


This MotoCAP safety rating applies to:

Brand: Merlin
Model: Ranger D3O Wax
Type: Glove - Leather
Date purchased: 14 February 2024
Sizes tested: L, XL and 2XL
Test glove gender: Male
Style: All Purpose
RRP: \$169.95

Test Results Summary:

	Rating	Score
MotoCAP Protection Rating	★★	2.7
Abrasion	6/10	3.25
Seam strength	5/10	8.3
Impact	4/10	7.5
Water resistance	5/10	7.0

These gloves are fitted with impact protection for the knuckles only. There is no impact protection for the palms. There is no provision for ventilation to allow airflow movement through the glove.

Gloves - Crash Impact Risk Zones

This diagram is a pictorial representation of the crash impact risk Zones.


Impact protection

Knuckles ☒
 Palm ☐

Zone 1

High risk of impact
High risk of abrasion

Zone 2

High risk of abrasion

Zone 3

Medium risk of abrasion

Abrasion Resistance

The gloves were tested for abrasion resistance in accordance with MotoCAP test protocols. The diagram below is a visual indication of the likely abrasion performance of the materials in each Zone calculated from the data in the table below. The colour coding is based on the worst performing material in each zone.



Abrasion Resistance Performance

Abrasion rating	6/10
Abrasion score	3.25

Determining Criteria	Area	Good	Acceptable	Marginal	Poor
High abrasion risk	Zone 1 & 2	> 4.0	2.7 - 4.0	1.2 - 2.6	< 1.2
Medium abrasion risk	Zone 3	2.5	1.8 - 2.5	0.8 - 1.7	< 0.8

Individual Abrasion Resistance Results: - The table below shows the test results for time to abrade through all layers of the materials. Calculated for each sample by Zone, type and area coverage of each material as a proportion of that Zone. Abrasion times are capped at a maximum of 10.00s.

Abrasion time for each test (seconds)

Zones 1	Coverage (%)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Average	
Material A	50%	10.00	10.00	10.00	10.00	10.00	10.00	10.00	G
Material B	50%	1.17	2.02	2.10	2.57	2.36	3.06	2.21	M
Zone 2	Coverage (%)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Average	
Material B	70%	1.17	2.02	2.10	2.57	2.36	3.06	2.21	M
Material C	30%	1.47	1.04	1.39	1.33	0.93	1.58	1.29	M
Zone 3	Coverage (%)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Average	
Material D	30%	9.50	9.05	5.57	4.09	5.00	6.18	6.57	G
Material C	70%	1.47	1.04	1.39	1.33	0.93	1.58	1.29	M

Details of materials used in glove - derived from manufacturer provided information

Material A	Woven fabric shell over hard-shell armour, foam layer, water-resistant layer and fabric inner liner
Material B	Leather shell, water-resistant layer and fabric inner liner
Material C	Woven fabric shell, water-resistant layer and fabric inner liner
Material D	Leather patch over leather shell, water-resistant layer and fabric inner liner

Seam Tensile Strength

The tensile strength of the gloves seams and glove restraint (the force required to drag off a properly fastened glove) were tested in accordance with MotoCAP test protocols. The diagram below illustrates the tensile strength and wrist restraint results in terms of the likely performance of the glove in a crash and is a pictorial representation of the data from the tables below.



Seam Strength Performance

Seam strength rating	5/10
Seam strength score	8.3

Determining Criteria	Unit	Good	Acceptable	Marginal	Poor
Seam tensile strength	(N/mm)	> 11	9 - 11	6 - 8.9	< 6
Glove restraint	(N)	> 200	100 - 200	50 - 99	<50

Individual Seam Strength Results: - The table below shows the seam tensile strength in newtons per millimeter (N/mm) for each seam tested by Zone and the average result for each Zone.

Seam tensile strength (N/mm)

Area	1	2	3	4	5	Average	
Zones 1 & 2	10.31	6.50	7.44	5.70	6.84	7.36	M
Zone 3	13.32	10.82	10.30	6.62	7.94	9.80	A

Individual Glove Restraint Results: - The table below shows the force required to remove the restrained glove in newtons (N) for each of the five gloves tested and the average result.

Glove restraint (N)

Glove	1	2	3	4	5	Average	
Wrist restraint	400.0	400.0	400.0	400.0	400.0	400.0	G

Impact Protection

The glove was tested for impact protection and coverage in accordance with MotoCAP test protocols. The diagram below is a visual indication of the likely performance of each impact protector calculated from the data in the table below. The colour coding is based on the worst performing score for average or maximum force for each impact zone. Areas shaded black are not considered in the impact protection ratings.



Impact Protection Performance

Impact rating	4/10
Impact score	7.5

Determining Criteria	Unit	Good	Acceptable	Marginal	Poor
Impact force	(kN)	< 2	2 - 4.9	5 - 8	> 8

* Poor may also indicate that no impact protector is present in the glove

Impact Protector Results: - The table below shows the test results for each strike on each impact protector in kilonewtons (kN) and their area of coverage in percentage (%) within the Zone. Impact forces are capped at a maximum of 10.0kN.

Impact protector type	Knuckles	Palm
Average force (kN)	1.3 G	P
Maximum force (kN)	1.6 G	P
Coverage of zone 1 area	100%	0%

Individual test results: - The table below shows the test results for each strike on each impact protector in kilonewtons (kN) and the position of the strike. Impact forces are capped at a maximum of 10.0kN.

Impact protector type	Knuckles			Palm	No impact protector present
Strike number	1	2	3	1	2
Impact Protector 1	1.3	1.3	1.3		
Impact Protector 2	1.1	1.5	1.4		
Impact Protector 3	1.2	1.6	1.5		

Water spray and rain resistance

This glove is advertised as water-resistant, and so has been tested for water spray and rain resistance according to the MotoCAP test protocols. The table below shows the water absorbed (ml) and the wetting proportion (%) of the glove and under-glove due to water absorption.

	Water absorbed by glove		Water absorbed by cotton glove	
	Volume (ml)	Percentage (%)	Volume (ml)	Percentage (%)
Pair 1	176.0	73%	8.0	36%
Pair 2	224.2	94%	19.8	94%
Average	200.1	84%	13.9	65%

Location of wetting:

Visible wetting to the cotton under-glove was present to the cuffs and fore fingers of the four gloves. There was major wetting to the thumbs for the two gloves.

Assessment Details.

Brand	Merlin
Model	Ranger D3O Wax
Type	Glove - Leather
Date purchased	14 February 2024
Tested by	AMCAF, Deakin University
Report approved by	MotoCAP Chief Scientist
Garment test reference	G24L22
Rating first published	April 2024
Rating updated	3 April 2024