






No. basis of certification:		2010700-79-86-04		
Issue date:		18.07.2022		
contracting authority:		HAIX SCHUHE Produktions- und Vertriebs GmbH Auhofstraße 10 DE – 84048 Mainburg		
Test objekt		Occupational footwear according to EN ISO 20347		
Type :		Einsatzstiefel 026 / Combat Boots 026 with and without orthopedic insocks		
No of certificate:		2010700-01-86		
Applied standards:		DIN EN ISO 20344:2013 (EN ISO 20344:2011) DIN EN ISO 20347:2012 (EN ISO 20347:2012)		
Notified body:		Prüf- und Forschungsinstitut Pirmasens e.V. Marie-Curie-Str. 19 66953 Pirmasens		
Other applicable documents:				
No.	expertises	Institut	testing of:	requirement
/*1	2009105-01/18-20-01a	PFI	Basetest	passed
/*2	1808466-01-00-01/02	PFI	Aquaseal NW T39U 2,5mm Golf	passed
/*3	2009967-01-00-01	PFI	Kansas black+ 3 mm XT foam+ non-woven PES 120 + 9050 hydro	passed
/*4	2009755-01-00-01	PFI	Kansas coyote + 3 mm XT foam+ non-woven PES 120 + 9050 hydro	passed
/*5	1809465-01-00-01a	PFI	Gore Collar and Tongue leather, black	passed
/*6	2005950-02-00-01/03	PFI	Kansas black + non-woven PES 120 + 9050 hydro	passed
/*7	1900761-03-00-01	PFI	Kansas coyote + non-Woven PES 120 + 9050 hydro	passed
/*8	1904102-01-00-01/05_	PFI	GORE-TEX Cabron, light grey	passed
/*9	1905433-01-00-01a	PFI	GORE-TEX Cabron, light grey	passed
/*10	1800865-02-00-01/02d	PFI	Micropell 120, black	passed
/*11	1708257-01-00-01	PFI	Puma Beige Non Idro+NewKit 100 Idrofil	passed
/*12	916-1/20	MirtaControl	Wapro Cool hydro 01/00/53	passed
/*13	1133-01/20	MirtaControl	Napa K3 hydro 02/00/71	passed
/*14	60247312 001	TÜV	ELS Haix CO	passed
/*15	21282656 001	TÜV	PES-Profil Filet (Dorado)	passed
/*16	60272319 001	TÜV	Linning Shoe Max beige	passed
/*17	R-17097085	Inescop	Insock BE 2.0 (EXE H29801)	passed
/*18	R-17097107	Inescop	Insock BE 2.0 (EXE H29801)	passed
/*19	3914025.02/D	Ricotest	Upper Leather Nepal hydro beige	passed
/*20	2101165-01/03-20-01	PFI	Basetest	passed
/*21	2101165-03-20-03	PFI	Basetest	passed
/*22	2101806-01/02-20-01	PFI	Basetest	passed
/*23	2102734-01/03-20-01	PFI	Basetest	passed

Description of Type	
Type	Einsatzstiefel 026 / Combat Boots 026
Size range	UK 3-15, EU 35-51, Mondopoint 225-330
Category / Protection funktion	O2, HI, CI, WR, HRO, FO, SRC
Design	C
Colour	black
Picture	
Combat GTX black	Combat GTX coyote
Combat GTX black LTR	Tactix GTX
Combat T coyote	
	
	
	
Outsole	Rubber-/PU-Twolayersole, 026 col. Black/black and coyote/beige
Anti penetration insert	not applicable
ToeCap	not applicable
Insole	Texon Texon T39 Golf 2,5mm, col. beige
Insock	
Arneplant	a) Full insock, Arneplant insock BE 2.0 (EXE-H29801), cover grey / downside yellow, red and blue
Arneplant	b) Full insock, HAIX® CO-System (HAIX® Certified Orthopedic System) green foam rubber with grey cover, orthopedic finish with up to 25 mm EVA-wedge with 40° or 50° shore A
Upper material	
Leather (2,0-2,2mm)	Wapro Gore Cool 2,0-2,2mm, black
Textile	Kansas black + 3 mm XT Foam + non-woven PES 120 + 9050 hydro
Leather (2,0-2,2mm)	Croupions Nepal hydro 2,0 - 2,2mm, beige
Textile	Kansas coyote + 3 mm XT foam + non-woven PES 120 + 9050 hydro
Tongue	
Textile	Kansas black + non-woven PES 120 g/m² black + 9050
Textile	Kansas coyote + non-woven PES 120 g/m² black + 9050
Leather (1,1-1,3mm)	Gore Collar and Tongue leather 1,1 - 1,3mm, black
Leather (1,1-1,3mm)	Collarleather K3 Hydro, brown
Lining Vamp and Quarter	
Leather (1,1-1,3mm)	Gore Collar and Tongue leather 1,1 - 1,3mm, black
Leather (1,1-1,3mm)	Collarleather K3 Hydro, brown
Lining Heel, Vamp and Quarter	
linning	Gore-Tex Carbon, grey
linning	Puma beige non idro+NewKit 100 idrofilo beige
linning	Micropell 120, grey
Linning Other	
linning	Show Max, beige
linning	PES-Profil-Filet (Dorado), black

