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Soft Armour Textile

A Guide to Global Cut Level Standards

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Cut level guide

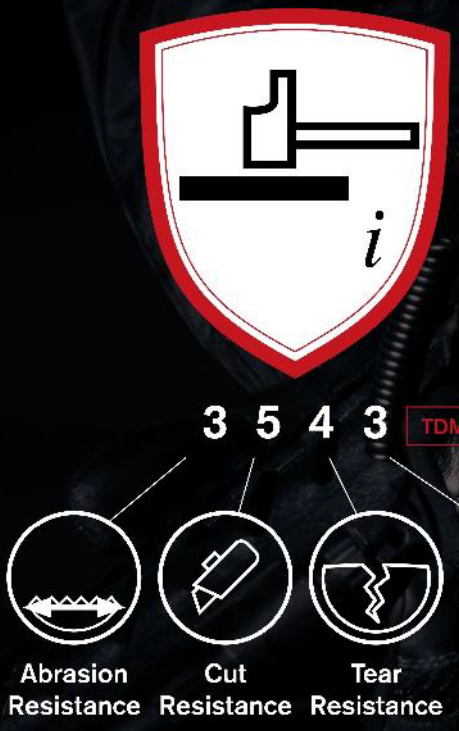
The performance of cut resistant fabrics has improved significantly in recent years, with new yarns and technologies developed to withstand the most challenging environments. This guide explains the European cut level standard, EN388, which is also recognised across Canada, Asia, Australia, New Zealand and Latin America, and the United States cut level standard, ANSI/ISEA 105.

Both global standards use the same piece of test equipment - the tomodynamometer, or TDM - although the methods prescribed in each case (ASTM F2992 vs ISO 13997) are slightly different. Both standards were also updated in 2015-16 to improve transparency around cut performance and allow a more informed decision about the level of cut resistance required.

Understanding EN388:2016

EN388 involves two tests for cut resistance - the coupe test (rotating blade) and ISO 13997 (TDM). The coupe test gives a cut score of 1-5 and is used for lower cut-resistant materials. The ISO 13997 test gives more accurate results and is implemented when coupe test results are level 3 or above and results in a score from A-F.

EN 388:2016



LEVEL	EN ISO CUT RESISTANCE
A	2 Newtons 204gms
B	5 Newtons 505gms
C	10 Newtons 1020gms
D	15 Newtons 1530gms
E	22 Newtons 2243gms
F	30 Newtons 3059gms

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Understanding ANSI/ISEA 105-2016

The ANSI standard uses the ASTM F2992-15 (TDM) test, in which the sample is cut five times with three different loads and an average is calculated, resulting in a cut score of A1-A9.

- Precision Assembly
- Electronics Manufacturing

- Construction
- Auto Assembly

- Construction
- Auto Assembly

- Bottle & Glass Handling
- Light Metal
- Oil & Gas

- Metal Fabrication

- Recycling

- Heavy Metal Stamping

- Meat Processing

- Pulp & Paper
- Blade Handling
- Float Glass

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Choosing your cut level

		(F2992-15) ANSI	EN388 (ISO 13997)		
Cut rating from A1-A9 (9 levels)	Measured in Grams of Force 1gf = 0.0098N	ANSI A#	EN 388 XXXX	Measured in Newtons 1N = 101.97gf	Cut rating from A-F (6 levels) *proposed

MATERIALS				APPLICATION
Metal Mesh	6000+ gf	A9		**EXTREME** Glass manufacturing. Recycling Sorting. Metal Fabrication
Metal Mesh	5000 - 5999 gf	A8		**EXTREME** Glass manufacturing. Recycling Sorting. Metal Fabrication
Engineered Yarns	4000 - 4999 gf	A7		**HIGH** Automotive Assembly. Pulp Paper. Aerospace Industry
Engineered Yarns	3000 - 3999 gf	A6	F 30 N (3059 gf)	**HIGH** Automotive Assembly. Pulp Paper. Aerospace Industry
Engineered Yarns	2000 - 2999 gf	A5	E 22 N (2243 gf)	**HIGH** Automotive Assembly. Pulp Paper. Aerospace Industry
Engineered Yarns	1500 - 1999 gf	A4	D 15 N (1529 gf)	**MODERATE** Manufacturing. Warehouse. Food Prep. Packaging
Engineered Yarns Synthetics Polyester/Nylon	1000 - 1499 gf	A3	C 10 N (1019 gf)	**MODERATE** Manufacturing. Warehouse. Food Prep. Packaging
Synthetics Polyester/Nylon	500 - 999 gf	A2	B 5 N (309 gf)	**LOW HAZARD** General purpose material handling with sharp edges
Synthetics Polyester/Nylon	200 - 499 gf	A1	A 2 N (203 gf)	**LOW HAZARD** General purpose material handling with sharp edges

