

### EN 469:2007-02 Test Result

Outer material		Moisture barrier		Lining	
Meta-aramid	61%	Meta-aramid	50%	Meta-aramid	70%
Para-aramid	31%	Viscose FR	50%	Para-aramid	29%
Polyamide imide	4%	PTFE membrane		Antistatic fiber	1%
Viscose FR	3%				
Antistatic fiber	1%				

	PROPERTIES	TEST METHOD	REQUIREMENT	ACTUAL
6-1	FLAME RESISTANCE	ISO 15025:2003-02A	Limited flame speed 2 seconds No melting, dropping or ignition	0 second PASS
6-2	THERMAL TRANSFER (Flame)	EN 367:1992-12A	HTI24 13 seconds and over HTI24-HTI12 4 seconds and over	17.6 seconds 4.4 seconds
6-3	THERMAL TRANSFER (Radiation)	ISO 6942:2002-09A	RHTI24 18 seconds and over RHTI24-RHTI12 4 seconds and over	18.4 seconds 5.5 seconds
6-4	TENSILE STRENGTH	DIN EN ISO 13934-1 (ISO 6942 10kw/m <sup>2</sup> after heat treatment)	Warp/Weft 450N and over	2,040N/1,920N
6-5	THERMAL RESISTANCE (Outer material, Fastener, button, lower sleeve edge and reflective material)	ISO 17493:2000-12A	No melting, dropping or ignition Dimensional change within 5%	PASS within 1%
6-6	TENSILE STRENGTH SEAM STRENGTH	DIN EN ISO 13934-1:2013 DIN EN ISO 13935-2:2014	Warp/Weft 450N and over 225N and over	2.360N / 2.350N 397N
6-7	TEAR STRENGTH	DIN EN ISO 13937-2:2000	Warp/Weft 25N and over	108N / 148N
6-8	WATER REPELLENCY	DIN EN 4920:2012-12A	Class 4 and over	Class4-5
6-9	DIMENSIONAL CHANGE AFTER WASHING CYCLE	DIN EN ISO 5077:2008	Dimensional change within 3%	PASS
6-10	LIQUID CHEMICAL PERMEABILITY	EN ISO 6530:2005-05A	Outflow 80% and over, No permeation to the back side	PASS
6-11	RESISTANCE TO WATER PENETRATION	DIN EN 20811:1992-08A	Level 1 or 2	Level 2
6-12	WATER VAPOR RESISTANCE	DIN EN ISO 11092:2014-12A	within 30m <sup>2</sup> pa/w	11.99m <sup>2</sup> pa/w
6-13	ERGONOMIC, SPECIFIC DESIGN REQUIREMENTS AND SO ON	DIN EN 469:2007	Wearing feeling, size balance Labeling, finished dimension Laundry indication and instruction manual	PASS
6-14	VISIBILITY	DIN EN 469:2007	Visibility by day 0.2m <sup>2</sup> and over Visibility by night 0.13m <sup>2</sup> and over	0.287m <sup>2</sup> 0.143m <sup>2</sup>

#### M80200 Tough Attack fire suit certified Japanese standard.

- COMFORTABILITY(Loss of total heat) ASTM F 1868 P-C
- ANTISTATIC JIS L 1094:2914C
- CORROSION RESISTANCE(Metal parts) JIS Z 2371
- FIRE RESISTANCE(Reflective material) / VISIBILITY ISO 15025 : 2000A / ISO 20471.2013
- THERMAL TRANSFER (Compression) ISO 12127-1
- WATER PRESSURE (Moisture barrier) JIS L 1092 B
- COLOR FASTNESS (Outer material) JIS L 0842-3(light) JIS L 0844 A-2(wash) JIS L 0848 (sweat) JIS L 0849-1(friction)



#### K-TFG9BK

Guideline Standard Regulated by Japan's Fire and Disaster Management Agency Passed

DIN EN659:2008-06 Passed  
DIN EN420:2010-03 Passed

CE 0555



#### FIRE EAGLE®

EN15090:2012 Passed

CE 0197



#### FKT-1402

EN443:2008 Passed

CE 0158

Inquiry



**FUNAYAMA.CO.LTD**

<http://www.funayama.co.jp>

●For the improvement of our products, specifications may change without prior notification.

# FIRE PROTECTION

Funayama fire suit are created in pursuit of a particular form of perfection,embodying the latest technology, but also an aesthetic sensibility.



**FUNAYAMA.CO.LTD**

We are saving the future.

# M80200 Tough Attack Fire Suit

We never give up to help tough athlete firefighter.