Classification and designs		DIN EN ISO 20347		4.0
Class I	Class I			
Class II				
Design		DIN EN ISO 20347		4.0
A/B/C/D/E	C			
Design		DIN EN ISO 20347		5.2
Height of upper design C - model Combat		DIN EN ISO 20347		5.2.2
Size [France]	height [mm]	Size	Height [mm]	passed /*21/22/23
≤ 36	>162	35	175	
37-38	>165	43	203	
39-40	>172	51	230	
41-42	>178			
43-44	>185			
≥45	>192			
Height of upper design C - model Tactix		DIN EN ISO 20347		5.2.2
Size [France]	height [mm]	Size	Height [mm]	passed /*23
≤ 36	>162	35	197	
37-38	>165	43	224	
39-40	>172	51	-	
41-42	>178			
43-44	>185			
≥45	>192			
Heel area (Design B, C, D, E)		DIN EN ISO 20347		5.2.3
The heel area shall be closed. In this area of the upper shall be no holes other than to form seams. For design A class I footwear without closed heel area, the requirement is not applicable.		Size	passed	passed /*21/22
		35	yes	
		43	yes	
		51	yes	
Whole footwear		DIN EN ISO 20347		5.3
Upper/outsole bond strength		DIN EN ISO 20347		5.3.1.2
The Upper/outsole bond strength shall be not less than 4,0 N/mm or 3,0 N/mm If there is tearing of the material		Size	[N/mm]	passed /*1/20
		35	5,1	
		43	5,65	
		51	4,66	

Specific ergonomic features		DIN EN ISO 20347		5.3.4
The specific ergonomic features are fullfilled if all questions are answerd with "yes"		passed [yes/no]		passed /*21/22
1) Is the inside surface of the footwear free from rough, sharp or hard areas that caused you irritation or injury?		yes		
2) Is the footwear free of features that you consider make wearing the footwear hazardous?		yes		
3) Can the fastening be adequately adjusted (if necessary)?		yes		
4) Can the following activities be performed without problems?				
4.1) Walking		yes		
4.2) Climbing stairs		yes		
4.3) Kneeling/crouching down		yes		
Dynamic footwear water penetration test - costumer requirement		EN ISO 20344		5.15.2
After 300 000 flexing cycles no water-penetration shall be observed	Size	passed		passed /*1 Symbol WR
	35	-		
	43	yes		
	51	yes		
height of the water 30mm				
Slip resistance requirement		DIN EN ISO 20347		5.3.5
Ceramic tile floor with sodium lauryl sulphate (NaLS) solution		DIN EN ISO 20347		5.3.5.2
Requirements	Coefficient	Size	A/B	passed /*1/20 Symbol SRA
ISO 20344:2011	of friction	35	0,34/0,52	
A (forward heel slip)	≥ 0,32	43	0,34/0,42	
B (forward flat slip)	≥ 0,28	51	0,40/0,37	
steel floor with glycerine - SRB		DIN EN ISO 20347		5.3.5.3
Prüfbedingung	Reibungs-	Size	C/D	passed /*1/20 Symbol SRB
ISO 20344:2011	koeffizient	35	0,19/0,17	
C (Ebene)	≥ 0,18	43	0,26/0,21	
D (Ferse)	≥ 0,13	51	0,21/0,13	
SRA and SRB passed - SRC		DIN EN ISO 20347		5.3.5.4
The requirements for SRC are considered fulfilled if the slip resistance for SRA and SRB are passed.		SRA and SRB passed: yes SRC: passed		passed /*1/20 Symbol SRC
Energy absorption of seat region		DIN EN ISO 20347		6.2.4
the energy absorption of the seat region shall be not less than 20 J.	Size	energy absorb.		passed /*1 Symbol E
		[J]		
	Size 35: Insock Haix CO 40° Shore	35	65	
	Size 43: Insock Arneplant thickes width	43	37	
	Size 51: Insock Haix CO 50° Shore	51	72	

Electrical properties		DIN EN ISO 20347	6.2.2 / 6.6
Antistatic footwear		DIN EN ISO 20347 .2.2.2 / 6.2.2.2	
Measured in accordance with ISO 20344, 5.10, after conditioning in a dry and wet atmosphere, the electrical resistance shall be for both conditions above 100 kΩ and less than or equal to 1 000 MΩ Size 35: insock Haix CO 50° Shore Size 43: Insock Arneplant medium width Size 51: Insock Haix CO 40° Shore	dry atmosphere		passed /*1/22 Symbol A
	Size	resistance [Ω]	
	35	1,8x108	
	43	2,9x108	
	51	1,7x108	
	wet atmosphere		
	Size	resistance [Ω]	
	35	1,3x107	
	43	2,3x107	
	51	7,7x108	
Resistance to inimical environments		EN ISO 20347	6.2.3
Heat insulation of outsole complex		EN ISO 20347	6.2.3.1
temperature increases on the upper insole HI ≤22 After testing, the footwear shall conform to the requirements given in ISO 20344, Annex B	Size	[°C]	passed /*1/22 Symbol HI
	35	15,8	
	43	16,8	
	51	-	
	Size	fulfill B.2.1	
	35	passed	
	43	passed	
	51	-	
Cold insulation of outsole complex		DIN EN ISO 20347	6.2.3.2
The temperature decrease on the upper surface of the insole shall be not more than 10 °C. Except for the insock, the insulation shall be incorporated in the footwear in such a manner, that it cannot be removed without damaging the footwear	Size	decrease [°C]	passed /*1 Symbol CI
	35	-	
	43	6,3	
	51	4,4	

