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IMPACT 1

# **Innovations Technology Center (ITC Lab)**



MCR Safety Innovations Technology Center 685 Highway 72 Piperton, TN 38017



In July of 2016, the MCR Safety's Innovations Technology Center had the pleasure of becoming one of the first North American testing labs to receive the ISO/IEC 17025 accreditation under the ANSI/ISEA 105 scope.

ISO/IEC 17025:2005 is the single most important standard for testing laboratories around the world.

Laboratories accredited to this international standard have demonstrated they are technically competent and able to produce precise and accurate test and/or calibration data.

MCR Safety's Innovations Technology Center (ITC) began operation in 2010. The three objectives at the forefront of the ITC lab development were:

- 1. Increase our ability to monitor the quality of incoming products produced at our factories.
- 2. Utilize the in-house testing laboratory, to increase Research & Development of new products and technologies.
- 3. Ensure that in-market comparisons between MCR Safety products and competitor products are viable. In other words, we want to ensure we are comparing apples-to-apples, and not apples-to-oranges.
- \*All testing performed for MCR Safety distributors is done free of charge.

The full scope of the accreditation includes the following tests:



**Cut Resistance** Testing



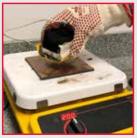
**Puncture Resistance** Testing



Test Method EN 388-16

**Tear Resistance** Testing

Conductive (Contact) Heat Resistance Test



Test Method ASTM F1060-08

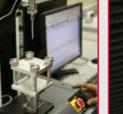


Test Method ASTM F2992-15



ASTM D3884-09 Uncoated Gloves

Test Method ASTM D3389-15 Coated Gloves





Tear Testing EN 388-16

"Integrity is doing what you say you will do" - Chuck Swindoll

Any glove company can market a cut resistant glove, however, has it passed the quality management testing process of an ISO 17025 laboratory which validates the performance levels? You can have 100% confidence that MCR Safety product will perform to the advertised cut resistant levels. These tests are not audited by OSHA or any government agency so it's up to the purchaser to determine the accuracy of testing. MCR Safety takes the guess work out by having our accredited lab perform testing so you can have 100% confidence that any MCR Safety product will perform to the advertised levels.

#### WE PROTECT PEOPLE!



## **ANSI/ISEA 105-2016 Cut Resistance**

Equipment: Tomodynamometer TDM-100

Blade Validation: Before and after each sample specimen is tested, the blades must be checked, to ensure the effective sharpness of the cutting edge.

Sample Prep:

- Three glove samples are required to perform the test
- The glove samples must be conditioned to specific environmental conditions
- $\bullet$  A 2"x 4" swatch cut from the palm of each glove at a 45-degree angle
- The test sample is then mounted to the mandrel of the machine

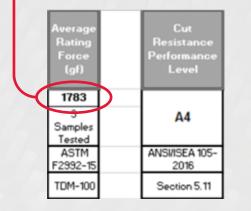
#### Testing:

- Each of the three glove samples will receive a total of 15 cut through measurements.
- The 15 cut through measurements are broken out into 3 distinct distances:
- 5 data points in the 5mm to 20mm cut through distance range
- 5 data points in the 20mm to 33mm cut through distance range
- 5 data points in the 33mm to 50mm cut through distance range
- The plotting of these data points on graph, enables us to find the cut through distance at 20mm of blade travel.