We do our best to protect them.

According to the opinion from firefighter all over the country and the events "Rescue days japan", we realized the requests in the planning and development.

We are proud to present our new fire suit "M80200 Tough Attack."



<Type A: Proven and trusted traditional design>

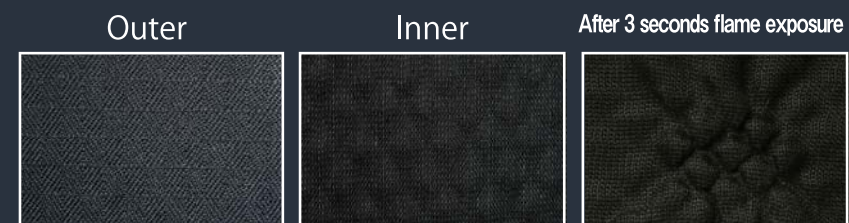
<Type B: High visibility and mobility>



## Tough Attack features

- We reduced the length of the collar by 3cm both types for a harmony of protection performance and comfort.
- Air cycle shoulder pad : for air circulation in clothes.
- 3D ergo arm hole : does not hinder arm movement for the upper wear, achieving a great range of motion. Also we analyzed the elbow movement, and type A adopts the "Active pattern".
- Type A is traditional and standard specifications. Type B has more priority over movement. For smooth work in front of body we reduced the length of the garment in front piece 6cm without fall the protect performance.
- High visibility :is essential thing for a prompt rescue in severe environment, various weather conditions,diverse fire and impulse natural disaster caused by abnormal weather. Also it is necessary for prevention of secondary accident and firefighters own safety. Type B adopts fluorescence flame-resistant material parts in addition to normal reflective materials. Also we adopts vertical reflective materials on the left and right on the back for get visibility when wearing a breathing apparatus.
- Trousers:Type A and Type B are the same design.
- We analyzed"Run,Jump,Twist and Bend"motions, and it has a curved silhouette.
- It gets easy movement by curved design and a special shape with notches.

### Outer Fabric



- Double weave clothe:for heat resistance and heat insulating properties.
- It sew Meta-Aramid outer and Para-Aramid inner with diamond kilt: get air layer for high heat insulating properties.
- If an instantaneous flame exposure of more than 1,000 degrees is performed within 3 seconds, the front side shrinks and an adiabatic air layer is formed in the middle between the back side.

### Membrane



- Reduce heat stress:it is a material laminated with PTEE membrane that does not permit entry of rain, various chemicals, dust etc under severe weather and environmental conditions.
- Water bearing pressure 294Kpa (30000mm) and over.
- Moisture permeability 1000/mh and over.

### Liner



- Artificial blood barrier and virus barrier conform to class 6.
- High mixing ratio of Para-Aramid:for improving durability.
- Tensile strength 700N,Tear strength 90N and over.
- Honeycomb structure:for insulation,ventilation and quick drying.

### Type A Jacket

Size	S	M	L	LL	3L	4L	O	XO
Suitable Height	155	165	170	175	180	185	170	175
Jacket Length	66	72	75	78	82	86	75	78
Chest	114	120	124	128	132	136	132	140
Shoulder Width	46	48	50	52	54	56	52	54
Sleeve Length	75	80	83	86	89	92	84	87

\* Unit cm,Measurement allowance ±2%  
 \* Jacket are TypeA 8sizes,TypeB 4sizes  
 \* Trousers are common design 6 sizes  
 \* You can choice different size Jacket and Trousers  
 \* S size for Women, Jacket O and XO size for a person with a large.

### Type B Jacket

Size	L	LL	3L	4L
Suitable Height	165~170	170~175	over175	over180
Jacket Length	75	78	82	86
Chest	124	130	136	140
Shoulder Width	50	52	54	56
Sleeve Length(outside)	60	62	64	66
Sleeve Length(inside)	57	59	61	63

### Trousers

Size	S	M	L	LL	3L	4L
Hip	72~80	80~88	88~96	96~104	104~112	112~120
Rise	26	28	29	30	31	32
Inseam	(+4cm)	68	72	76	80	84
	Standard	64	68	72	76	80
	(-4cm)	60	64	68	72	76
Fork Length	35	37	38	39	40	42

【事業所番号】 M-3202  
 【製品番号】 Z-28004  
 【種類】 防火服B-II  
 【併用要件】

This product complies the fire suit guideline Standard regulated by Japan's Fire and Disaster Management Agency, and Fire Suit B-2 Standard regulated by Japan Fire Retardant Association.