Upper Material - Wapro Cool hydro 01/00/53, black		
Thickness		HRN EN ISO 2589:2016 5.4.2
Requirement: 2,0-2,2 mm	Thickness [mm] 2,14	passed /*12
Tensile properties		HRN EN ISO 3376:2012 5.4.4
Tensile strength split leather: ≥ 25 N/mm	Tensile leather [N/mm] 25,5	passed /*12
Elongation at 2N/mm ² Requirement 10-16	Dehnung 13,5	
Tear strength - one corner		HRN EN ISO 3377-1:2012
The tear strength shall be at least 45 N/mm	tear strenght [N/mm] 50,7	passed /*12
Tear strength - two corner		HRN EN ISO 3377-2:2012
The tear strength shall be at least 120 N	tear strenght [N] 266	passed /*12
pH value		HRN EN ISO 20344:2012 5.6.2
The pH value shall be not less than 3,2. If the pH value is below 4, the difference figure shall be less than 0,7.	pH-value 3,5	pH-value Diff.-figure 0,55 passed /*12
Determination of substances soluble in dichloromethane		HRN EN ISO 4048:2018
A maximum of 16% soluble substances may be contained.	[%] 5,8	passed /*12
Chromium VI content		HRN EN ISO 20344:2012 5.6.3
Chromium VI content shall be not more than 3mg/kg.	Chromium VI content [mg/kg] not detectable	passed /*12
Determination of flex resistance		HRN EN ISO 5402-1:2012 5.4.4
dry a 100 000x wet a 50 000x no co cracks	Result no changes	passed /*12

Upper — Water penetration and absorption		HRN EN ISO 5403-1:2012	6.3
the water penetration, expressed as the mass increase of the absorbent cloth after 360 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 50 %.	mass [g] 0	absorbtion [%] 8,4	passed /*12
staining of the felt		HRN EN ISO 11640:2004	
Colour fastness to rubbing of th front: staining of the felt dry 50x ≥4 wet 50x ≥4 pH 8 50x ≥4	Result grain side / felt 4-5/5 4-5/4-5 4-5/4-5		passed /*12
Water vapour permeability and coefficient		HRN EN ISO 20344:2012	5.4.6
The Water vapour permeability shall be at least $\geq 5 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 6,89 water vapour absorption [mg/cm ²] 9,5 water vapour coefficient [mg/cm ²] 64,6		passed /*12

Upper Material - Kansas black + 3 mm XT Foam + non-woven PES 120 + 9050 hydro			
Tear strength		DIN EN ISO 20347	
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 60 N in both directions		tear strength leather [N] -	tear strength textile [N] 139
		passed /*3	
Water vapour permeability and coefficient		DIN EN ISO 20347	
The Water vapour permeability shall be at least $\geq 0,8 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$		water vapour permeability [mg/cm ² h] 34,1 water vapour absopction [mg/cm ²] - water vapour coefficient [mg/cm ²] 274,4	passed /*3
Water penetration and absorption		EN ISO 5403	
the water penetration, expressed as the mass increase of the absorbent cloth after 120 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 30 %.		mass [g] 0,1	absorbtion [%] 7
		passed /*3	
Abrasion resistance - costmer requirement			
DIN EN ISO 12947-2 / DIN EN 13520 / PFI 00/1132			
the lining shall not develop any holes before the following number of cycles has been performed: dry 200 000x no wet 100 000x holes		result: no damage no damage	
		passed /*3	
Upper Material - Leather Nepal 2,0-2,2mm, beige			
Tear strength		EN ISO 20347	
The tear strenght for leather shall be at least 120N in both directions. Coated fabric and textiles shall have at least 60N in both directions		tear strength leather [N] 286	tear strength textile [N] -
		passed /*19	
Tensile properties		EN ISO 3377-2:2016	
Tensile strength split leather: $\geq 25 \text{ N/mm}$		Tensile leather [N/mm] 27,7	
		passed /*19	

pH value		EN ISO 20344:2012	5.4.7
The pH value shall be not less than 3,2. If the pH value is below 4, the difference figure shall be less than 0,7.	pH-value 3,3	pH-value Diff.-figure 0,6	passed /*19
Chromium VI content		EN ISO 20344:2012	5.6.3
Chromium VI content shall be not more than 3mg/kg.	Chromium VI content [mg/kg] not detectable		passed /*19
Upper — Water penetration and absorption		EN ISO 5403-1:2012	6.3
the water penetration, expressed as the mass increase of the absorbent cloth after 420 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 30 %.	mass [g] 0	absorbtion [%] 14,7	passed /*19
Water vapour permeability and coefficient		EN ISO 20344:2012	5.4.6
The Water vapour permeability shall be at least $\geq 0,8 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 7,0 water vapour absorption [mg/cm ²] - water vapour coefficient [mg/cm ²] 64,1		passed /*19

