This MotoCAP safety rating applies to:

Brand:	BMW
Model:	City Denim Trousers
Type:	Pants - Denim
Date purchased:	28 August 2019
Sizes tested:	52 and 56
Gender:	M
Style:	All Purpose
Test code:	P19D10

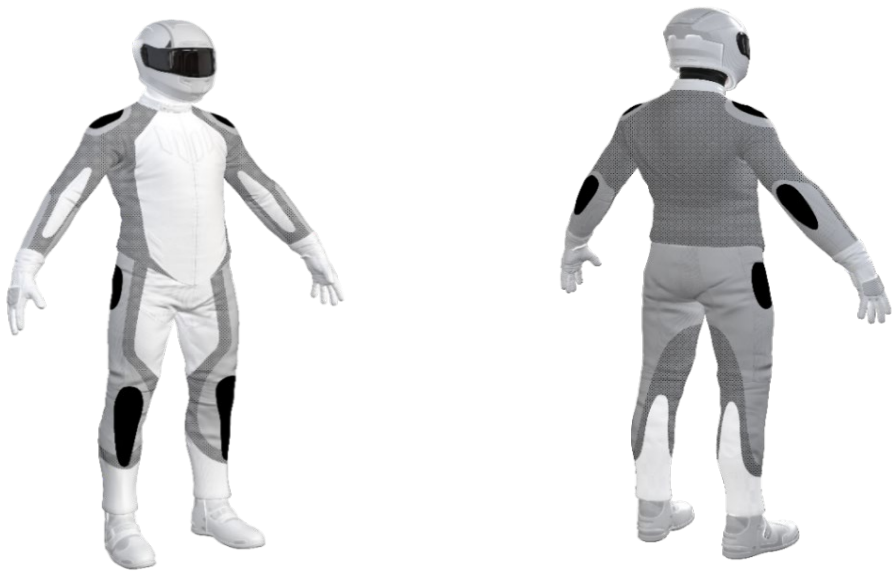
Test Results Summary:

	Rating	Score
MotoCAP Protection Rating	★	18.0
Abrasion	1/10	0.41
Burst	6/10	696
Impact	4/10	30.0
MotoCAP Comfort Rating	★★★★	0.563
Moisture Vapour Resistance		20.5
Thermal Resistance		0.192
Water resistance	N/A	N/A

This garment is fitted with impact protectors for the knees and hips. There are no vents to allow airflow movement through the garment.

Jacket and Pants - Crash Impact Risk Zones

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



Zone 1	Zone 2	Zone 3	Zone 4
High risk of abrasion High risk of impact	High risk of abrasion	Medium risk of abrasion	Low risk of abrasion

Abrasion Resistance

The garment was tested for abrasion resistance in accordance with MotoCAP test protocols. 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.

Details of materials used in garment:

Material A: Denim fabric shell

Zone	Coverage (%)	Abrasion time for each test (seconds) 1	2	3	4	5	6	Average (seconds)	
Zone 1 and 2 areas (High abrasion risk)									
Material A	100%	0.43	0.42	0.39	0.49	0.38	0.37	0.41	P
Zone 3 area (Medium abrasion risk)									
Material	100%	0.43	0.42	0.39	0.49	0.38	0.37	0.41	P
Zone 4 area (Low abrasion risk)									
Material A	100%	0.43	0.42	0.39	0.49	0.38	0.37	0.41	M

Abrasion times are capped at a maximum of 10.00s.

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 above. The colour coding is based on the worst performing material in each zone.

Determining Criteria		Good	Acceptable	Marginal	Poor
High abrasion risk	Zone 1/2:	> 5.6	3.0 - 5.6	1.3 - 2.9	< 1.3
Medium abrasion risk	Zone 3:	> 2.5	1.8 - 2.5	0.8 - 1.7	< 0.8
Low abrasion risk	Zone 4:	>1.5	1.0 - 1.5	0.4 - 0.9	< 0.4

Burst Strength

The garment's burst strength was tested in accordance with MotoCAP test protocols. The table below shows the burst pressure in kilopascals (kPA) for each sample tested by Zone and the average result for each zone.

Burst pressure (kPA)

Area	1	2	3	4	5	Average	
Zones 1 & 2	224	183	295	521	445	334	P
Zone EZ	841	1053	540	1223	1109	953	A
Zones 3 & 4	735	1240	751	780	1014	904	A

The diagram below illustrates the burst strength results in terms of the likely performance of the garment in an impact and is a pictorial representation of the data from the table above.

Determining Criteria		Good	Acceptable	Marginal	Poor
Burst strength	(kPa)	> 1000	800 - 1000	500 - 799	< 500

Impact Protection

The garment was tested for impact protection and coverage in accordance with MotoCAP test protocols. The table below shows the test results for each strike on each impact protector in kilonewtons (kN) and their area of coverage as a proportion (%) of the Zone.

Impact protector type	Knee		Hip	
Average force (kN)	23.4	A	17.4	A
Maximum force (kN)	34.1	P	28.6	M
Coverage of zone 1 area	95%		130%	
Coverage of zone after displacement	50%		100%	

Individual test results

Impact force (kN)	Knee			Hip		
Strike location	**A**	**B**	**C**	**A**	**B**	**C**
Impact Protector 1	20.9	18.1	34.1	10.7	15.4	20.3
Impact Protector 2	18.7	22.2	31.4	11.3	13.7	20.0
Impact Protector 3	15.7	18.1	31.0	15.7	21.0	28.6

The diagram below is a visual indication of the likely performance of each impact protector calculated from the data in the table above. The colour coding is based on the worst performing score for average or maximium force for each impact zone.

Determining Criteria		Good	Acceptable	Marginal	Poor*
Impact force	(kN)	< 15	15 - 24	25 - 30	> 30

* Poor may also indicate that no impact protector, or impact protector pocket is present in the garment

Areas shaded black are not considered in the impact protection ratings.

Thermal comfort

The garment was tested for thermal comfort following the MotoCAP test protocols. The table below shows the moisture vapour resistance and the thermal resistance values obtained.

	1	2	**Average**
Moisture Vapour Resistance - R_{et} ($kPam^2/W$)	20.3	20.7	20.5

	1	2	**Average**
Thermal Resistance - R_{ct} (Km^2/W)	0.191	0.193	0.192

Water spray and rain resistance

This garment has not been advertised as water resistant so has not been tested for water spray and rain resistance.