THE ONLY EASY DAY WAS YESTERDAY

LALO Shadow 5" Amphibian
Technical Specification

Description:

Black leather 5" uniform boot with front KPU lace system on rubber and EVA bottom. Boot must be lightweight and provide good support and protection on any surface in any terrain and be fully drainable.

General Requirements:

- Total weight per pair must not exceed 1000g in size US#10.
- Boot must be completely Black, Coyote, OD Green or Desert sand color with chrome tanned full grain cow leather vamp and a carbonized rubber toe cap.
- Outsole must have excellent slip and abrasion resistance on wet, dry, muddy, highly abrasive surfaces, tarmac, rocks, grass, slippery and undulating ground.
- Outsole must be stitched to the upper in the toe and forefoot.
- Boot must be available in medium 6-11.5, 12, 13,14
- Boot quarter/shaft area must be made of breathable nylon and KPU Rubber Grills.
- Boot must be non-magnetic

Upper

- The tongue has to be gusseted to keep debris from entering the boot.
- The tongue has to include a lace loop to prevent sliding from side to side
- The tongue must include a pocket to store the excess laces or other material or weapon.
- Lacing system must be self-securing in a rubber lace eyelet to prevent movement in the laces underwater.
- Lining has to be moisture wicking Trek-Dry ceramic and bamboo blend for moisture management and antimicrobial and antibacterial properties.
- Boot must be outfitted with and EVA compression molded insole. Top layer must be treated with an antimicrobial treatment and be vented for drainage and air circulation.

- The optional side zip must allow the wearer a quick entry and removal of the boot without having to untie the laces. The zipper needs to be secured by a magnetic closure at the top of the boot.

Bottom Unit

- Boot must include a protection plate that runs the length of the footboard that is puncture resistant and drainable.
- Protection plate must be rockered with a 1" or 2.5 cm toe spring and be made of a polypropylene composite with 70% recycled materials
- Protection plate must add a biomechanical advantage to the user when they walk saving them 20% to 35% energy expenditure
- Midsole must be a dual density EVA with separate densities in the rear foot (50 Shore EVA) and forefoot (55 Shore EVA)
- Boot must drain via the midsole and outsole with the water exiting the outsole via 6 drainage holes in the walls of the outsole.
- Boot must have a clip on the rear of the boot to secure a swim fin
- Boot has to have an aluminum arch with teeth for ropes
- Outsole to be constructed out of a blown DuPont TPU rubber for weight reduction
- Heel to toe drop must not exceed 10mm unweighted and 8mm fully weighted with 200 lbs. of pressure.
- Aside from good flexibility the boot must provide stability when worn.
- Comfortable and snug fit under any condition and in any position i.e. kneeling, climbing, repelling or other activities in training or professional use.
- Wearing the boot shall not hinder or compromise individual's movement and activity. when driving different types of military or law enforcement vehicles especially in breaking or accelerating.
- Easy to maintain, requiring only simple washing and application of polish on the vamp to maintain the performance of the boot.

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Component/Material Features

1. Upper

1.1. Leather: High quality smooth finished leather vamp and quarter panels, breathable for all day comfort to withstand cuts and abrasions from debris and vegetation. Thickness between 1.6~1.8mm

Test Item	Test Method	Standard Requirements
Tensile Strength Length	ASTM D2209	Min. 25kgs
Width		Min. 35kgs
Elongation Length	ASTM D2211	55% +/-15
Width		65% +/-15
Tongue Tear Length	ASTM D 4704	5.7kgs
Width		7.7kgs
Mullen Burst	ASTM 3786	40 kg/cm2

1.2. Upper Fabric: Nylon mesh in quarter area.

Test Item	Test Method	Standard Requirements
Tensile Strength Length	ASTM D5035-11	52kgf/2.5cm
Width		33kgf/2.5cm
Tear Strength Length	ASTM 2261-07	15kgf
Width		10kgf
Seam Strength Length	SATRA TM33	23kgf/2.5cm
Width		13kgf/2.5cm
Taber Abrasion	ASTM D3884-09	1,100 cycles
Crocking Test	Force: 900g x 10 cycles	4.5 Grade
Color Fastness	AATCC-15:2009	4.5 Grade

1.3. Collar: The collar needs to be padded and made of material that is perforated and breathable to provide a comfortable fit.

1.4. Lining: Moisture wicking ceramic and bamboo lining for odor and bacterial resistance and to be comfortable, particularly suitable for all day use. Entire lining of boot is laminated with 3 to 5mm foam for comfort depending upon the area of the foam.

Test Item	Test Method	Standard Requirements
Tensile Strength Length	ASTM D5035-11	18kgf/2.54cm
Width		15kgf/2.54cm
Elongation Length	ASTM D5035-11	90%
Width		140%
Seam Tear Length	ASTM D 4705	4.0kgf
Width		4.0kgf
Bursting Test	ASTM D 751-06	20kgf/cm2
Martindale Abrasion Dry	STRA-TM31	25,600 cycles
Wet		12,800 cycles
Crocking Dry	AATCC8	4.5 Grade
Wet		4.5 Grade
Water Vapor Permeability & Coefficient	EN ISO 20344	Pass
Dynamic Shake Flask	ASTM E2149-01	Pass

1.5. Toe box insert: 1.25mm thickness, made of tough backer material to ensure shape retention of the boot is enough to protect the toe area.

