

SELECTION CRITERIA

In order to make the right choice in a type and/or model of a personal protection product the user should make for himself selection criteria in order to come up with the best choice for his/her situation.

Weldas wants to help with that by giving you a number of selection criteria to start by making the right choice. Please read for that the 2 following pages carefully.

General selection criteria for leather products such as welding gloves and welding clothing

Choosing the right product is always important to make the workplace productive but also safe.

The factors to consider include one or more of the following arguments:

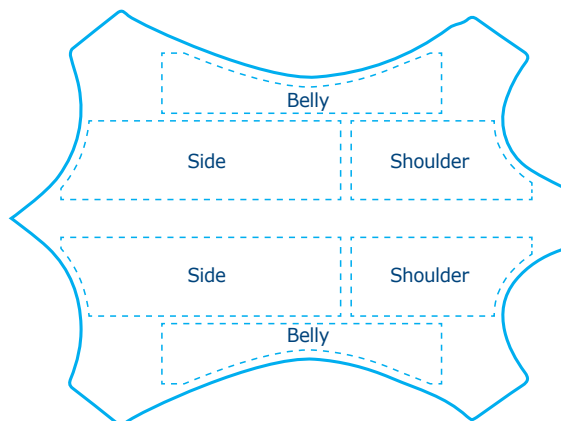
- Protection arguments: resistant to heat, flame, molten splashes, UV, electricity and punctures.
- Health arguments: values of pH, Chromium, PCP or other substances that needs to be within limits.
- Durability arguments: values of abrasion resistance, tensile strength, tear resistance, heat related dimensional change resistance, reinforced seams and stress points as well as thread strength and flame resistance.
- Comfort arguments: the right sizing and fit, dexterity, fingertip sensitivity, weight, sweat vapor transmission and absorption and climate and oil resistant.

Type of leather selection criteria for leather products such as welding gloves and welding clothing:

| Type of leather | Features |
|------------------------------|------------------------------------------------------------------------------------------------|
| Split cow leather | Heat & flame resistant, material breaths because of open structure, also low priced |
| Grain cow leather | Pliable and strong, water and oil resistant |
| Suede (reversed) pig leather | Soft and comfortable and mostly lower priced than other leathers |
| Grain deer leather | Fit and dexterity and, with that, very good comfort as well as water and oil resistant |
| Grain goat leather | Fit and dexterity, light weight and very good comfort as well as water and oil resistant |
| Grain bison leather | Fit and dexterity, very good comfort, high mechanical value as well as water and oil resistant |

Leather grades and terminology:

Different portions of the hide of an animal have different characteristics: the side offers the best strength and most constant quality, the shoulder offers good strength and pliability, the belly is the lowest in quality but also the most economical.



Choice of thumb design:

| Straight thumb | Wing thumb | Keystone thumb |
|-----------------------------------------------------|------------------------------|---------------------|
| | | |
| For extra sensitivity and/or extra welding gun grip | For seamless palm durability | For comfortable fit |

Note on thumb/palm design: extra durability and/or cut resistance can be achieved by adding an extra reinforcement around thumb and/or on palm of the glove.

Remark: the choice of materials and design for welding gloves and clothing but also for other products out of the Weldas product program always depend on what the applicable European norm desires. For that reason our products are tested and certified by a, by the European Union approved, test and certification laboratory. All test reports and certificates can be found on our special CE website:

www.weldas-ce.com

Weldas offers a lot of information through its catalog, website and other means of publication in order to help the user to make the right choice of product for its personal protection but it is and will always be the responsibility of the user what product he/she does choose.

INFORMATION ON EUROPEAN NORMS

In 1989 the council of the European community agreed on the directive 89/686/EEC which requires employers to use the appropriate personal protective equipment (PPE). All products used for personal protection must be marked with the appropriate basic CE marking and extended if the applicable norm does ask for it and according to it's intended use. The directive recognizes 3 levels of protection and the products to go with these levels:

Level 1

simple product design for minimal risk situations below 50°C. This is the only level where the manufacturer is allowed to do self-certification and where CE-minimal risk markings/imprints are allowed.