#### Data Recorded:

		Sample 1			Sample 2	Sample 3				
		1820			1810			1718		
	Load (gf)	Distance (mm)	Norm. Distance (mm)	Load (gf)	Distance (mm)	Norm. Distance (MM)	Load (gf)	Distance (mm)	Norm Distance (MM)	
Calibration Cut	500	15.85		500	15.31		500	17.80		
(Before)		10.00						11.00		
1	2000	9.06	11.63	2000	7.83	3.46	2000	18.05	19.25	
2		9.37	12.03	2000	13.90	16.79		5.74	6.12	
3		12.46	15.99	2000	6.75	8.15		8.89	9.48	
4	2000	5.02	6.44	2000	8.67	10.47	2000	15.26	16.28	
5		5.08	6.52	2000	8.96	10.82	2000	8.02	8.55	
6		24.44	31.37	1800	31.69	38.28	1600	20.86	22.25	
7	1800	26.62	34.17	1800	20.28	24.50		21.18	22.59	
8		20.80	26.70		20.41	24.66	1600	24.94	26.60	
9		31.20	40.05	1800	20.14	24.33		27.59	29.43	
10		20.39	26.17	1800	26.79	32.36	1600	28.30	30.19	
11		44.80	57.51		33.17	40.07	1400	40.77	43.49	
12	1400	33.44	42.93	1400	33.46	40.42	1400	33.20	35.41	
13		40.60	52.12	1400	33.11	40.00		38.15	40.65	
14	1400	33.03	42.40	1400	35.05	42.34	1400	39.11	41.72	
15	1100	40.11	51.49	1400	41.10	49.65	1400	33.47	35.70	
Calibration Cut (After)	500	15.31		500	17.80		500	19.70		
		Correction	1	Sharpess Co		1		Correction	1	
		e Distance	20mm	Reference D		20mm		e Distance	20mm	
	RatingFo		1820.16	RatingForce		1809.95	RatingFo		1718.50	
RESULTS		ence Interval (gf)	366.50		e Interval (gf)	341.43	% Confid	291.84		
		Deviation (gf)	169.65	Standard De	viation (gf)	158.04		Deviation (gf)	135.09	
	R-Square		0.73	R-Squared		0.76	R-Square	0.81		
	Correctio		0.13	Correction F		0.12	Correctio		0.09	
Optional Sample	Basis W1	3.11	Grams	Basis WT	3.59	Grams	Basis WT	3.11	Grams	
Properties	Thicknes	0.97	MM	Thickness	0.98	MM	Thicknes	0.99	MM	

#### Reporting and Averaging the 3 gram scores



#### ANSI/ISEA 105 2016 Cut Score Gram Levels

A9: 6,000+ grams to cut					
A8: 5,000 to 5,999 grams to cut					
A7: 4,000 to 4,999 grams to cut					
A6: 3,000 to 3,999 grams to cut					
A5: 2,200 to 2,999 grams to cut					
A4: 1,500 to 2,199 grams to cut					
A3: 1,000 to 1,499 grams to cut					
A2: 500 to 999 grams to cut					
A1: 200 to 499 grams to cut					

Tomodynamometer TDM-100



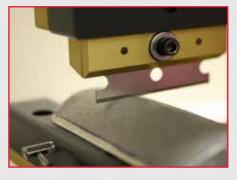
**Blade Validation** 



Sample Prep



Testing



Data Recorded



### "It's only after you've stepped outside your comfort zone that you begin to change, grow, and transform." - Roy T. Bennett

Every day consists of change and improvement so at MCR Safety we are living this out by updating the most powerful cut protection offerings in the industry with a single brand that represents the best of the best in fibers, coatings, and technology advancements as CUTPRO. One unified brand identity along with an easy identifiable ANSI cut scoring system.

#### **Glove Shell and Coating**

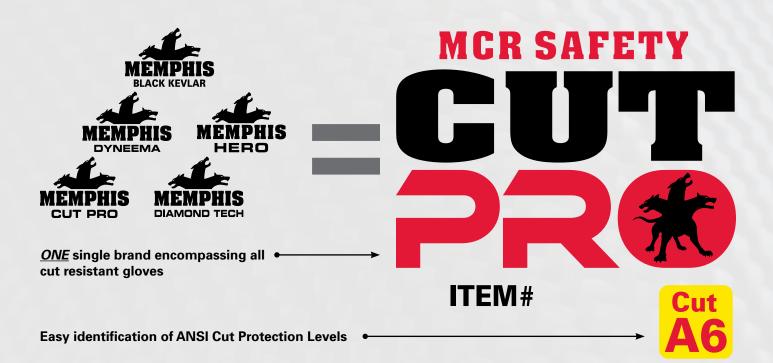
Guess what?! The name is changing and that's it. The glove shell fiber combination and coating is staying exactly the same as before - No changes....Zero, Zilch, Zip, Nada

