	<b>HAND INJURY PREVENTION</b> ALL-A0A-00-000-HST-0030	<b>Retention Code:</b> CG01 - CA
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<b>Owner:</b> HSE Operations	<b>Approved By:</b> Manager, Health & Safety Operations	<b>Review Frequency:</b> Five years or less
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## Document History

Date	Approved by	Change Summary
March 2021	David Reaich	<ul style="list-style-type: none"><li>• Specific requirements for knife use added (e.g. ANSI A4 at a minimum)</li><li>• Additional guidance on “choosing the right tool for the job”</li><li>• Additional guidance on glove selection.</li></ul>

## About this Procedure

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**Purpose** This document provides guidance on hand injury prevention and glove selection.

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### 1. General

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**Hand Injury Hazards** Hazards that may lead to hand injuries include:

- Physical hazards (e.g., line of fire, sharps, piercing objects, crush points)
- Temperature extremes (e.g., cryogenics)
- Chemical exposures (e.g., pH, toxicity)
- Infectious potential or biological hazards
- Environmental factors (e.g., winter conditions, wind)

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**Recommended Defenses** Implement the following defenses when possible:

- Eliminate or improve a work process to reduce severity (e.g., cut away from yourself)
- Use the right tool for the job (e.g., knives and other open bladed tools should be replaced with safer alternative when possible)
- Use well maintained tools (e.g., do not use dull, poorly maintained knives)
- Address pinch points or line of fire.
- Mitigate impacts from concurrent activities.
- Use the appropriate glove for the job. (e.g., job specific hazard assessment and permit considers most appropriate glove for task)

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When knife use is required:

- opt for concealed blade knives or auto-retractable knives whenever possible.
  - wear cut resistant gloves (ANSI A4 at a minimum). The cut resistance rating is stamped on the glove or tag sewn inside (see Section 2 – Gloves)
  - wear cut resistant wristlets or sleeves.
  - always cut away from yourself and others.
  - Maintain a sharp knife blade.
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**Choose the Right  
Tool for the Job**

Always use the right tool for the job. When possible, to reduce the likelihood of a hand injury avoid the use of knives. Below are examples which may be more appropriate for cutting tasks:

<b>Application</b>	<b>Tool</b>
Strip Cable Ends	Wire Cutter, Cable Strippers
Remove Burr (Casting)	File
Cut Teflon	Metal Saw
Cut Carton Boxes	Pair of scissors or auto retracting knife
Cut Rope	Pair of scissors or wire cutter
Cut Masking Tape/Duct Tape	Pair of scissors
Remove Tape	Scraper
Remove Old Gaskets	Scraper, abrasive paper
Cut Hoses	Wire Cutter or hack saw
Cut Carpeting / Linoleum	Auto-retracting safety knife
Remove Paint	Paint scraper
Cutting Gaskets	Scissors, tin snips, hole punch
Cut Heat-Shrinkable Tubing	Pair of scissors, wire cutter
Cut Car Seals, Cable Ties	Wire cutter, cable tie cutting tool
Cut Insulation Materials	Metal saw
Cut tie-raps or Zip Ties	Side cutters

## 2. Gloves

Use the below sections as guidance to ensure appropriate gloves are used.

### General Glove Requirements

Gloves must be:

- Comfortable.
- Suitable for the specific task.
- Provide the best protection.
- Correctly fit the hands of the user.
- Suitable for the weather conditions or exposure to hot or cold surfaces.
- Inspected prior to use and periodically thereafter.
- Disposed of and replaced immediately if defective or worn out.

### Protection Level Markings

Gloves may have markings of either or both the American Standard – ANSI and ANSI / ISEA 138 or the European Standard – EN 388. This procedure primarily references American standards. European references are included for the most referenced cases.



**NOTE:** In the below tables the rating with the highest protection factor is indicated with \*

#### ANSI and ANSI / ISEA 138

Hazard	Rating Range	Example Marking
Cut	A1-A9*	ANSI A6 CUT
Puncture	0-5*	ANSI 4 PUNCT
Abrasion	0-6*	ANSI 4 ABR
Impact	1*-3	ANSI / ISEA 138 2

**EN 388**

Hazard	Rating Range	Example Marking
Cut (Coup test)	1-5*	
Cut (TDM-100 Test)	A-F*	
Tear	1-4*	
Puncture	1-4*	
Abrasion	1-4*	
Impact	Pass, Fail, X (not tested)	

**Cut Resistance**

Use the below table to select the appropriate cut resistant glove:

Old ANSI Cut-Resistance Levels (Grams)	New ANSI/ ISEA Cut-Resistant Levels (Grams)	EN 388 Newtons (gram)	Example Applications	Example Protective Materials
1 (200)	Light cut hazards (200-499)	A 2N (204g)	<ul style="list-style-type: none"> <li>Material / paper handling</li> <li>General purpose</li> <li>Warehouse</li> </ul>	Lightweight leather, polyester, nylon, cotton
2 (500)	Light/medium cut hazards (500-599)	B 5N (509g)	<ul style="list-style-type: none"> <li>Material handling</li> <li>General purpose</li> <li>Construction</li> <li>Small parts assembly with sharp edges</li> <li>HVAC</li> <li>Metal handling</li> </ul>	Leather, terry cloth (aramid fiber)