Level 2

complex product design for industrial environments with heat, flame and/or mechanical risks. The PPE products must be tested, certified and marked to the appropriate European norms.

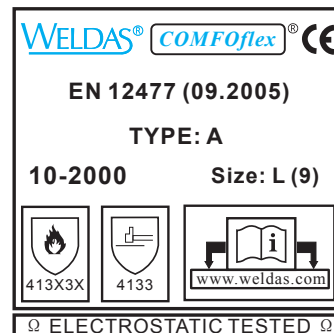
Level 3

very complex product design for high risk situation like dangerous chemicals handling or very high heat. These products must be tested and certified like in level 2 but also auditing on the manufacturing quality assurance system is required.

Example of certificate:



Example of imprint of a Weldas® certified glove:



Basic norms and pictograms on gloves used for personal protection:

EN 420 norm on sizing of gloves: see page 9 of this catalogue.

EN 388 norm on mechanical risks for gloves:

| Digit | Test Resistance | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
|-------|---------------------|---------|---------|---------|---------|---------|
| 1st | Abrasion (# cycles) | 100 | 500 | 2000 | 8000 | - |
| 2nd | Blade Cut (index) | 1,2 | 2,5 | 5,0 | 10,0 | 20,0 |
| 3rd | Tear (Newton) | 10 | 25 | 50 | 75 | - |
| 4th | Puncture (Newton) | 20 | 60 | 100 | 150 | - |

EN 12477 norm on welding gloves and allied processes:

| Minimum requirements | according to EN.... | Type A Minimum Rating | Type B Minimum Rating |
|---------------------------------|---------------------|-----------------------|-----------------------|
| Electrical Insulation | pr1149-2 | $R \geq 10^6 \Omega$ | $R \geq 10^5 \Omega$ |
| Abrasion Resistance | EN 388 | 2 500 cycles | 1 100 cycles |
| Blade Cut Resistance | EN 388 | 1 Index 1,2 | 1 Index 1,2 |
| Tear Resistance | EN 388 | 2 25 N | 1 10 N |
| Puncture Resistance | EN 388 | 2 60 N | 1 20 N |
| Burning Behaviour | EN 407 | 3 | 2 |
| Contact Heat Resistance | EN 407 | 1 100° C | 1 100° C |
| Convective Heat Resistance | EN 407 | 2 HTI ≥ 7 | 0 |
| Small Molten Splash Resistance | EN 407 | 3 25 Droplets | 2 15 Droplets |
| Dexterity (pick up of rod dia.) | EN 420 | 1 $\leq 11\text{mm}$ | 4 $\leq 6,5\text{mm}$ |

EN 407 norm thermal risks for gloves:

| Digit | Test Resistance | Digit | Test Resistance |
|-------|-------------------|-------|----------------------------------|
| 1st | Burning behaviour | 5th | Small splashes of molten metal |
| 2nd | Contact heat | 6th | Large quantities of molten metal |
| 3rd | Convective heat | | |
| 4th | Radiant heat | | |

EN 11611 norm on welding clothing and allied processes:

| Requirement(s) | Class 1 | Class 2 |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Tensile strength — woven outer textile material — leather | 400 N 80 N | |
| Tear strength | 20 N | |
| Dimensional change of woven textile materials Dimensional change of knitted textile materials | $\leq \pm 3 \%$ $\leq \pm 5 \%$ | |
| Flame spread a : For ISO 15025:2000, Procedure B, this requirement is not applicable. | ISO 15025:2000, Procedure A, (surface ignition) ; ISO 15025:2000, Procedure B, (edge ignition) No flaming to the top or either side edge; No hole formation a; No flaming or molten debris Mean afterflame ≤ 2 s; Mean afterglow ≤ 2 s | |
| Impact of spatter | 15 drops | 25 drops |
| Heat transfer (radiation) | RHTI 24 W 7 | RHTI 24 W 16 |
| Burst strength | 200kPa | |
| Seam strength — textile material — leather | 225 N 110 N | |
| Electrical resistance | $> 10^5 \Omega$ | |
| Innocuousness | See 6.11 | |
| Leather | Fat content: $\leq 15 \%$ | |