Upper material - Kansas coyote + 3 mm XT Foam + non-woven PES 120 + 9050 hydro			
Tear strength		DIN EN ISO 20347	5.5.1
The tear strength for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 60 N in both directions	tear strength leather [N] -	tear strength textile [N] 138	passed /*4
Water vapour permeability and coefficient		DIN EN ISO 20347	5.4.6
The Water vapour permeability shall be at least $\geq 0,8 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 27 water vapour absorption [mg/cm ²] - water vapour coefficient [mg/cm ²] 218,1		passed /*4
Water penetration and absorption		EN ISO 5403	6.2
the water penetration, expressed as the mass increase of the absorbent cloth after 120 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 30 %.	mass [g] 0,1	absorption [%] 8	passed /*4
Abrasion resistance - costmer requirement			
DIN EN ISO 12947-2 / DIN EN 13520 / PFI 00/1132			
the lining shall not develop any holes before the following number of cycles has been performed: dry 200 000x no wet 100 000x holes		result: no damage no damage	passed /*4

Tongue Material - Kansas black + nonwoven PES 120 g/m ² black + 9050 hydro			
Tear strength		DIN EN ISO 20345	5.5.1
The tear strenght for leather shall be at least 120N in both directions. Coated fabric and textiles shall have at least 60 N in both directions	tear strength leather [N] -	tear strength textile [N] 150	passed /*6
Water vapour permeability and coefficient		DIN EN ISO 20345	5.4.6
The Water vapour permeability shall be at least $\geq 0,8 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 42,1 water vapour absorption [mg/cm ²] - water vapour coefficient [mg/cm ²] 338,2		passed /*6
Water penetration and absorption		DIN EN ISO 20345	6.3
the water penetration, expressed as the mass increase of the absorbent cloth after 60 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 30 %.	mass [g] 0,1	absorbtion [%] 5	passed /*6
Water penetration and absorption		i.a. DIN EN ISO 20345	6.3
the water penetration, expressed as the mass increase of the absorbent cloth after 120 min, shall not be higher than 0,2 g and the water absorption shall not be higher than 30 %. Compression 10%	mass [g] 0,1	absorbtion [%] 5,8	passed /*6
Abrasion resistance		DIN EN ISO 20345	
the lining shall not develop any holes before the following number of cycles has been performed: dry 200 000x wet 100 000x	no holes	result: no hole no hole	passed /*6

Tounge - Kansas coyote Fb. 3316 + non-woven PES120 g/m² black + 9050 hydro		
mass per unit area of nonwovens		DIN EN 12127
informativ	mass per unit area [g/m ²] 426,2	passed /*7
tensile strength		i.A. DIN EN ISO 13934-1
	Unti	Value
preload force	N	5,0
clamping length	mm	200
velocity	mm/min	100
sample width	mm	50
tensile strength a	N	1093,8
tensile strength b	N	1393,1
tensile strength a	N/10mm	218,8
tensile strength b	N/10mm	278,6
elongation a	%	70,4
elongation b	%	82,5
Tear strength		DIN EN 13571
informativ	Result [N/mm] 112,8	passed /*7
Abrasion resistance (Martindale)		i.a. DIN EN ISO 12947-2 / DIN EN 13520
the lining shall not develop any holes before the following number of cycles has been performed: dry 200 000 cycles wet: 100 000 cycles		5.5.2
		holes
		no hole
		no hole
Waterrepelling properties (spraytest)		DIN EN ISO 4920/DIN EN ISO 17231
Watertemperature 23,2 °C	Result	passed /*7
Wetting of the surface	5	
Customerrequirements ≥ 5		

Collar-/Tongueleather Gore 1,1-1,3 mm, black			5.5
Determination of substances soluble in dichloromethane		EN ISO 4048	
A maximum of 16% soluble substances may be contained.	[%] 7,9	passed /*5	
Determination of substances soluble in water		EN ISO 4048	
A maximum of 2% soluble substances may be contained.	[%] 0,08	passed /*5	
Determination of Chromiumoxid content		EN ISO 4048	
It shall be ≥ 2,5% Chromiumoxid	[%] 4,0	passed /*5	
pH value		DIN EN ISO 20347	
The pH value shall be not less than 3,2. If the pH value is below 4, the difference figure shall be less than 0,7.	pH-value	pH-value Diff.-figure	passed /*5
	4,0	-	
Thickness		5.7.1	
informative (1,1-1,3mm)	thickness [mm] 1,16	passed /*5	
Tear strength		DIN EN ISO 20347	
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 15 N in both directions	tear strength leather	tear strength textile	passed /*5
	[N] 156	[N] -	
Tensile testing		DIN EN ISO 3376 / PFI 00/1125	
Maximum tensile strength a ≥ 15 N/mm²	Result 16,9 N/mm²	passed /*5	
elongation a ≤ 20,0 % Deh.bei 2N/mm²	Result 15 %		
Stitch tear strength		DIN EN ISO 23910 / PFI 00/1128	
The stitch tear strength shall be at least 40 N/mm	Result [N/mm] 106	passed /*5	
Tear strength		i.A. EN ISO 3377-1 / DIN EN 13571 / PFI 00/1119	
The tear strength shall be at least 35 N/mm	Result [N/mm] 73	passed /*5	

