INTEL’S SAFETY WARNING LABEL REQUIREMENTS

INTRODUCTION:
Direction is provided on Intel’s Safety Warning Label requirements to ensure suppliers provide equipment with hazards identified and the safety precautions needed to ensure safe operation and maintenance of the equipment. These requirements fulfill both the ANSI Z535 and IEC 1310-1 requirements for safety warning labels as well as SEMI S1, Safety Guidelines for Equipment Safety Labels.

DEFINITIONS:
Hazard: A source of potential injury to a person.
Message Panel: Area of the safety sign, which contains the word messages which identify the hazard, indicates how to avoid the hazard, and advises of the probable consequence of not avoiding the hazard.
Panel: Area of the safety sign having a distinctive background color different from adjacent areas of the sign, or which is clearly delineated by a line or border. There generally are three panels per sign or label: signal word, message, and IEC pictogram.
Pictogram: A graphic representation intended to convey a message without the use of words. It may represent a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages.
Pictogram Panel: Area of the safety sign and/or label which contains the pictogram.
Safety Alert Symbol: A symbol (explanation mark) which indicates a potential personal safety hazard. It is composed of an explanation mark surrounded by an equilateral triangle conforming to ANSI Z535.3.
Safety Label or Sign: A visual alerting device in the form of a decal or label which advises the observer of the nature and degree of the potential hazard(s) which can cause injury or death. It also provides safety precautions or evasive actions to take or provides other directions to eliminate or reduce the hazard.
Signal Word: The word or words that designate a degree or level of hazard seriousness. The signal words for product safety signs are DANGER, WARNING, AND CAUTION.

REQUIREMENTS:
1) The Safety Label/Sign is divided into three panels or parts. The requirements for each panel are explained in depth. The three panels contain the Signal Word, Pictogram, and Message.
2) SIGNAL WORD PANEL
   a) Signal Word classifies hazard or severity of consequences associated with the exposure or operation into Danger, Warning, or Caution categories:
      Danger: Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.
      Warning: Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
      Caution: Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
Note: Danger or Warning should not be used for property damage accidents unless personal injury risk appropriate to these levels is also involved. Caution may be used to identify hazards resulting in merely property-damaged accidents.

b) Safety Alert (Explanation mark) Symbol precedes the signal word in this panel

1) The Explanation Mark is same color as the background color on the signal word panel and resides on a black (caution and warning) or red (danger) triangle.

2) The color of the signal word panel is

- Red for Danger
- Orange for Warning
- Yellow for Caution

c) The following table summarizes the requirements for the size, font, and color of the letters and background for both the Signal Word and Safety Alert Symbol:

<table>
<thead>
<tr>
<th>SIGNAL WORD (san serif font)</th>
<th>SAFETY ALERT SYMBOL</th>
</tr>
</thead>
</table>
| **DANGER** - White Lettering / Red Background  
(Safety Red: per ANSI Z535.4 - 15 parts Warm Red, 1 part Rubine Red, 1/4 part Black) | White Triangle / Red Exclamation Point |
| **WARNING** - Black Lettering / Orange Background  
(Safety Orange: per ANSI Z535.4 - 13 parts Yellow, 3 parts Warm Red, 1/4 part Black) | Black Triangle / Orange Exclamation Point |
| **CAUTION** - Black Lettering / Yellow Background  
(Safety Yellow: per ANSI Z535.4 - Pantone 108C) | Black Triangle / Yellow Exclamation Point |

2) **MESSAGE PANEL**

a) The message identifies the hazard, how to avoid the hazard and advises of the potential consequence of not avoiding the hazard.

b) The letters are black on a white background for all three hazard (Danger, Warning, Caution) categories.

c) Message Panel Letter Height should range from a minimum of 0.10 in or 2.54 mm high for favorable reading conditions.

**NOTE:** An exception can be made for products having limited surface on which the safety warning label can be applied, the letter height can go down to 0.05 in or 1.27 mm for the lower case letter height.

a) The example Warning Label contains requirements on the font and case of the letters used.

b) Examples of warnings and information in the Message Panel:

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>POTENTIAL CONSEQUENCE</th>
<th>PRECAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Voltage Present</td>
<td>Electric Shock</td>
<td>Turn off and lock out system before maintenance</td>
</tr>
<tr>
<td>Rf Voltage Present</td>
<td>Contact with internal Rf source can cause burns and/or electrical shock</td>
<td>Disconnect and lock out power before removing cover</td>
</tr>
<tr>
<td>Pinch Point</td>
<td>Pinch hand or fingers in hinged cover</td>
<td>Watch your hands and fingers when opening and closing cover</td>
</tr>
<tr>
<td>Moving Parts Present</td>
<td>Serious injury to hands or fingers</td>
<td>Keep hands away from moving parts. Disconnect and lock out power before servicing</td>
</tr>
</tbody>
</table>
3) **PICTOGRAM PANEL**
   a) Pictogram is used as a supplement to the word message to provide an immediate recognition of the type of hazard present.
   b) The pictogram, itself, should reside within a yellow triangle with a black border on a white background. See example label below.
   c) The pictogram must meet European IEC 1310-1 requirements.
   d) See ISO 3864 and IEC 1310-1 or the SEMI S2-93 Related Information 3, Hazard Labels for acceptable pictograms.

