

ULR -TC-61762100009868F

TEST REPORT

Report No. : CH:TX:1242009885

DATE : 20/03/2021



CP REF NO: 2021-02-26-021(CA59339)

FUMO SMART SDN BHD
 ZERO ARMOUR
 A/C F580101 SGS (MALAYSIA) SDN. BHD.
 CONTACT PERSON :

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	GLOVES HEAVY DUTY IMPACT GLOVE
COLOUR	BLACK AND GREEN
STYLE NO.	MK - 1
FIBRE CONTENT	ARAMID FABRIC AND SPANDEX WITH TPR PATCH ON BLACK
PRODUCT NAME / BRAND	ZERO ARMOUR
COUNTRY OF DESTINATION	MALAYSIA
COUNTRY OF ORIGIN	CHINA
PHOTO APPENDIX.	



SAMPLE RECD ON 11/03/2021 TESTING PERIOD : 11/03/2021 - 19/03/2021

Summary of Test Results/Conclusion

Test Method / Standard	Clause/Test Name	Status / Performance Level
BS EN 388:2016 +A1.2018	Protective Gloves against mechanical risks	
	Clause 6.1- Abrasion Resistance	Performance level 4
	Clause 6.2- Blade Cut Resistance (Coupe test)	Performance level 4
	Clause 6.2- TDM Cut Resistance	Performance level E
	Clause 6.4- Tear Resistance	Performance level 4
	Clause 6.5- Puncture Resistance	Performance level 4
ANSI/ISEA 105-2016	American National Standard for Hand Protection lassification	
	Cut Resistance	Level A5
EN 420:2003+A1.2009	Protective gloves - General requirements	
	Dexterity	Performance level 5

Per pro SGS India Private Ltd.

R. GANESAN
 SECTION INCHARGE

Email your Test Report Related Enquiries at Feedback.SLT@sgs.com



RESULTS

BS EN 388 : 2016+A1.2018 Protective Gloves against mechanical risks

Clause	Test Name	Result	Performance level	
6.1	Abrasion resistance Protection part : Palm	Sample # Break Through Between /(Rubs)	Level – 4	
		1 >8000		
		2 >8000		
		3 >8000		
		4 >8000		
Observation : Break through not occurred until 8000 rubs				
6.2	Blade cut resistance (Coupe test) Protection part : Palm	Sample # Blade cut Index /(Index)	Level – 4 (See Note)	
		1 14.64 14.33 16.19 14.95 16.38		
		Mean : 15.30		
		2 17.00 15.81 15.29 15.46 16.79		
		Mean : 16.07		
6.4	Tear resistance Protection part : Palm	Sample # Maximum Force/(N)	Level – 4	
		1 426.5		
		2 414.5		
		3 259.2		
		4 268.3		
6.5	Puncture resistance Protection part : Palm	Sample # Maximum Force/(N)	Level – 4	
		1 173.6		
		2 191.1		
		3 156.4		
		4 166.1		

Note : Sample dulling the blade of coupe cut test (number of cycles on control specimen after first sequence of test specimen is greater than 3 times of initial control fabric value)

Requirement as per BS EN 388:2016+A1.2018

Table - 1

Clause/Test Name	Level 1	Level 2	Level 3	Level 4	Level 5
6.1 Abrasion resistance (Number of rubs)	100	500	2000	8000	-
6.2 Coupe test: Blade cut resistance (index)	1.2	2.5	5.0	10.0	20.0
6.4 Tear resistance (N)	10	25	50	75	-
6.5 Puncture resistance (N)	20	60	100	150	-

**** End of Page****



RESULTS

BS EN ISO 13997:1999 Protective clothing – Mechanical properties – Determination of resistance to cutting by sharp objects

Machine used : Tomodynamometer

Protection Part : Palm

Test	Rating Force, in N	Cutting stroke lengths, in mm	Normalized cutting stroke length in mm
Initial trail Cuts	24	11.7	10.1
	23	22.9	19.7
	22	36.7	31.6
	24	14.2	12.2
	23	26.7	23.0
	22	39.8	34.2
	24	8.9	7.7
	22	41.7	35.9
	23	24.8	21.3
	22	36.8	31.6
	24	9.6	8.3
	22	39.2	33.7
	23	23.4	20.1
	24	12.8	11.0
23	25.6	22.0	
Estimate based on Graph-1	23	22.6	19.4
		25.3	21.8
		24.8	21.3
		23.5	20.2
		24.3	20.9
Force required to cut through the material in a 20 mm cutting stroke from the curve plotted in Graph-2			22.9 N
Blade sharpness correction factor			0.86
Performance level in accordance with BS EN 388:2016+A1.2018 Table 2			E

