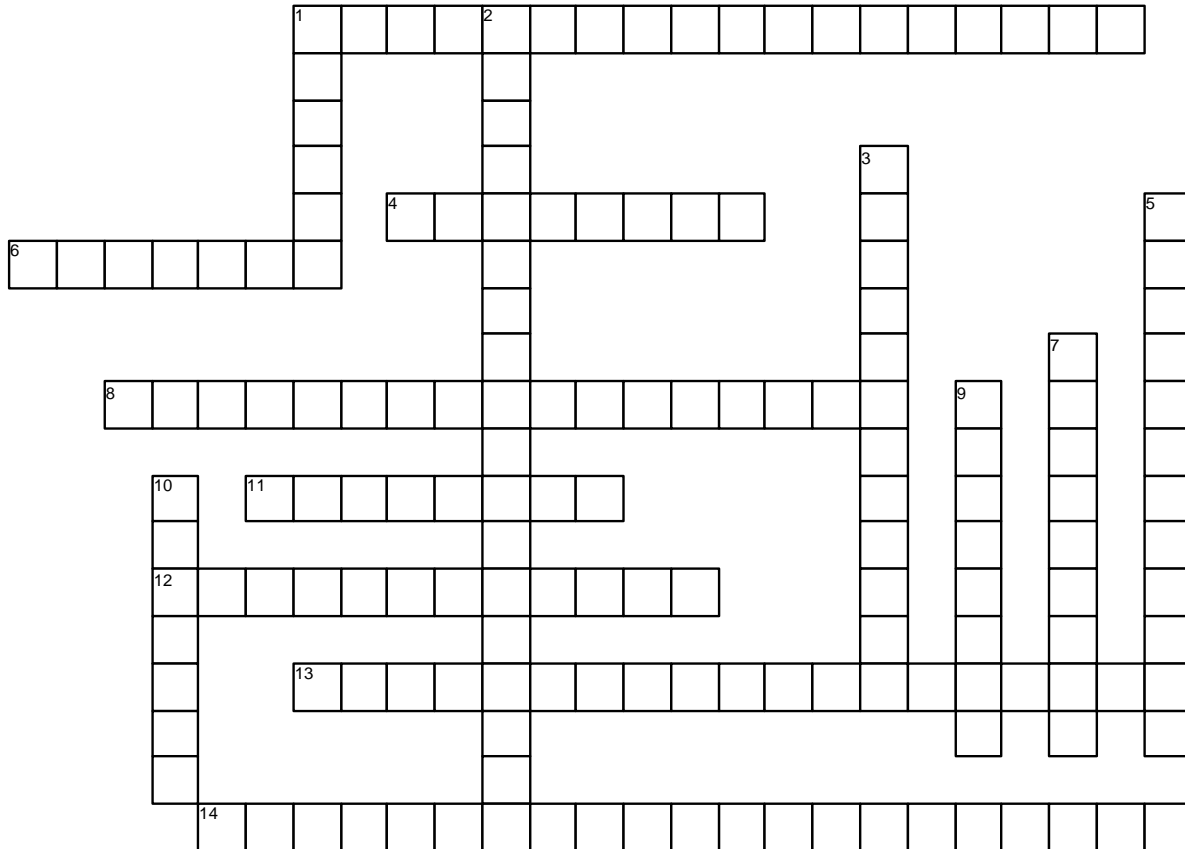


# Catalytic Converters

## Chapter 88



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### ACROSS

- 1 A \_\_\_\_\_ is an aftertreatment device used to reduce exhaust emissions outside of the engine.
- 4 A \_\_\_\_\_ is a chemical that helps start a chemical reaction but does not enter into the chemical reaction.
- 6 The converter substrate contains small amounts of \_\_\_\_\_.
- 8 In a \_\_\_\_\_ all three exhaust emissions are converted to CO<sub>2</sub> and H<sub>2</sub>O.
- 11 The converter substrate contains small amounts of \_\_\_\_\_.
- 12 Some vehicles have used a small, quick heating oxidation converter called a \_\_\_\_\_ that connects directly to the exhaust manifold outlet.
- 13 The catalytic converter does not work when cold, so it must be heated to its \_\_\_\_\_ of close to 500°F (260°C) before it starts working at 50% effectiveness.
- 14 The converters used on OBD-II vehicles have \_\_\_\_\_, due mostly to the cerium coating in the catalyst rather than the precious metals used.

### DOWN

- 1 Since the early 1990s, many converters also contain \_\_\_\_\_, an element that can store oxygen.
- 2 Preconverters have a small catalyst surface area close to the engine that heats up rapidly to start the oxidation process more quickly during cold engine warm-up, for this reason they were often called \_\_\_\_\_.
- 3 A \_\_\_\_\_ tool can be made by using an oxygen sensor housing and epoxy or braze to hold the tube to the housing.
- 5 Another name for a preconverter is a \_\_\_\_\_.
- 7 The converter substrate contains small amounts of \_\_\_\_\_.
- 9 The substrate is coated with a porous aluminum material called the \_\_\_\_\_, which makes the surface rough.
- 10 The simple \_\_\_\_\_ involves tapping on the catalytic converter using a rubber mallet.