Water vapour permeability and coefficient		DIN EN ISO 20347	5.4.6
The Water vapour permeability shall be at least $\geq 5 \text{ mg/cm}^2\text{h}$	water vapour permeability [mg/cm ² h] 10,2	passed /*5	
The water vapour absorption is needed for calculation	water vapour absorption [mg/cm ²] 7,9		
The water vapour coefficient shall be at least 15,0 mg/cm ²	water vapour coefficient [mg/cm ²] 89,1		
Water resistance of flexible leather		i.A. DIN EN ISO 5403-1 / PFI 00/1141	
compression 5% penetration time $\geq 120\text{min}$ water absorption 120 min $\leq 20\%$	Result 5,0% $\geq 120\text{min}$ 20,0%	passed /*5	
Determination of flex resistance		DIN EN ISO 5402-1 / DIN EN 13512 / PFI 00/1137	5.4.4
dry a 100000x no co cracks	Result no changes	passed /*5	
Adhesion of finish		DIN EN ISO 11644 (IUF 470)	5.4.4
dry a $\geq 2,0 \text{ N/10mm}$	Result 2,04	passed /*5	
staining of the felt		EN ISO 11640	
Colour fastness to rubbing of th front: staining of the felt dry 20x ≥ 3 wet 20x ≥ 3 pH 8 20x ≥ 3	Result grey scale rating 4-5 4 3	passed /*5	
pH value		DIN EN ISO 20347	5.6.2
The pH value shall be not less than 3,2. If the pH value is below 4, the difference figure shall be less than 0,7.	pH-value 4,0	pH-value Diff.-figure -	passed /*5
Chromium VI content		DIN EN ISO 20347	5.6.3
Chromium VI content shall be not more than 3mg/kg.	Chromium VI content [mg/kg] not detectable	passed /*5	
Abrasion resistance (Martindale)		i.a. DIN EN ISO 12947-2 / DIN EN 13520	
the lining shall not develop any holes before the following number of cycles has been performed: dry 51 200 cycles wet: 12 800 cycles	holes dry no hole no hole	holes wet no hole no hole	passed /*5

Collar material - Nappa K3 hydro, brown			5.5
Thickness		HRN EN ISO 2589	
Requirements: 1,10 -1,3 mm	Thickness [mm] 1,24	passed /*13	
Tensile properties		HRN EN ISO 3376	
Tensile strength ≥ 15 N/mm	Tensile strenght [N/mm ²] 16,7	passed /*13	
Elongation at Tensile strength 2N/mm ²		HRN EN ISO 3376	
Elongation < 20%	Elongation [%] 11,2	passed /*13	
Tear strength		HRN EN ISO 3377-1	
one corner > 35 N	56,7 N	passed /*13	
Tear strength		HRN EN ISO 3377-2	
two corners > 36 N	103,3 N	passed /*13	
pH value		DIN EN ISO 20347	
The pH value shall be not less than 3,2. If the pH value is below 4, the difference figure shall be less than 0,7.	pH-value 3,8	pH-value Diff.-figure 0,5	passed /*13
Water penetration and absorption		EN ISO 5403	
the water penetration, expressed as the mass increase of the absorbent cloth after 60 min, shall not be higher than 0,0 g and the water absorption shall not be higher than 20 %.	mass [g] 0	absorbtion [%] 5,1	passed /*13

Water penetration and absorption		EN ISO 5403	6.2
the water penetration, expressed as the mass increase of the absorbent cloth after 120 min, shall not be higher than 0,0 g and the water absorption shall not be higher than 20 %.	mass [g] 0	absorbtion [%] 7,6	passed /*13
Chromium VI content		DIN EN ISO 20347	5.6.3
Chromium VI content shall be not more than 3mg/kg.	Chromium VI content [mg/kg] not detectable		passed /*13
Abrasion resistance leather		DIN EN ISO 20347	
the leather shall not develop any holes before the following number of cycles has been performed: dry 25 600 cycles wet: 12 800 cycles	holes dry no holes	holes wet no holes	passed /*13

Lining vamp and quarer - GORE-TEX Carbon, light grey			5.5
mass per unit area of nonwovens		DIN EN 12127	
Requirement: 260-300 g/m²	mass per unit area [g/m²] 271,6	passed /*8	
Thickness		DIN EN ISO 5084	
Requirement: 0,6-1,0 mm	Thickness [mm] 0,86	passed /*8	
Tear strength		DIN EN ISO 13937-2 / DIN EN 13571 / PFI 00/1123	
requirement in direction against direction and "b" ≥ 15 N	name in against strength [N] 57,3 50	passed /*8	
Water vapour permeability and coefficient		DIN EN ISO 20347	
The Water vapour permeability shall be at least ≥ 2 mg/cm²h The water vapour absorption is needed for calculation The water vapour coefficient shall be at least 20,0 mg/cm²	water vapour permeability [mg/cm²h] 14,1	passed /*8	
	water vapour absoption [mg/cm²] 1,4		
	water vapour coefficient [mg/cm²] 114		
Abrasion resistance Martindale - Upper surface		i.a. DIN EN ISO 20344	
the lining shall not develop any holes before the following number of cycles has been performed: dry 51 200 cycles wet: 12 800 cycles	holes dry	holes wet	passed /*8/9
	no hole no hole	no hole no hole	
Fibre microscopy - Upper surface		DIN EN ISO 1833-1	
informativ	Result 72,3% Polyamid 27,7% Polyester	passed /*8	
Fibre microscopy - inner layer		DIN EN ISO 1833-1	
informativ	Result 100% Polyester	passed /*8	