#### Inventory

**Light Cut Hazards** 

Not Recommended for Cut

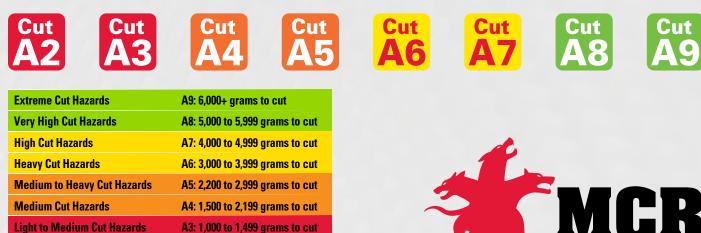
During this transition, there is a good chance that you could receive old and new logo product however that's the only difference. The glove is the same product that we have manufactured for years which means we still have your back. Same protection, same glove, same piece of mind in wearing Protection You Can Trust!



#### Understanding ANSI/ISEA 105 2016 Cut Score Gram Levels

A2: 500 to 999 grams to cut

A1: 200 to 499 grams to cut





# **CUT PRO Materials**



ARX<sup>®</sup> is an Aramid base fiber designed to protect against cut, abrasion, and flame resistant hazards which is available in coated knits, leather, and sleeve configurations. This fiber is developed and manufactured in MCR Safety's state of the art spinning facility where quality is never sacrificed. #WeProtectPeople

www.mcrsafety.com/cut-protection



HyperMax<sup>™</sup> synthetic yarns are engineered to protect against cuts and lacerations ranging from ANSI Cut Level A2 up to A9. Excellent abrasion properties and high levels of comfort are key to the success of this fiber. #WeProtectPeople www.mcrsafety.com/cut-protection



Hero<sup>™</sup> yarn takes cut protection to the next level without sacrificing comfort or dexterity. Made up of a combination of proprietary spun yarns designed and knitted exclusively in MCR Safety's spinning plant where quality is never sacrificed. #TrustedToProtect www.mcrsafety.com/cut-protection

Kevlar

Kevlar<sup>®</sup> is the original gold standard in cut protection. Ideal for applications requiring cut and heat protection in one. Patented Kevlar<sup>®</sup> engineered yarns combine cut-resistant soft-spun Kevlar<sup>®</sup> materials, high-strength inorganic yarns and elastic stretch-core yarns to deliver the best balance of protection and comfort. #Kevlar

www.mcrsafety.com/gloves/technology/kevlar



Dyneema<sup>®</sup> Diamond Technology is the latest patented fiber innovation from DSM Dyneema. This state-of-art technology is once again pushing forward the properties of cut resistance in a lightweight and "natural feeling" fiber. #Dyneema

www.mcrsafety.com/gloves/technology/dyneema

# **ANSI A9 Cut Protection**

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## **ANSI A9 Cut Protection**



#### **Overall Features:**

- ANSI A9 Cut Protection extreme slice resistant
- ANSI Puncture Level 3 prevention of penetrating hazards
- ANSI Contact Heat Level 5 Up to 608°F thermal protection

#### Applications:

- Heavy Material Fabrication
- Blade Handling
- High-Risk contact with glass, wire, metal, wood

#### 93719MK Sleeve

- 19" length extended arm protection
- Elbow gusset improved range of motion
- Spandex hand cuff for stationary protection to allow use with gloves
- Gusset clip firm attachment to undergarment
- Ambidextrous





#### 93709MK Sleeve

- 9" length forearm protection
- Spandex hand cuff for stationary protection to allow use with gloves
- Ambidextrous