Requirement as per BS EN 388:2016+A1.2018

Table - 2

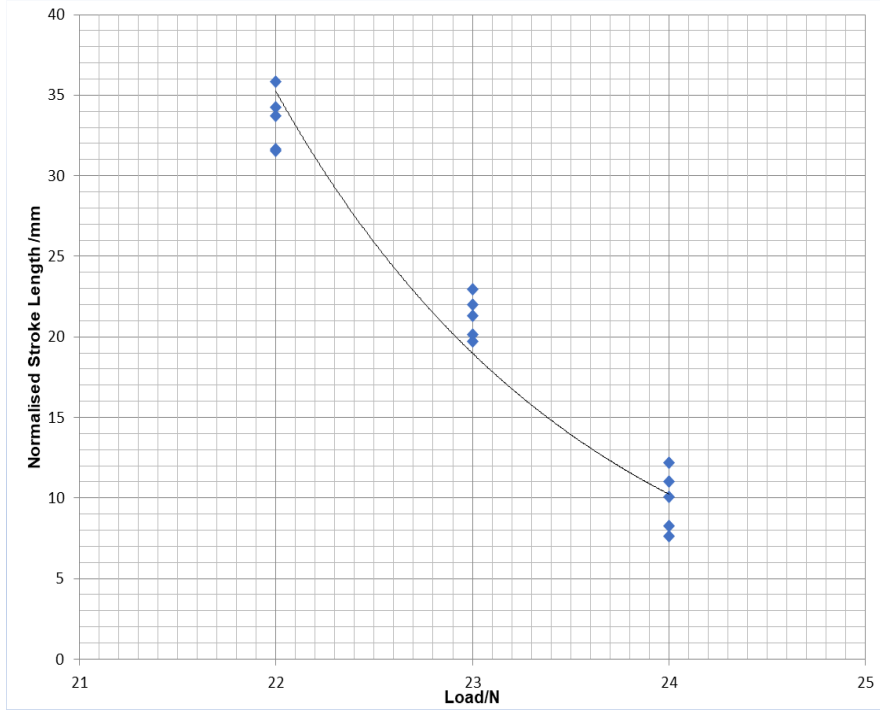
Clause/Test Name	Level A	Level B	Level C	Level D	Level E	Level F
6.3 TDM: cut resistance (N)	2	5	10	15	22	30

**** End of Page****

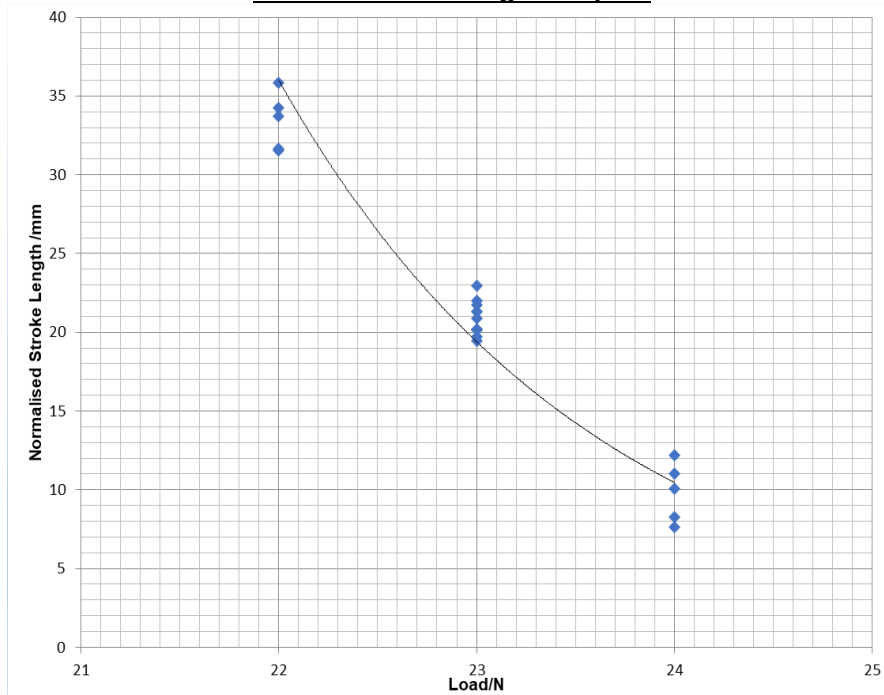


RESULTS

Load vs Stroke Length Graph-1



Load vs Stroke Length Graph-2



***** End of Page*****



RESULTS

Refer to EN 13594:2015 Protective gloves for motor cycle riders – Requirements and test methods. Impact attenuation test. (Drop Striker Mass : 2.5 kg, Impact energy : 5J)

Test Positions	Single result (kN)	Mean transmitted force (kN)	Performance Level
1	5.5	5.4	Level - 1
2	5.5		
3	5.3		
4	5.4		

Requirement as per BS EN 388:2016 : When the tests were carried out according to EN 13594:2015 6.9 with impact energy of 5J, glove performance shall conform to Level 1 of EN 13594:2015, Table 7.