FTIR of the functional layer		
Front back	PU PTFE	passed /*8
Fibre microscopy - inside layer		
DIN EN ISO 1833-1		
informativ	Result 100% Polyamid	passed /*8
Abrasion resistance (Martindale) inside		
i.a. DIN EN ISO 20344		5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 51 200 cycles	holes dry no hole	holes wet no hole passed /*8
Lining - Puma Beige Non Idro-NewKit 100		
EN ISO 20345		5.5
Tear strength		
DIN EN ISO 20345		5.5.1
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 15 N in both directions	tear strength leather [N] -	tear strength textile [N] 97 passed /*11
Abrasion resistance - vamp lining		
DIN EN ISO 20345		
the lining shall not develop any holes before the following number of cycles has been performed: dry 25 600x wet 12 800x	no holes	result: no hole no hole passed /*11
Abrasion resistance - seat region lining		
DIN EN ISO 20345		
the lining shall not develop any holes before the following number of cycles has been performed: dry 56 200x wet 25 600x	no holes	result: no hole no hole passed /*11
Water vapour permeability and coefficient		
DIN EN ISO 20345		5.4.6
The Water vapour permeability shall be at least $\geq 2 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $20,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 40 water vapour absoption [mg/cm ²] - water vapour coefficient [mg/cm ²] 321,5	passed /*11

Lining heel - non-woven Micropell 120, grey		DIN EN ISO 20347	5.5
Tear strength		DIN EN ISO 20347	5.5.1
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 15 N in both directions	tear strength leather [N] -	tear strength textile [N] 45	passed /*10
Abrasion resistance - costmer requirement DIN EN ISO 12947-2 / DIN EN 13520 / PFI 00/1132			
the lining shall not develop any holes before the following number of cycles has been performed: dry 500 000x no wet 170 000x holes	result: clear abrasion no hole heavy abrasion no hole		passed /*10
Water vapour permeability and coefficient		DIN EN ISO 20347	5.4.6
The Water vapour permeability shall be at least $\geq 2 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $20,0 \text{ mg/cm}^2$	water vapour permeability [mg/cm ² h] 13,8 water vapour absoption [mg/cm ²] 2,3 water vapour coefficient [mg/cm ²] 112,3	passed /*10	
Thickness		DIN EN ISO 2589 / PFI 00/1118	
Requirements: 1,20 +/- 0,05 mm	Thickness [mm] 1,19	passed /*10	
Colour fastness to rubbing		EN ISO 105-X12 / PFI 00/1148	
dry wet sweat	dry wet sweat	change little little little	passed /*10
tensile strength and elongatinon of non-woven		i.A. DIN EN ISO 13934-1	
	requirement costumer	tensile strength [N/50mm] elongation [%]	passed /*10
tensile strength a	≥ 350	1122	-
tensile strength b	≥ 350	683,5	-
elongation a	≥ 30	-	78,2
elongation b	≥ 30	-	131,8

Colour fastness to perspiration		DIN EN ISO 105-E04		
i.A. DIN EN 17700 Verfahren C.2+C.3/PFI 00/1152				
Parameter	requirement costumer	result [greyscale]	passed /*10	
S.C.Acetat pH 5.5	≥ 4	4-5		
B.u. Cotton pH 5.5	≥ 4	4-5		
Polyacryl pH 5.5	≥ 4	4		
Sample pH 5.5	≥ 4	4-5		
S.C.Acetat pH 8.0	≥ 4	4		
Polyacryl pH 8.0	≥ 4	4		
Sample pH 8.0	≥ 4	4-5		
Velocity of soaking water of textile fabrics		DIN 53924		
Parameter		height [mm]	passed /*10	
time	10s			
sample a	-	0		
sample b	-	0		
time	30s			
sample a	-	0		
sample b	-	0		
time	60s			
sample a	-	0		
sample b	-	0		
time	300s			
sample a	-	0		
sample b	-	0		
WDD		DIN EN ISO 14268 / DIN EN 13515 / PFI 00/1144		
WDD		WDD [mg/cm²xh] 14,6		passed /*10

Other lining - Shoe Max beige		DIN EN ISO 20347	5.5
Tear strength		DIN EN ISO 20347	5.5.1
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 15 N in both directions direction 1 direction 2	tear strength leather [N] 21 / 20 / 21 26 / 26 / 26	tear strength textile [N] 21 / 20 / 21 26 / 26 / 26	passed /*16
Abrasion resistance vamp and quarter lining		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 25 600 cycles wet: 12 800 cycles	no holes no holes		passed /*16
Abrasion resistance lining at heel area		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 51 200 cycles wet: 25 600 cycles	no holes no holes		passed /*16
Abrasion resistance - costumer requirement		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 73 000 cycles wet: 53 000 cycles	no holes no holes		passed /*16
Water vapour permeability and coefficient		DIN EN ISO 20347	5.5.3
The Water vapour permeability shall be at least $\geq 2 \text{ mg/cm}^2\text{h}$	water vapour permeability [mg/cm ² h] 44,7 47,5 48,1		passed /*16
The water vapour coefficient shall be mind. $\geq 20,0 \text{ mg/cm}^2$ betragen	water vapour coefficient [mg/cm ²] 357,3 380,2 384,9		