Test Item	Test Method	Standard Requirements
DLC	STM73	>110N
Bond Strength	STM87	>11 N/cm

1.6. Heel counter insert: 1.5 mm thickness Tough Backer material to secure the heel firmly in place.

Test Item	Test Method	Standard Requirements
DLC	STM83	>163N
Bond Strength	STM401	>10 N/cm

1.7. Hardware: The eyelets are KPU and lace tough backer material to ensure durability.

Test Item	Test Method	Standard Requirements
Breaking Strength Raw	SATRA TM94	35kgs
Breaking Strength Boot	SATRA TM94	75kgs

1.8. Thread: Nylon bonded thread

Test Item	Test Method	Standard Requirements
Breaking Strength		5.5kgs
Elongation		36%

1.9. Lace: Tubular lace with increased strength and durability.

Test Item	Test Method	Standard Requirements
Breaking Strength	SATRA TM94	100kgs

1.10. Zipper: Must use YKK® 5VS Vislon zipper with zipper stop for additional durability.

1.11. Sock liner: Molded comfort EVA sock liner, top layer treated with antimicrobial treatment

Test Item	Test Method	Standard Requirements
Hardness	ASTM D2240	35+/-5 shore C
Density	ASTM D297	0.08g/cm3
Tear Strength	DIN 53507	0.6 kgf/cm
Elongation	ASTM D412	100%
Compression Set 50% Test Plaque	ASTM D395B	40%
Dynamic Shake Flask	ASTM E2149-01	Pass

2. Bottom

2.1 Insole package: EVA molded insole for lateral support and torsional stability with composite shank and half board to accommodate proper flex point to help reduce fatigue.

Test Item	Test Method	Standard Requirements
Flexing Index	SATRA PM3	600 cycles
Scuff Resistance	SATRA PM14	Max 50/MM3
Taped Mullen	SATRA TM1013	Min 210/PSI
Hot Melt Adhesion	SATRA TM1028	Min 138 IBF
Fungal Resistance	SATRA TM1028	Min 100%

2.2 Midsole: Compression molded EVA with dual density at toe and heel to provide great absorption of impact and improve comfort during long shifts.

Test Item	Test Method	Standard Requirements
Hardness	ASTM D2240-05	55+/-5 Shore C
Hardness	ASTM D2240-05	50+/-5 Shore C
Specific Gravity	ASTM D3574	20g/cm3
Tensile Strength	ASTM D-412	25kgs/cm3
Elongation	ASTM D-412	280%
Split Tear	ASTM D3574	3g/cm2
Compression set	CNS3560	45%

2.3 Outsole: Rubber Sole is specifically designed for superior slip and abrasion resistance, with sipping cuts.

Test Item	Test Method	Standard Requirements	
Hardness	ASTM D 2244	65-68	
Density	ASTM D 297	1.17g/cm3	
Tensile Strength	ASTM D 412	100kg/cm2	
Elongation	ASTM D 412	450%	
Tear Strength	ASTM D 624	45kg/cm	
Abrasion Resistance	DIN 53516	<100 mm3	
Ross Flex	ASTM 1052	Min 50,000	
Resistance to Fuel Oil	EN ISO 20344	6%	
Slip Resistance Dry	ASTM F 489 PVC	0.9	
Wet	Surface	0.8	
Slip Resistance	SATRA TM144	Heel-Dry	0.60
		Heel-Wet	0.40
		Flat-Dry	0.65
		Flat-Wet	0.50

2.4 Bonding: The bonding between outsole and midsole and between outsole/midsole and upper must be at least 4kgs/cm.

Test Item	Test Method	Standard Requirements
Interlayer Bond Strength (whole footwear)	EN ISO 20344	>4kgs/cm
Upper/Outsole Bond Strength (whole boot)	EN ISO 20344	>4kgs/cm

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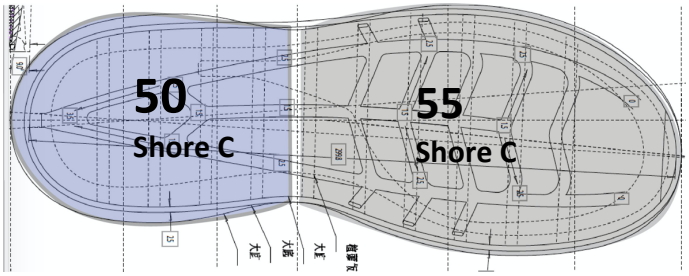
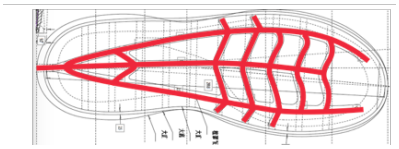


Midsole



Drainage

Protection Plate