

STEEL WOOL KINETICS

- Weigh out a single piece of steel wool that is about 2.0 g.
- Wash the steel wool in acetone for about 30 seconds.
- Thoroughly dry the wool and then swirl it in about 50 mL of vinegar for about 30 seconds.
- Remove the steel wool from the vinegar and THOROUGHLY dry it with a paper towel.
- Repeat the washing with the dilute vinegar solution (10 mL of vinegar diluted to 100 mL with deionized water).
- After drying, QUICKLY place the steel wool into the test tube (150x25 mm) ensuring that it is not forced all the way to the bottom of the test tube. It should be as spread out as possible to ensure the greatest surface area, which will decrease the reaction time. (NOTE: If the steel wool is not thoroughly dried of the acid, there is a possibility that hydrogen gas will be generated as a result of the reaction of the steel wool with the excess acid rather than the desired reaction with gaseous oxygen. Even thorough drying with paper towels leaves enough residual acid to catalyze the reaction.)
- Lastly, connect the test tube assembly to the Vernier oxygen gas sensor.
- The sensor should fit snugly into the test tube forming a very tight seal.

Extracted from: Vol. 82 No. 7 July 2005. Journal of Chemical Education "Steel Wool and Oxygen: A Look at Kinetics" James Gordon and Katherine Chancey, Division of Science and Mathematics, Central Methodist University, Fayette, MO 65248; jgordon@centralmethodist.edu