

Main technical requirements of HG/T 2019-2022 <Black rain boots(shoes) >

No.	Item	Test method	Requirement			
1.	Appearance quality	HG/T 2019-2022,6.4	Comply with HG/T 2019-2022,5.5			
2.	Tensile strength	Vulcanized rubber: GB/T 528-2009	/	Vulcanized rubber	Injection-EVA	Injection-Other
			Upper	≥10.0MPa	≥2.5 MPa	≥6.5 MPa
			Outsole	≥7.0 MPa	≥2.0 MPa	≥6.0 MPa
3.	Elongation at break	Injection molding materials: GB/T 1040.2-2006	/	Vulcanized rubber	Injection-EVA	Injection-Other
			Upper	≥400%	≥320%	≥300%
			Outsole	≥320%	≥300%	≥250%
4.	Rubber film elongation	HG/T 4991-2016	/	Vulcanized rubber	Injection-materials	
			Upper	≥100%	/	
5.	Abrasion resistance of outsole	Vulcanized rubber: GB/T 1689-2014 Injection molding materials: GB/T 9867-2008, method A	/	Vulcanized rubber	Injection-EVA	Injection-Other
			Outsole	≤1.2 cm ³	≤600 mm ³	≤300 mm ³
6.	Hardness	Vulcanized rubber/ Non foaming materials: GB/T 531.1-2008 Foaming materials: HG/T 2489-2007	/	Vulcanized rubber	Non foaming materials	Foaming materials
			Upper	≤65 Shore A	50~70 Shore A	50~70 Asker C
			Outsole	≤70 Shore A	55~75 Shore A	50~70 Asker C
7.	Performance retention rate in tensile strength after Aging	HG/T 2019-2022,6.1.7	/	Vulcanized rubber	Injection-EVA	Injection-Other
			Upper	≥80%	≥90%	≥80%
			Outsole	≥80%	≥90%	≥80%
8.	Slip resistance of outsole	HG/T 3780-2005, 8.2	Wet static friction coefficient ≥0.5			
9.	Adhesion strength of upper-sole	GB/T 21396-2022	/	Vulcanized rubber	Injection-materials	
			upper-sole	≥1.6 N/mm	/	

10.	Adhesion strength of upper lining	HG/T 4805-2015	/	Vulcanized rubber	Injection-materials
			upper lining	≥ 0.4 N/mm	/
11.	Thickness of outsole	HG/T 2019-2022,6.2.1	Thickness at thickest part of forepart ≥ 4.0 mm Base thickness ≥ 2.0 mm Thickness at thickest part of heel part ≥ 5.0 mm		
12.	Thickness of upper	HG/T 2019-2022,6.2.2	≥ 1.0 mm		
13.	Resistance of water penetration	HG/T 3664-2015,5.2	No Water leakage, no water penetration to inside		

Table 1