

Section IV. Material Safety Data Sheets

The on-line version of this section contains a (hopefully) useful set of links to some of the vast information related to safety available through the World Wide Web. You can access our page via:

[http://weewave.mer.utexas.edu/DPN_files/courses/FabLab/Fab Lab Manual/MSDS.html](http://weewave.mer.utexas.edu/DPN_files/courses/FabLab/Fab_Lab_Manual/MSDS.html)

MAKE SURE YOU READ THE UNIVERSITY OF TEXAS AT AUSTIN INFORMATION AT:

<http://www.utexas.edu/business/oehs/msds/index.html>

For our lab here are some of the MSDS that are most important:

- [Acetone](http://www.jtbaker.com/msds/a0446.htm) (<http://www.jtbaker.com/msds/a0446.htm>)
- [photoresist](http://siri.uvm.edu/msds2/f/89/16587.html) (<http://siri.uvm.edu/msds2/f/89/16587.html>)
- [photoresist developer](http://siri.uvm.edu/msds2/f/89/20631.html) (<http://siri.uvm.edu/msds2/f/89/20631.html>)
- [20% hydrofluoric acid](http://siri.uvm.edu/msds2/f/88/11985.html) (<http://siri.uvm.edu/msds2/f/88/11985.html>)
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This information is provided to help you evaluate the relative hazards involved in handling and working with many of the common chemicals used in the semiconductor fabrication process. As you leave the university and enter the work place you will find the most common way in which such information is disseminated is via the Materials Safety Data Sheet, also known as a MSDS. You should be most concerned with Section II: Hazard Data; Section VI: Health Hazard Information; and Section VIII: Special Protection Information.

As an example, look at the MSDS for automotive gasoline shown on the next two pages (pp. VI-2 and VI-3 or via the WWW at

<http://haz2.siri.org/msds/h/389/144120>">unleadedgasoline

Note in Section II the column labeled "Hazard Data": here you will find the statement

"8-hr TWA 300 ppm or 900 mg/m³"

The abbreviations used refer to the **TLV**:

Threshold Limit Value, the term used by the American Conference of Governmental Industrial Hygienists Inc. (ACGIH), to express airborne concentration of a material to which nearly all persons can be exposed day after day without adverse effects.

In conjunction with the TLV, several sub-definitions are used:

TWA: time-weighted average concentration for a normal 8-hour workday or 40-hour week.

STEL: short-term exposure limit, the maximum concentration for continuous short exposure.

TLV-C: Ceiling exposure limit, the concentration that should never be exceeded even instantaneously.

Thus the MSDS for gasoline tells us that over the course of an 8-hour work day exposure to gasoline should not exceed more than 300 parts per million (ppm). Also note this same information, with details on specific health hazards, is given on p. VI-3 in Section VI: Health Hazard Information.

Further abbreviations are defined on pp. IV-4 & 5.

When followed properly, the laboratory procedures described in this manual, along with established laboratory practices outlined in class, should keep exposure to the chemicals we use to levels less than the TLV's given in the MSD Sheets.

A brief list of some WWW sites that might be helpful:

MSDSs on-line:

The Vermont SIRI MSDS collection:

<http://haz2.siri.org/msds/index.html>