Table 7 as per EN 13594:2015.

Clause	Requirements		
		Level 1	Level 2
4.11 Impact attenuation	Single result	≤ 9.0 kN	≤ 5.0 kN
	Mean transmitted force	≤ 7.0 kN	≤ 4.0 kN

EN 420 : 2003+A1: 2009 Protective Gloves – General requirements and test methods

Clause	Test Name	Result	Average	Standard sizing
5.2	Dexterity Smallest Pin Diameter (mm)	5 5 5 5	5	Performance level 5

***** End of Page*****



RESULTS

ANSI/ISEA 105-2016 – American national standard for hand protection selection criteria

Clause/ Test name	Method	Test Results/ Rating force (Weight) in g	Performance level
5.1.1 Cut Resistance (Weight (grams) needed to cut through material with 20 mm of blade travel)	ASTM F2992/F2992M-15	2344 grams	Level A5 (Table 1)

Performance requirements:

Table 1 (Cut Resistance) – Weight (grams) needed to cut through material with 20 mm of blade travel

level	Weight (g)	level	Weight (g)
A1	≥ 200	A6	≥ 3000
A2	≥ 500	A7	≥ 4000
A3	≥ 1000	A8	≥ 5000
A4	≥ 1500	A9	≥ 6000
A5	≥ 2200		

***** End of page*****



RESULTS

ASTM F2992/F2992M-15 – Measuring Cut Resistance of Materials

Machine used : Tomodynamometer

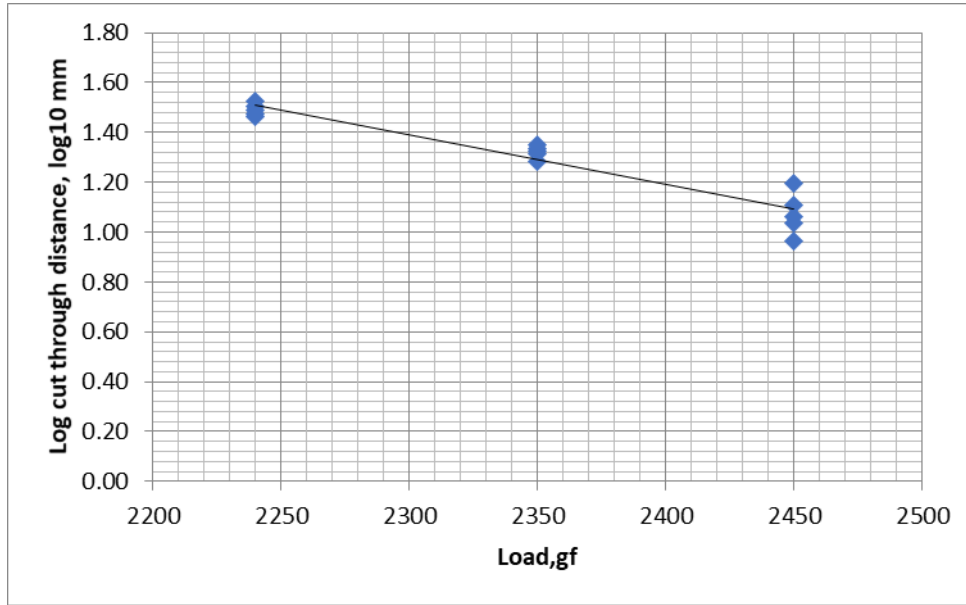
Test	Rating Force, in g	Cutting stroke lengths, in mm	Normalized cutting stroke length in mm	Log (Normalized cutting stroke length)
Initial trail Cuts	2450	13.4	11.5	1.06
	2450	18.3	15.7	1.20
	2450	10.7	9.2	0.96
	2450	14.9	12.8	1.11
	2450	12.7	10.9	1.04
	2240	37.2	32.0	1.51
	2240	34.6	29.8	1.47
	2240	39.2	33.7	1.53
	2240	33.7	29.0	1.46
	2240	35.8	30.8	1.49
	2350	22.4	19.3	1.29
	2350	24.7	21.2	1.33
	2350	25.1	21.6	1.33
	2350	23.8	20.5	1.31
	2350	26.2	22.5	1.35
Inerpolated weight to cut after 20 mm blade travel				2344 g
Blade sharpness correction factor				0.86

***** End of Page*****



RESULTS

Regression Analysis



***** End of Report*****