3 (1000)	Light/medium cut hazards (1000-1499)	C 10 N (1020g)	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Facilities maintenance</li> </ul>	Leather, terry cloth (aramid fiber)
4 (1500)	Medium cut hazards (1500-2199)	D 15 N (1530g)	<ul style="list-style-type: none"> <li>• Electrical</li> <li>• Work with knives</li> </ul>	Metal mesh, staple-reinforced heavy leather, Kevlar®
5 (3500)	Medium/ heavy cut hazards (2200-2999)	E	<ul style="list-style-type: none"> <li>• Metal handling</li> <li>• Automotive</li> </ul>	
	High Cut Hazards (3000-3999)	F	<ul style="list-style-type: none"> <li>• Metal handling</li> <li>• Automotive</li> </ul>	
	High cut hazards (4000-4999)		<ul style="list-style-type: none"> <li>• Industrial pipefitting</li> </ul>	
	High cut hazards (5000-5999)			
High cut hazards (6000+)				



**NOTE:** Level A4 is the minimum allowable ANSI cut rating if a blade cut hazard is present.

Puncture Resistance

ANSI Rating (Newtons)	EN388	Example Applications	Example Protective Materials
Light Duty <b>0</b> (0-9 N)	Light Duty <b>0</b> (0-20 N)	<ul style="list-style-type: none"> <li>Parts assembly</li> <li>Paper/ cardboard handling</li> <li>Light material handling</li> </ul>	<ul style="list-style-type: none"> <li>Palm coatings (e.g., nitrile, rubber)</li> <li>Leather</li> <li>High Performance Polyethylene fiber shell (HPPE)</li> </ul>
Light Duty <b>1</b> (10-19 N)		<ul style="list-style-type: none"> <li>Parts assembly</li> <li>Paper/ cardboard handling</li> <li>Light material handling</li> </ul>	
Light/ Medium Duty <b>2</b> (20-59 N)	Light/ Medium Duty <b>2</b> (20-59 N)	<ul style="list-style-type: none"> <li>Light construction</li> <li>Material handling</li> <li>Parts assembly</li> </ul>	
Medium Duty <b>3</b> (60-99)	Medium Duty <b>3</b> (60-99)	<ul style="list-style-type: none"> <li>Construction</li> </ul>	
Medium Heavy Duty <b>4</b> (100-149)	Heavy Duty <b>4</b> (100+)	<ul style="list-style-type: none"> <li>Construction</li> </ul>	
Heavy Duty <b>5</b> (150+)		<ul style="list-style-type: none"> <li>Insulation stud pin/ clip install</li> </ul>	



**Abrasion Resistance**

Consider abrasion resistance when a task will have repetitive rubbing on rough surfaces. The higher the rating number the better the protection.

Level (tested at 500-gram load)	Abrasion Cycles to Fail		Example Protective Materials
0	< 100	Less severe rubbing on rough surfaces.	Rubber, plastic, leather, polyester, nylon, cotton
1	≥ 100		
2	≥ 500		
3	≥ 1000		

Level (tested at 1000-gram load)	Abrasion Cycles to Fail		Example Applications	Example Protective Materials
4	≥ 3000	Severe and repetitive rubbing on rough surfaces.	Grinding, buffing	Reinforced heavy rubber, staple-reinforced heavy leather
5	≥ 10000			
6	≥ to 20000			

**Chemical Resistance**

Chemical Permeation Resistance testing is rate at which chemicals pass through the material on a molecular level.

Level	Standard Breakthrough Time (Minutes)	Example Protective Materials
0	< 10	See SDS for the recommended material. Examples: Natural rubber, neoprene, nitrile rubber, Saranex™, Tychem®, Trellechem®
1	≥ 10	
2	≥ 30	
3	≥ 60	
4	≥ 120	
5	≥ 240	
6	≥ 48	

**Thermal / Ignition Resistance**

Ignition Resistance and burning behavior is how easily a glove will ignite, and if ignited how readily it will continue to burn once the flame is removed.

Level	Time Exposed to Flame (seconds)	After-Flame Time (seconds)
0	3	> 2
1	3	≤2
2	12	< 2
3	12	Greater than or equal to 2
4	No ignition in either 3 or 12 second exposure period	

Contact Temperature	Rating	Example Protective Material
Slightly Warm (≤ 100°C)	0-1	Chrome-tanned leather, terry cloth
Warm (101-200°C)	1-2	Nomex®, Kevlar®, heat-resistant leather, terry cloth (aramid fiber)
Medium High (201-350°C)	3	Nomex®, Kevlar®, neoprene-coated asbestos, heat-resistant leather with linings
High (> 350°C)	4	Asbestos

**Cold Resistance**




For cold weather, select gloves which protect against task related hazards and are made of/with:


- Leather
- Insulated plastic or rubber
- Wool
- Cotton


For extreme cold, ensure gloves are rated for cryogenics, -150 °C to absolute zero.

Impact Resistance

Impact-resistant is how well the force of the impact is dispersed.

Level	Mean Transmitted Force	Example Applications	Example Protective Materials
<b>ANSI / ISEA 138</b>  Highest level of rated protection	≤4 kN	Drill floor- tripping pipe	Thermoplastic rubber adhesion, anti-impact padding (check fingertips and thumb)
<b>ANSI / ISEA 138</b>  Highest level of rated protection	≤6.5 kN	Loading, unloading iron to/from racks	
<b>ANSI / ISEA 138</b>  Lowest level or rated protection	≤9 kN	General access to drilling and completions sites	

 **NOTE:** The lower kN measurement for each performance level equates to a glove that is safer from impact.

 **NOTE:** Minimum ANSI / ISEA 138 1 rated gloves are required for general access to drilling and completions sites.

Radiation Resistance

To protect against radiation exposure, ensure gloves are lead-lined rubber, plastic, or leather.

Biological

If performing first aid, protect hands using nitrile or natex gloves.

Arc Flash

Gloves must be selected based on the voltage. Refer to the Electrical Work (ALL-AOA-00-000-HST-0014), Protective Measures and manufacturer’s specifications.