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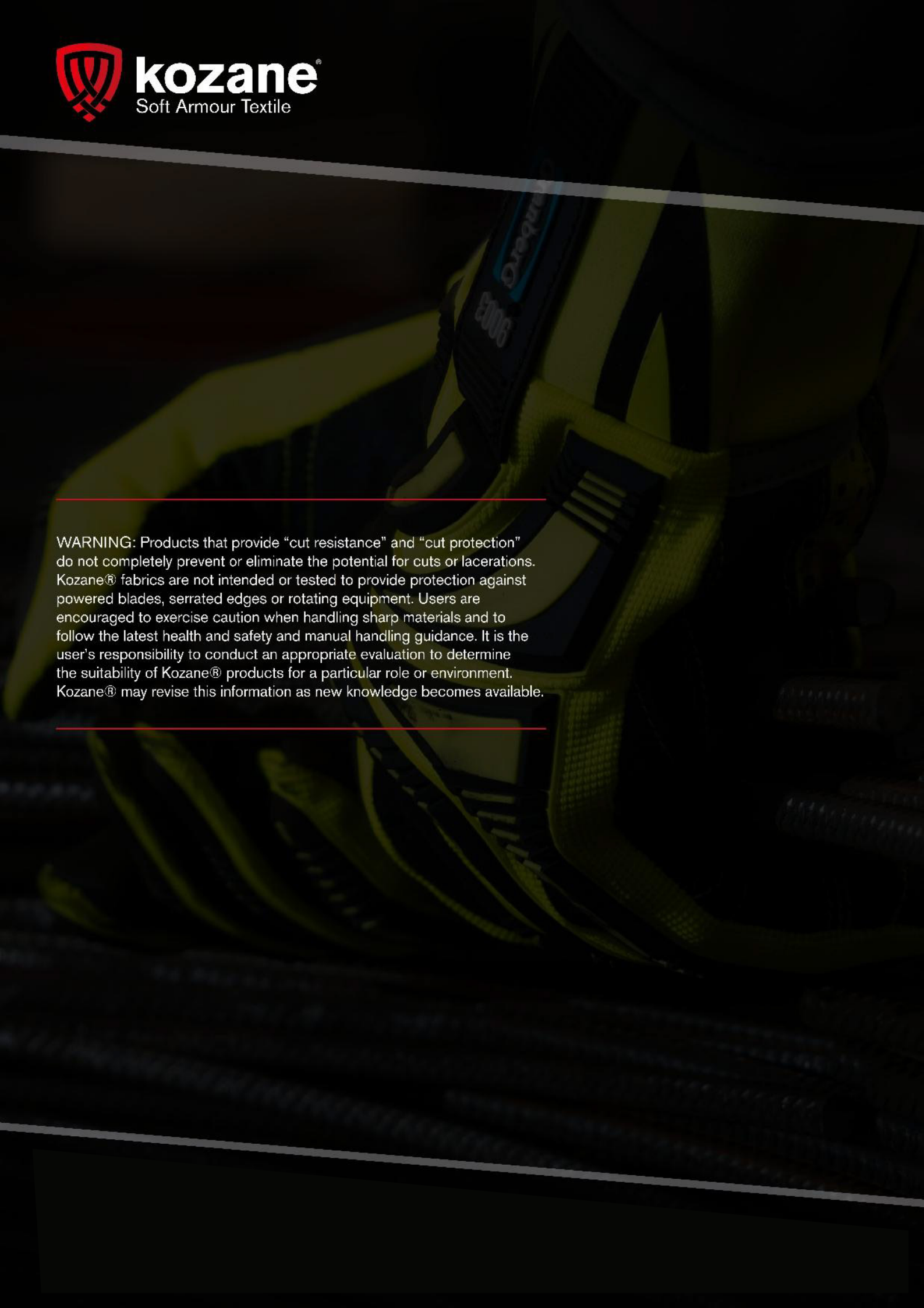

WARNING: Products that provide “cut resistance” and “cut protection” do not completely prevent or eliminate the potential for cuts or lacerations. Kozane® fabrics are not intended or tested to provide protection against powered blades, serrated edges or rotating equipment. Users are encouraged to exercise caution when handling sharp materials and to follow the latest health and safety and manual handling guidance. It is the user’s responsibility to conduct an appropriate evaluation to determine the suitability of Kozane® products for a particular role or environment. Kozane® may revise this information as new knowledge becomes available.