#### 93130MK Apron

- 30" x 24" torso protection
- Nylon/Neoprene neck strap all day comfort
- Nylon waist strap

# MCR Safety Sleeves



# **MCR Sleeve Styles**



Premium Grade Sleeve: Made with more DuPont<sup>™</sup> Kevlar<sup>®</sup> material per square inch less material stretch



Competitive Value Grade Sleeve: Made with less DuPont<sup>™</sup> Kevlar<sup>®</sup> material per square inch more material stretch



Sleeve Length														
Fiber	4″	7″	8″	9"	10″	12″	14″	15″	18″	19"	20″	21″	22″	24″
ARX <sup>®</sup>	-	-	-	-	٠	-	-	-	•	-	-	-	-	-
Kevlar <sup>®</sup> Blend	-	-	-	•	•	•	•	-	•	•	-	-	•	•
SteelCore	-	-	-	-	-	•	-	-	•	-	-	•	-	-
Hero™	-	-	-	-	-	-	-	-	•	-	-	-	-	-
Dyneema®	-	-	-	-	-	•	•	-	•	-	-	-	-	-
Kevlar®	•	•	•	-	•	•	•	•	•	-	-	-	•	•
HyperMax™	-	-	-	-	-	•	•	-	•	-	•	-	-	-
Competitive Value	-	-	-	-	•	-	•	-	•	-	-	-	•	-



Bar Tack

Thumb Slot

Cotton Interior

Elbow Gusset

Leather Pad Silicone Mini-Dots

Silicon Grid

	Sleeve Options									
Fiber	Bar Tack	Thumb Slot	Cotton Interior	Elbow Gusset	Leather Pad	Silicone Mini-Dots	Silicon Grid			
ARX®	-	•	-	-	-	-	-			
Kevlar <sup>®</sup> Blend	-	•	•	-	-	-	-			
SteelCore	-	-	-	-	-	-	-			
Hero™	-	•	-	-	-	-	-			
Dyneema®	-	•	-	•	-	•	•			
Kevlar®	•	•	-	•	•	-	-			
HyperMax™	-	•	-	-	-	-	-			
Competitive Value	•	•	-	-	-	-	-			

# **ANSI Sleeve Cut Protection**



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Presente Mariante Research and Annual Annual Annual Annual	
A9 ANSI CUT ≥ 6000 Grams	ANCL

Item #	Fiber	Length	Color	Grade	Wrist	ANSI Abrasion	ANSI Conductive Heat	EN388 Tear				
93130MK	Kevlar <sup>®</sup> Blend	30"x24"	Yellow	Premium	N/A	Х	5	Х				
93719MK	Kevlar <sup>®</sup> Blend	19"	Yellow	Premium	Thumb Slot	Х	5	Х				
93709MK	Kevlar <sup>®</sup> Blend	9"	Yellow	Premium	Thumb Slot	Х	5	Х				
A8 ANSI CUT ≥ 5000 Grams												
9321	SteelCore	21"	White	Premium	Plain	Х	Х	4				
9318	SteelCore	18"	White	Premium	Plain	Х	Х	4				
9312	SteelCore	12"	White	Premium	Plain	Х	Х	4				
	A6 ANSI CUT ≥ 3000 Grams											
9318K7	Hero™	18"	Green	Premium	Plain	3	3	3				
9318K7T	Hero™	18"	Green	Premium	Thumb Slot	3	3	3				
9318K13	Hero™	18"	Yellow	Premium	Plain	3	Х	3				
9318K13T	Hero™	18"	Yellow	Premium	Thumb Slot	3	Х	3				
			A5 AN	$ S  CUT \ge 2$	200 Grams							
9318DT510T	Dyneema®	18"	Blue	Premium	Thumb Slot	3	Х	3				
91780	Kevlar®	18"	Orange	Premium	Plain	3	2	3				
91780T	Kevlar®	18"	Orange	Premium	Thumb Slot	3	2	3				
91740	Kevlar®	14"	Orange	Premium	Plain	3	2	3				
91740T	Kevlar®	14"	Orange	Premium	Thumb Slot	3	2	3				
			A4 AN	<b>ISI CUT</b> ≥ 1	500 Grams							
92180	HyperMax™	20"	Orange	Premium	Plain	3	Х	Х				
9318DT10	Dyneema®	18"	Gray	Premium	Plain	6	Х	2				
9318DN7M	Dyneema®	18"	Gray	Premium	Plain	Х	Х	Х				
9318DN7MT	Dyneema®	18"	Gray	Premium	Thumb Slot	Х	Х	Х				
92180VT	HyperMax™	18"	Orange	Premium	Plain	3	Х	Х				
9378KF	Kevlar <sup>®</sup> Blend	18"	Yellow	Premium	Plain	Х	3	2				
9378KFT	Kevlar <sup>®</sup> Blend	18"	Yellow	Premium	Thumb Slot	Х	3	2				
9374TL	Kevlar®	14"	Yellow	Premium	Thumb Slot	Х	Х	4				