4) **LASER WARNING LABEL ADDITIONAL REQUIREMENTS**
   a) Class 3B and 4 lasers require two types of labels: The ANSIZ535/IEC 1310-1 label and the FDA - CDRH Laser Performance Standard requirements
   b) The tool must have ANSI Z535/IEC 1310-1 labels for the level of exposure outside the tool during normal operations and at the source with the covers removed.
   c) The ANSI Signal Words and sample messages for the different laser classes are

<table>
<thead>
<tr>
<th>CLASS</th>
<th>SIGNAL WORD</th>
<th>EXAMPLE MESSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Caution</td>
<td>Avoid long-term viewing of direct laser radiation</td>
</tr>
<tr>
<td>3a*</td>
<td>Caution</td>
<td>Avoid long-term viewing of direct laser radiation</td>
</tr>
<tr>
<td>3b</td>
<td>Danger</td>
<td>Laser Radiation; avoid direct exposure to beam</td>
</tr>
<tr>
<td>4</td>
<td>Danger</td>
<td>Laser Radiation; avoid eye and skin exposure to direct or scattered radiation</td>
</tr>
</tbody>
</table>

\*This is the appropriate signage for low powered 3a lasers that do not exceed calculated MPE (maximum permissible exposure) for irradiance. Higher powered Class 3a lasers must be signed per 3b labeling requirements.

d) **Labeling for Laser Products.**
   1) Labels for defeatable interlocked protective housings. These labels shall be visible on the product prior to and during interlock defeat and in close proximity to the opening created by the removal or displacement of such portion of the protective housing.

<table>
<thead>
<tr>
<th>CLASS</th>
<th>SIGNAL WORD</th>
<th>EXAMPLE MESSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Caution</td>
<td>Laser radiation when open and interlock defeated. DO NOT STARE INTO BEAM</td>
</tr>
<tr>
<td>IIIa*</td>
<td>Caution</td>
<td>Laser radiation when open and interlock defeated. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS</td>
</tr>
<tr>
<td>CLASS</td>
<td>SIGNAL WORD</td>
<td>EXAMPLE MESSAGE</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>IIIa**</td>
<td>Danger</td>
<td>Laser radiation when open and interlock defeated. AVOID DIRECT EYE EXPOSURE.</td>
</tr>
<tr>
<td>IIIb</td>
<td>Danger</td>
<td>Laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.</td>
</tr>
<tr>
<td>IV</td>
<td>Danger</td>
<td>Laser radiation when open and interlock defeated. AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION.</td>
</tr>
</tbody>
</table>

*IIIa accessible laser radiation with irradiance $\leq 2.5 \times 10^{-3} \text{ W cm}^{-2}$

**IIIa accessible laser radiation with irradiance $> 2.5 \times 10^{-3} \text{ W cm}^{-2}$

e) FDA - CDRH Labeling requirements include:

1) A certification label on the laser which states that the manufacturer certifies that the product complies with the standard or has an approved variance.

2) Examples of FDA - CDRH's minimum statements are
   - "Complies with 21 CFR Chapter 1, Subchapter J" or
   - "Complies with 21 CFR 1940.10 and 1040.11"

3) This label must be in the form of a label or tag permanently affixed to or inscribed on such product so as to be legible and readily accessible to view when product is fully assembled for use.

GENERAL NOTES:

1) Use the ANSI Z535.4 Color guides for the colors.

2) Use only ink that is resistant to IPA. (IPA is generically used throughout Intel to clean equipment)

REFERENCES:

1) ANSI Z535.4—Current Version, Product Safety Signs and Labels
2) SEMI S2-0200, Related Information 3, Hazard Labels
3) ISO 3864, Safety Colors and Safety Symbols
4) IEC Publication 61310-1, Safety Machines – Indication, Marking, and Actuation
   Part 1: Requirements for Visual, Auditory and Tactile Signals
   Part 2: Requirements for Marking
EXAMPLE OF A WARNING LABEL:
The label shown below is an example which combines requirements from ANSI Z535, and ISO 3864 and IEC 1310-1.

IEC/ISO PICTOGRAM PANEL:  
- White background
- Orange background
- Black border 0.06 x Base width
- Safety alert symbol‡

ANSI SIGNAL WORD PANEL:  
- Signal Word Panel †
  - (All capitalized min. letter height 1.5 times the message panel text height)

HAZARDOUS VOLTAGE.  
Contact may cause electric shock or burn.  
Turn off & lock out system before servicing.

MESSAGE PANEL:  
HAZARD & PRECAUTIONARY MEASURES
PARTIAL LIST OF RECOMMENDED IEC/ISO SYMBOLS

- **Strong magnetic field**
  IEC 1310

- **Non-ionizing radiation**
  IEC 417 - 5152

- **General hazard**
  ISO 7000 - 0434
  ISO 3864 - B.3.1

- **Laser**
  IEC 417 - 5152

- **Toxic material**
  ISO 3864 - B.3.5

- **Oxidant material**
  IEC 1310

- **Fuse replacement**
  IEC 417-5016

- **Corrosive material**
  ISO 3864 - B.3.4

- **Hot surface**
  IEC 417 - 5041
  ISO 7000 - 0535

- **Explosive material**
  ISO 3864 - B.3.3

- **Electrical**
  IEC 417 - 5036
  ISO 3864 - B.3.6

- **Flammable Material**
  ISO 3864 - B.3.2

- **Heavy Object**

- **Irritant Material**
  IEC 1310

- **Pinchpoint**

- **Falling Object**

- **Tipover**

- **Radioactive Material**
  IEC 1310

- **Cold Temperature**
  IEC 1310

- **Pinchpoint from moving gear(s)**