**Australian/New Zealand Occupational Protective Glove Standards**

**An Overview**

The Australian/New Zealand Glove Standards have been developed based on the European Standards to ensure improved hand and wrist safety in the workplace.

AS/NZS 2161 consists of:

- **AS/NZS 2161.5:1998, Occupational protective gloves Part 5:** Protection against cold (EN 511:1994)
- **AS/NZS 2161.10.3:2005, Occupational protective gloves Part 10:** Determination of resistance to permeation by chemicals (EN 374-3:2003)

**Pictograms**

Pictograms representing hazards or applications to the European & Aust/NZ Standards:
Australian/New Zealand Occupational Protective Glove Standards


This standard defines the general requirements for ergonomic, glove construction, high visibility, innocuousness, cleaning, comfort and efficiency, marking and information applicable to all protective gloves.

Put simply the Standard requires that:

**General Requirements:**

- Glove design and construction is suitable for its intended use.
- Any seams present in construction (cotton, leather etc) do not result in a significant decrease in product performance.
- The gloves will not harm the health or hygiene of the user.

**Sizing:**

- Glove sizing conforms to set specifications with respect to hand circumference.
- Minimum glove lengths are specified for each size.

**Product and Packaging Labelling (Marking):**

- Gloves must be generally marked with trade mark or other identification of manufacturer/representative, product code name or code and size.
- Packaging carries additional information such as where information about the product can be obtained and pictograms denoting performance levels against Standards as appropriate.
- Instructions for use.
**Australian/New Zealand Occupational Protective Glove Standards**


This standard is applicable to all kinds of protective gloves with regards to physical and mechanical aggressions caused by abrasion, blade cut, tear and puncture. This standard may also be used to determine the impact cut resistance and anti-static nature of the glove product.

The four basic tests that define this standard are:

- **Abrasion resistance**: How well can the material of the glove resist exposure to repeated abrasion?
- **Blade cut resistance**: How well can the material of the glove resist cutting objects?
- **Tear resistance**: What force is needed to enlarge, by tearing a pre-cut hole in the material of the glove?
- **Puncture resistance**: What force is needed to puncture the palm of the glove with a calibrated spike?

Gloves are tested for each of these properties and results reported as performance ratings. The higher the rating, the better the glove is with respect to this property.

Further optional testing of impact cut resistance and anti-static performance may also be performed.

<table>
<thead>
<tr>
<th>Test</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Resistance (# of cycles)</td>
<td>100</td>
<td>500</td>
<td>2000</td>
<td>8000</td>
<td>-</td>
</tr>
<tr>
<td>Blade Cut Resistance (Index)</td>
<td>1.2</td>
<td>2.5</td>
<td>5.0</td>
<td>10.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Tear Resistance (Newton)</td>
<td>10</td>
<td>25</td>
<td>50</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>Puncture Resistance (Newton)</td>
<td>20</td>
<td>60</td>
<td>100</td>
<td>150</td>
<td>-</td>
</tr>
</tbody>
</table>

**Mechanical Hazards Pictogram**

The rating underneath the pictogram refer to the gloves protection with respect to: Abrasion (4), Cut (2), Tear (2), Puncture Resistance (1).
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AS/NZS 2161.5:1998 (EN 511:1994) Protection Against Cold

This standard defines the requirements and test methods for gloves which protect against convective or conductive cold down to -50°C. This cold can be linked to climatic conditions or work conditions.

The tests that define the standard are:

**Flexibility Behaviour:** Will the glove crack when used in the cold?

**Water impermeability:** Will water seep through the gloves when used?

**Cold resistance:** How well do the gloves resist the cold?

**Convective Cold:** How well do the gloves insulate the wearer from the cold?

**Contact Cold:** How well does the palm of the gloves insulate the wearer from the cold?

**Cold Hazards Pictogram**

The rating underneath the pictogram refer to the glove's performance with respect to: Convective Cold (2), Contact Cold (3), and Water Impermeability (1).
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Resistance to permeation is assessed by measuring the time for a chemical to break through the glove material. Samples cut from the palms of the gloves, are placed in a permeation cell which enables the chemical to be placed in contact with the outer surface of the gloves. Air or water is passed through the cell to collect any chemical that has broken through to the inside surface of the glove sample.

The "Chemical Resistant" glove pictogram must be accompanied by a 3 digit code. This code refers to the code letters of three chemicals (from a list of 12 standard defined chemicals), for which a breakthrough time of a least 30 minutes has been obtained.

<table>
<thead>
<tr>
<th>Code</th>
<th>Chemical</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Methanol</td>
<td>Primary Alcohol</td>
</tr>
<tr>
<td>B</td>
<td>Acetone</td>
<td>Ketone</td>
</tr>
<tr>
<td>C</td>
<td>Acetonitrile</td>
<td>Nitrile Compound</td>
</tr>
<tr>
<td>D</td>
<td>Dichloromethane</td>
<td>Chlorinated paraffin</td>
</tr>
<tr>
<td>E</td>
<td>Carbone disulphide</td>
<td>Sulphur containing organic compound</td>
</tr>
<tr>
<td>F</td>
<td>Toluene</td>
<td>Aromatic hydrocarbon</td>
</tr>
<tr>
<td>G</td>
<td>Diethylamine</td>
<td>Amine</td>
</tr>
<tr>
<td>H</td>
<td>Tetrahydrofuran</td>
<td>Heterocyclic and ether compound</td>
</tr>
<tr>
<td>I</td>
<td>Ethyl acetate</td>
<td>Ester</td>
</tr>
<tr>
<td>J</td>
<td>n-Heptane</td>
<td>Saturated hydrocarbon</td>
</tr>
<tr>
<td>K</td>
<td>Sodium Hydroxide 40%</td>
<td>Inorganic base</td>
</tr>
<tr>
<td>L</td>
<td>Sulphuric acid 96%</td>
<td>Inorganic mineral acid</td>
</tr>
</tbody>
</table>