#### 9312, 9318, 9321

· Steelcore yarn - cut resistant

- Available in 12", 18", 21" length
- Made with FDA accepted material for use in food processing Food Processing, Canning, Stationary Blade Changeouts

# B OUPONTE Kevlar.

91780 Size: 18"

- DuPont<sup>™</sup> Kevlar<sup>®</sup> engineered yarn cut resistant
- · Advanced elbow gusset great range of motion and comfort Sheet Metal Assembly, Mill Operators, Injection Molding

## **ANSI Sleeve Cut Protection**





9318K13T Size: 18"

Hero<sup>™</sup> fiber - Kevlar<sup>®</sup> and synthetic combo

 Available with or without thumb slot Process Assembly, Metal Stamping, Machining Parts



9318DT10 Size: 18"

- Dyneema® Diamond Technology protection without fiberglass
- · Double sided silicone grid prevents movement and slicing on arm while handling materials
- Advanced elbow gusset great range of motion and comfort Metal Fabrication, Plastic Moldings, Raw Glass Handling



- Upper arm adjustable hook and loop strap
- Thumb Slot
- Recycling, Parts Sorting, Corrugated Handling



- 9374TL Size: 14"
- Made with DuPont<sup>™</sup> Kevlar<sup>®</sup> trusted cut protection
- · Thumb Slot with Leather forearm -Protection from heat and abrasion Handling Of Sharp Metal Materials, Parts Assembly