Other lining - PES-Profil-Filet (Dorado), black		DIN EN ISO 20347	5.5
Tear strength		DIN EN ISO 20347	5.5.1
The tear strenght for leather shall be at least 30N in both directions. Coated fabric and textiles shall have at least 15 N in both directions	tear strength tear strength Textil Textil [N] [N] direction 1 direction 2 18/22/18 18/15/16	passed /*15	
Abrasion resistance vamp and quarter lining		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 25 600 cycles wet: 12 800 cycles	no holes no holes	passed /*15	
Abrasion resistance lining at heel area		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 51 200 cycles wet: 25 600 cycles	no holes no holes	passed /*15	
Abrasion resistance - costumer requirement		DIN EN ISO 20347	5.5.2
the lining shall not develop any holes before the following number of cycles has been performed: dry 100 000 cycles wet: 50 000 cycles	no holes no holes	passed /*15	
Water vapour permeability and coefficient		DIN EN ISO 20347	5.4.6
The Water vapour permeability shall be at least $\geq 5 \text{ mg/cm}^2\text{h}$ The water vapour absorption is needed for calculation The water vapour coefficient shall be at least $15,0 \text{ mg/cm}^2$	water vapour permeability [$\text{mg/cm}^2\text{h}$] 40,9/61,1/68,2 water vapour absoption [mg/cm^2] - water vapour coefficient [mg/cm^2] 327,4/488,5/545,6	passed /*15	

Insole - Aquaseal NW T39U 2,5mm Golf		DIN EN ISO 20347	5.7
Thickness			5.7.1
Requirement: at least 2,0mm	thickness [mm] 2,7	passed /*2	
Water absorption and desorption		DIN EN ISO 20347	5.7.3
the water absorption of the insole or insock shall be not less than 70 mg/cm ²	absorbtion [mg/cm ²] 127	desorbtion [%] 100	passed /*2
the water desorption shall be not less than 80 % of the water absorbed.			
Abrasion resistance - insole		DIN EN ISO 20347	5.7.4.1
after 400 cycles the sample shall be in the same condition as the refernce	same as reference	passed /*2	
Density		PFI 00/1027	5.7.4.1
informative	0,38 g/cm ³	passed /*2	
durable bending behaviour (Rossflex)		i.a. ISO 5423	5.7.4.1
100000x / 23°C a	no puncture	no damage	passed /*2
100000x / 23°C b	no puncture	no damage	
Electrical resistance - informative		i.a. ISO 5423	5.7.4.1
delivered state	7,0 x 10 ²	passed /*2	
antistatic dry	7,0 x 10 ²		
antistatic wet	7,0 x 10 ²		

Outsole		DIN EN ISO 20347	5.8	
Design		DIN EN ISO 20347	5.8.1	
Outsole with a cleat height of less than 2,5 mm are regarded as un-cleated				
Thickness		DIN EN ISO 20347	5.8.1.1	
The outsole can be composed of several layers. When measured in accordance with ISO 20344, 8.1.2, the outsole thickness, d1 and d3, shall fulfil the requirements: Non-cleated outsole class I und II d1 ≥ 6 mm Cleated outsole class I d1 ≥ 4 mm Cleated outsole class II d1 ≥ 3 mm d3 ≥ 6 mm see d1 and d3 in DIN EN ISO 20344, 8.1.2	size	d1	passed /*1	
		[mm]		
	35	10,7		
	43	10,7		
	51	10,0		
Cleated area		DIN EN ISO 20347	6.7.1	
The cleated area of the outsole shall be constructed in a way that no straight-lined groovings are covering the whole outsole	size	fulfilled	passed /*1	
		[yes/no]		
	35	yes		
	43	yes		
	51	yes		
Cleat height		DIN EN ISO 20347	6.7.2	
The cleat hight shall be at d2 at least be 3 mm	size	d2	passed /*1	
		[mm]		
	35	5,2		
	43	5,2		
	51	5,7		
Tear strength of outsole		0		
Tear strength of outsole ≥ 8 kN/m	Size	Tear strength	passed /*1	
		[kN/m]		
	35	10,26		
	43	10,26		
	51	10,26		

Abrasion resistance		DIN EN ISO 20347		5.8.3
the relative volume loss shall be not grater than	size	loss [mm ³]	passed /*1	
	35	37		
density	43	37		
[g/cm ³]	51	37		
>0,9		150		
≤ 0,9		250		
Flexing resistance		DIN EN ISO 20347		5.8.4
the cut growth shall be not greater than 4 mm before 30 000 flex cycles	size	cur growth [mm]	passed /*1	
Spontaneous cracks are acceptable in the following circumstances	35	0		
a) The centre of the flexing area shall be assessed for cracking. Cracks under the toecap zone shall be ignored	43	0		
b) Superficial cracks up to 0,5 mm deep shall be ignored	51	0		
c) if cracks are not deeper than 1,5 mm, not longer than 4 mm and not more than five in number	size	spntaneous crack		
	35	passed		
	43	passed		
	51	passed		
Interlayer bond strength		DIN EN ISO 20347		5.8.6
the bond strength between the outer or cleated layer and the adjacent layer shall be not less than 4,0 N/mm. When there is tearing of the outsole layers and the bond between the outsole layers cannot be separated, the bond strength is passed	Größe	Trennkraft [N/mm]	passed /*1	
	35	3,33*		
	43	4,54**		
	51	4,68*		
	* Materialbruch			
	** Adhesionsbruch			
Resistance to hot contact		DIN EN ISO 20347		6.4.1
rubber and polymeric outsole shall not melt and shall not develop any cracks when bent around the mandrel	size	fulfilled [yes/no]	passed /*1 Symbol HRO	
	35	-		
	43	-		
	51	yes		
Resistance to fuel oil		DIN EN ISO 20347		6.4.2
The change in volume shall not be more than 12%. If the volume shrinks more than 1% or the increases in hardness by more than 10 Shore a hardness units, a further test piece shall be taken and testet in accordance with ISO 20344, 8.6.2	size	increase [%]	passed /*1 Symbol FO	
The cut growth shall be not greater than 6 mm before 150 000 flex cycles.	35	4,60		
	43	4,60		
	51	5,16		

