HSE JOINING

HEALTH, SAFETY AND ENVIRONMENT TRAINING FOR JOINING

CUTTING RISKS

Io2 – Educational materials

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Causes

Globally:

- Materials
- Tools
- Environment

Figure 1 – Environment. Source: VCL

Figure 2 – Tools. Source: VCL

Figure 3 – Materials. Source: VCL

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Main causes

- Personal causes contain:
  - The lack of, or wrong use of PPE;
  - Insufficient knowledge and education about the risks;
  - Lack of concentration and common sense;

- Environmental causes contain:
  - Lack of organisation ➔ Insufficient workplace organisation, etc;
  - Insufficient safety measures concerning machinery;

Figure 4 -Lack of common sense.
Source: www.rampado.eu/

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Figure 5 – Torn Glove. Source: VCL

Figure 6 – Torn Glove. Source: VCL

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Consequences

The consequences can be very severe:

- Injuries can lead to disabilities for life and even death;

Not to mention the huge financial impact of a serious injury for both employer and employee.

Figure 7 – Wound. Source:Van Valen, R. (sd). Wondgenezing en Diabetes Mellitus.

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Prevention

- Wear the proper PPE;
- Focus when working with sharp materials;
- Warn others who are working irresponsibly;

Figure 8 - Stay focused. Source: Katie. (2017, april 1). Are you on track for success? Keith Upkes Coaching.

Figure 9 - PPE symbols. Source: https://electricalconnection.com.au/27257-2/

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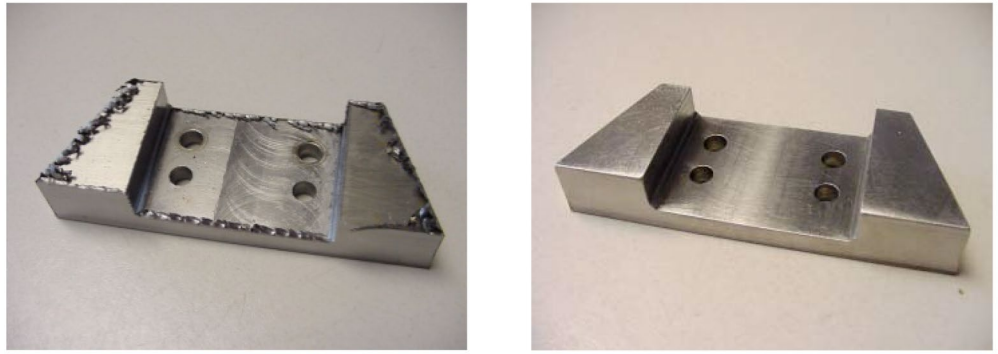
Prevention

- Workplace organisation;
- Maintain and check your equipment;
- Round off any sharp edges and deburr the materials;
- Use protective rubber for sharp edges.



(a) Before deburring (b) After deburring

Figure 10 – Deburring. Source: Niknam, 2014

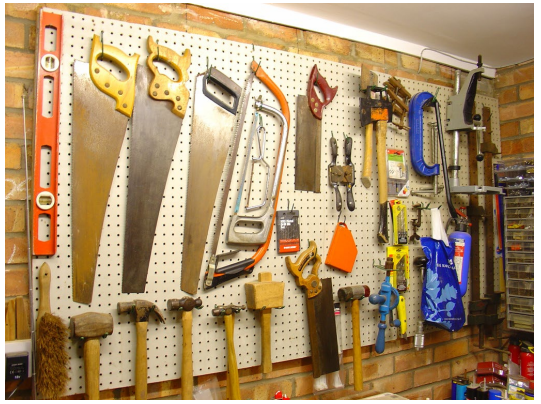


Figure 11 – Organisation. Source: Dumont

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PPE

- Workwear:
  - Flame retardant but still comfortable;
  - The fire symbol suggests resistance against heat;

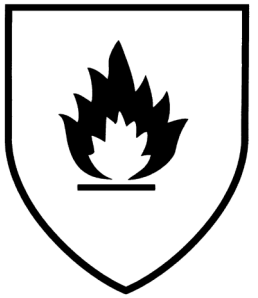

Figure 14 – Fire Symbol. Source: EN12477

- Goggles:
  - When cutting, drilling, grinding, etc;
    - Always use protective goggles!

Figure 12 -Safety glasses. Source: https://info.theuniversalgroup.ca/demolition/the-5-safety-supplies-you-need-for-your-construction-site

Figure 13 -Safety glasses. Source: www.maxpixel.net/Protection-Accident-Prevention-Safety-Goggles-1683644

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PPE

Safety gloves

- To protect your hands against cuts ➔ cut resistant, heat resistant, enough manoeuvrability;
- These two symbols for grinding;
- Cutting risk ➔ Hammer symbol;
- EN 12477 divides gloves in to two types:
  - Type A
  - Type B = for greater manoeuvrability
    - ➔ TIG welding

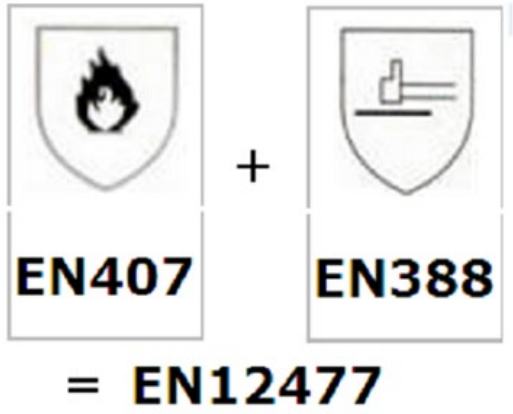

Figure 15 – Symbols. Source EN12477

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PPE

Ear protection:

- Especially during grinding;

Figure 16 – Ear Protection. source: https://electricalconnection.com.au/27257-2/

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PPE

EN 12477 ➔ difference type A and B

Requirements	Minimum performance required		
	EN Number	Type A	Type B
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 (contact temperature 100°C)	1 (contact temperature 100°C)
Convective heat resistance	EN 407	2 (HTI ≥ 7)	-
Resistance to small splashes of molten metal	EN 407	3 (25 droplets)	2 (15 droplets)
Dexterity	prEN 420: 1998	1 (smallest diameter 11mm)	4 (smallest diameter 6,5mm)

Table 1 – Levels of performance. Source: EN 12477

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PPE

Numbers on gloves ➔ EN 388

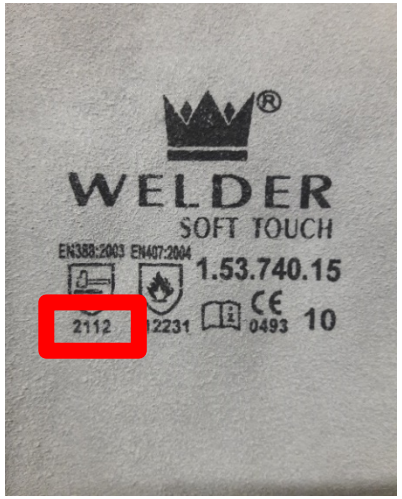

Figure 17 -Levels of performance. Source: EN 12477

Table 1 – Levels of performance					
Test	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
6.1 Abrasion resistance (number of rubs)	100	500	2000	8000	-
6.2 Couple test: Blade cut resistance (index)	1,2	2,5	5,0	10,0	20,0
6.4 Tear resistance (N)	10	25	50	75	-
Puncture resistance (N)	20	60	100	150	-

Table 2 – Levels of performance. Source: EN 12477

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European, National Regulations and Recommendations

- EN 388
- EN 407
- EN 12477

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