**ANSI Sleeve Cut Protection** 



#### A3 ANSI CUT ≥ 1000 Grams

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Item #	Fiber	Length	Color	Grade	Wrist	ANSI Abrasion	ANSI Conductive Heat	EN388 Tear
93724T	Kevlar®	24"	Yellow	Premium	Thumb Slot	2	2	4
9373B	Kevlar®	23"	Yellow	Premium	Bar Tack	Х	3	Х
9379	Kevlar®	22"	Yellow	Premium	Plain	2	2	4
9379KCT	Kevlar <sup>®</sup> Blend	22"	Yellow	Premium	Thumb Slot	2	3	4
9379KCTE	Kevlar <sup>®</sup> Blend	22"	Yellow	CV	Thumb Slot	2	3	3
9379KCTJ	Kevlar <sup>®</sup> Blend	22"	Yellow	Premium	Thumb Slot	2	3	3
SA9378E	ARX®	18"	Yellow	CV	Plain	Х	Х	Х
SA9378T	ARX®	18"	Yellow	Premium	Plain	Х	Х	Х
SA9378TE	ARX®	18"	Yellow	CV	Plain	Х	Х	Х
SA9378FTP	ARX®	18"	Yellow	Premium	Plain	Х	2	Х
9178G	Kevlar®	18"	Gray	Premium	Plain	Х	Х	Х
9178GT	Kevlar®	18"	Gray	Premium	Thumb Slot	Х	Х	Х
9178GP	Kevlar®	18"	Gray	CV	Plain	Х	Х	Х
9378BE	Kevlar®	18"	Yellow	CV	Bar Tack	2	3	3
9378E	Kevlar®	18"	Yellow	CV	Plain	2	3	3
VP9378E (VP)	Kevlar®	18"	Yellow	CV	Plain	2	3	3
9378TE	Kevlar®	18"	Yellow	CV	Thumb Slot	2	3	3
VP9378TE (VP)	Kevlar®	18"	Yellow	CV	Thumb Slot	2	3	3
9378TES	Kevlar®	18"	Yellow	CV	Thumb Slot	2	3	3
9378	Kevlar®	18"	Yellow	Premium	Plain	2	2	4
9178T	Kevlar®	18"	Black	Premium	Thumb Slot	2	2	4
9378B	Kevlar®	18"	Yellow	Premium	Bar Tack	2	2	X
9378SPW	Kevlar®	18"	Yellow	Premium	Wide Elastic	X	x	X
9378T	Kevlar®	18"	Yellow	Premium	Thumb Slot	2	2	4
VP9378T (VP)	Kevlar®	18"	Yellow	Premium	Thumb Slot	2	2	4
9378KC	Kevlar <sup>®</sup> Blend	18"	Yellow	Premium	Plain	2	3	3
9378KCT	Kevlar <sup>®</sup> Blend	18"	Yellow	Premium	Thumb Slot	2	3	3
VP9378KCT (VP)		18"	Yellow	Premium	Thumb Slot	2	3	3
9375	Kevlar®	15"	Yellow	Premium	Plain	X	X	X
9174G	Kevlar®	14"	Gray	Premium	Plain	X	X	X
9374E	Kevlar®	14"	Yellow	CV	Plain	2	3	3
9374	Kevlar®	14"	Yellow	Premium	Plain	2	2	4
VP9374 (VP)	Kevlar®	14"	Yellow	Premium	Plain	2	2	4
9374T	Kevlar®	14"	Yellow	Premium	Thumb Slot	2	2	4
9372E	Kevlar®	12"	Yellow	Premium	Plain	2	3	3
9372	Kevlar®	12"	Yellow	Premium	Plain	2	2	4
9372T	Kevlar®	12"	Yellow	Premium	Thumb Slot	2	2	4
SA9371	ARX®	10"	Yellow	Premium	Plain	X	X	X
9171GT	Kevlar®	10"	Yellow	Premium	Thumb Slot	X	X	X
9371	Kevlar®	10"	Yellow	Premium	Plain	2	2	4
VP9371 (VP)	Kevlar®	10"	Yellow	Premium	Plain	2	2	4
9371BE	Kevlar®	10"	Yellow	CV	Bar Tack	2	X	3
9371E	Kevlar®	10"	Yellow	CV	Plain	2	3	3
9371E 9371TE				CV				
	Kevlar® Kovlar®	10"	Yellow		Thumb Slot	2	3	3 V
9371T	Kevlar®	10"	Yellow	Premium	Thumb Slot	2	2	X X
9171TE	Kevlar®	10"	Black	CV	Thumb Slot	2		
9307	Kevlar®	7"	Yellow	Premium	Plain	2	2	4
9304	Kevlar®	4"	Yellow	Premium	Plain	2	2	4







SA9371 Size: 10"

- ARX<sup>®</sup> engineered yarn Excellent dexterity and flexibility
- 10" Length protection up to the elbow

Working near or coming in contact with sharp/abrasive materials





SA9378FTP Size: 18"

- ARX®/Fiberglass engineered yarn -Excellent dexterity and flexibility
- 18" Length protection over the elbow Working near or coming in contact with sharp/abrasive materials





9178T Size: 18"

- Made with DuPont<sup>™</sup> Kevlar<sup>®</sup> trusted cut protection
- 18" Length with Thumb Slot protection up to the biceps Working near or coming in contact with sharp/abrasive materials, Great for dirty environments