Insock - HAIX® CO-System		DIN EN ISO 20347	5.7
Water absorption		DIN EN ISO 20347	5.7.3
the water absorbtion shall be at least ≥ 70 mg/cm²	adsorbtion [mg/cm²] 241/229/233	passed /*14	
Water desorbtion		DIN EN ISO 20347	5.7.3
the water desorbtion shall be at least ≥ 80 %	desorbtion [%] 92/90/91	passed /*14	
Abrasion resistance insock		DIN EN ISO 20347	5.7.4.2
the insock shall not develop any holes before the following number of cycles has been performed: dry 25 600 cycles wet: 12 800 cycles	dry after 240 000 cycles sample holes 1 no wet after 60 000 cycles sample holes 1 no	passed /*14	
Thickness		DIN EN ISO 9073-2	
Requirement: min 2,0 mm	Thickness [mm]	passed /*14	
Shore A 40°	tip ball area hinge heal area	3,7/3,7 3,9/3,9 22,0/21,6 29,6/29,5	
Shore A 50°	tip ball area hinge heal area	3,7/3,7 3,8/3,8 22,4/22,8 28,9/28,9	

Insocks - BE 2.0 (EXE H29801)		DIN EN ISO 20347	5.7
Water absorption - Insock		DIN EN ISO 20347	5.7.3
the water absorption shall be at least ≥ 70 mg/cm ² blue new yellow new red new	adsorbtion [mg/cm ²] 275/295/281 197/179/173 219/233/218	passed /*17	
Water desorbtion - Insock		DIN EN ISO 20347	5.7.3
the water desorbtion shall be at least ≥ 80 % blue new yellow new red new	desorbtion [%] 100/99/99 99/100/100 100/97/97	passed /*17	
Abrasion resistance insock		DIN EN ISO 20347	5.7.4.2
the insock shall not develop any holes before the following number of cycles has been performed: dry 25 600 cycles wet: 12 800 cycles	dry after 150 000 cycles sample holes 1 no 2 no 3 no 4 no wet after 50 000 cycles sample holes 1 no 2 no 3 no 4 no	erfüllt /*18	
Marking		DIN EN ISO 20347	7.0
Each item of footwear shall be clearly and permanently marked, e.g. by embossing or branding, with the following: a) size b) manufacturer's identification mark c) manufacturer's type designation d) year and month of manufacture e) reference to this International Standard dd.h. EN 20347:2012 f) symbol(s) appropriate to the protection provided	fulfilled [yes/no] yes	passed	

Information to be supplied	DIN EN ISO 20347	8.0
<p>footwear shall be supplied to the shall be customer with the following information. All information unambiguous and shall include the following</p> <ul style="list-style-type: none"> a) Name and full address of the manufacturer b) Reference to this International Standard c) Explanation of any pictograms, markings and levels of performance d) Basic explanation of the tests that have been applied to the footwear, if applicable e) Instructions for use: <ul style="list-style-type: none"> 1) tests to be carried out by the wearer before use, if required 2) fitting and how to put on and take off the footwear, if relevant 3) application (basic information on possible uses and, where detailed information is given, the source); 4) limitations of use 5) instructions for storage and maintenance, with maximum periods between maintenance checks 6) instructions for cleaning and/or decontamination 7) obsolescence deadline or period of obsolescence; 8) if appropriate, warnings against problems likely to be encountered (modifications can invalidate the type approval, e.g. insock, orthopaedic) 9) if helpful, additional illustrations, part numbers, etc f) Reference to accessories and spare parts, if relevant. g) Type of packaging suitable for transport, if relevant 	<p>fulfilled [yes/no] yes</p>	<p>passed</p>

Information about electrical properties		DIN EN ISO 20347	8.2
Each pair of antistatic footwear shall be supplied with a leaflet containing a defined wording.	fulfilled [yes/no] yes	passed	
Insocks		DIN EN ISO 20347	8.3 / 9.3
<p>If the footwear is supplied with a removable insock, it should be made clear in the leaflet that testing was carried out with the insock in place.</p> <p>A warning shall be given that the footwear shall only be used with the insock in place and that the insock shall only be replaced by a comparable insock supplied by the original footwear manufacturer.</p> <p>A warning shall be given that fitting an insock can affect the safety properties of the footwear.</p>	fulfilled [yes/no] yes	passed	



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Notified Body according to
EU Regulation 2016/425
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