- 9379 Size: 22"
- Made with DuPont<sup>™</sup> Kevlar<sup>®</sup> trusted cut protection
- 22" Length protection over the biceps Working near or coming in contact with sharp/abrasive materials





9378B Size: 18"

- Made with DuPont<sup>™</sup> Kevlar<sup>®</sup> trusted cut protection
- 18" Length with Bar Tack protection up to the biceps Working near or coming in contact with sharp/abrasive materials



- 93724T Size: 24"
- Made with DuPont<sup>™</sup> Kevlar<sup>®</sup> trusted cut protection
- 24" Length with Thumb Slot protection over the biceps Working near or coming in contact with sharp/abrasive materials
- 13

### **ANSI Sleeve Cut Protection**

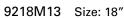
# ANSI Sleeve Gut Protection



#### A3 ANSI CUT ≥ 1000 Grams

Item #	Fiber	Length	Color	Grade	Wrist	ANSI Abrasion	ANSI Conductive Heat	EN388 Tear
9318D10	Dyneema®	18"	Gray	Premium	Plain	4	Х	2
VP9318D10 (VP)	Dyneema®	18"	Gray	Premium	Plain	4	Х	2
9318D10T	Dyneema®	18"	Gray	Premium	Thumb Slot	4	Х	2
VP9318D10T (VP)	Dyneema®	18"	Gray	Premium	Thumb Slot	4	Х	2
9318D10TMD	Dyneema®	18"	Gray	Premium	Thumb Slot	5	Х	Х
9318D7	Dyneema®	18"	Gray	Premium	Plain	3	Х	2
9318D7T	Dyneema®	18"	Gray	Premium	Thumb Slot	3	Х	2
9318D7M	Dyneema®	18"	Gray	Premium	Plain	3	Х	3
9318D7MT	Dyneema®	18"	Gray	Premium	Thumb Slot	3	Х	3
9218M13	HyperMax™	18"	Gray	Premium	Plain	5	Х	2
9378P	Kevlar®	18"	Yellow	Premium	Plain	2	Х	3
9314D10	Dyneema®	14"	Gray	Premium	Plain	4	Х	2
9214M13	HyperMax™	14"	Gray	Premium	Plain	5	Х	2
9312D10	Dyneema®	12"	Gray	Premium	Plain	4	Х	2
9212M13	HyperMax™	12"	Gray	Premium	Plain	5	Х	2
9371ES	Kevlar®	10"	Yellow	CV	Bar Tack	Х	Х	Х
9370	Kevlar®	8"	Yellow	CV	Plain	2	2	4

# **ANSI Sleeve Cut Protection**



- Hypermax<sup>™</sup> engineered yarn cut protection and comfort in one
- 18" length Protection up to the elbow Working near or coming in contact with sharp/abrasive materials

#### · Dyneema® protection without fiberglass -Protection over the elbow

9314D10 Size: 14"

· Advanced Elbow Gusset - Great range of motion and comfort Working near or coming in contact with sharp/abrasive materials

9318D10T Size: 18"

10

- · Dyneema® protection without fiberglass -Protection up to the elbow
- · Advanced Elbow Gusset Great range of motion and comfort Working near or coming in contact with sharp/abrasive materials

9318D7 Size: 18"

- · Dyneema® protection without fiberglass -Protection up to the biceps
- · Advanced Elbow Gusset Great range of motion and comfort Working near or coming in contact with sharp/abrasive materials



- Dyneema® protection without fiberglass -Protection up to the biceps
- · Double sided Silicone Micro Dots Reduces slice potential
- Advanced Elbow Gusset Great range of motion and comfort Working near or coming in contact with sharp/abrasive materials













9212M13 Size: 12"

- Hypermax<sup>™</sup> engineered yarn cut protection and comfort in one
- 12" length Protection up to the elbow Working near or coming in contact with sharp/abrasive materials







9318D10TMD Size: 18"



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