



IADC SOUTHERN ARABIAN PENINSULA CHAPTER

Q3 Meeting, Thursday 2nd September 2021

TOM ANDREWS

HEAD-TO-TOE

RED WING SHOE COMPANY

- Family Owned Company.
- Founded 1905 – 116 years old.
- Employs 2,300 employees worldwide.
- Produce 5 million pairs of footwear and over 1 million units of work wear annually.
- Approaching \$700+ M USD of revenue.
- Global leader in the Energy PPE sector.
- Vertically Integrated.

(Design, to Leather Tannery, to Production, to Quality,
To distribution through Retail and Global network)



SAFETY SOLUTIONS

REDWINGSAFETY.COM



RED WING WORK BOOTS

160+ steps in process!



TANNING



CUTTING



FITTING



LASTING



BOTTOMING



SHOE FINISHING

RED WINGS 10% RULE !!!

- For regulatory requirements, Red Wing will exceed the standard value by 10%.
- For example, if the specified toe impact minimum clearance is 12.7 mm, RWS requires 14.0 mm.
- **Why?** – Certification samples are carefully made. There may be variability in the daily production process as well as slight variances in our safety components. 10% allows for this variation.



SAFETY SOLUTIONS

REDWINGSAFETY.COM



OUR PRODUCTS



Footwear



Workwear



PPE Accessories



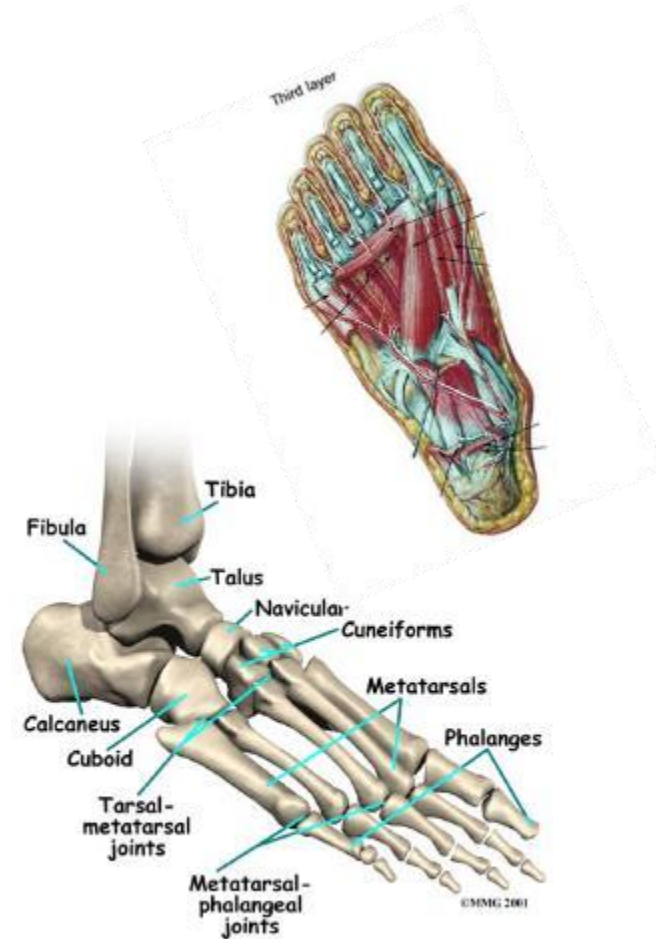
THE FOOT

Our foot is one of the body's most advanced parts

Each foot has:

- 26 bones.
- 33 joints.
- More than 100 tendons, muscles and different ligaments.
- The foot contains a quarter of all the bones in our body.
- Heel bone is the largest of the 26 bones in foot.

**The foot has 250,000 sweat glands. When they are active, they can produce from 12 to 25 ounces of sweat per day and sometimes more.*



MAIN FUNCTIONS OF A SAFETY BOOT

3 classical reasons for protective footwear.

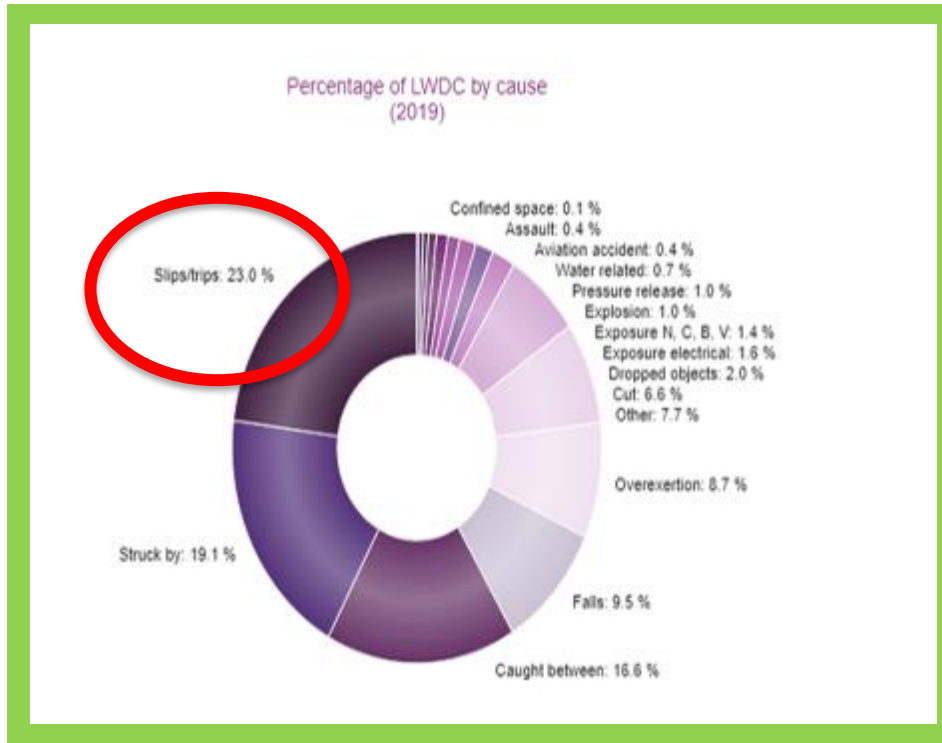
- Protection from stepping on sharp objects which can penetrate the foot.
- Protect toes from dropped objects and / or compaction injuries.
- Minimize the risk of Slipping on wet or oily surfaces.

Factors that contribute to Slips:

- Harsh environmental conditions.
- Chemicals / Oil / Grease and Water on the job site.
- Poor housekeeping / Poor Spill Prevention.
- Heavy equipment / poorly maintained connections.
- Long working hours, Fatigue.
- Demanding ergonomic tasks, leaning and stretching.



WHY PREVENTING SLIPS IS IMPORTANT



- **Slip hazards** are created when liquids, ice or other materials interfere with the TRACTION between the floor and a person's feet.
- **Falls** can be life threatening.

“““The US Department of the Interior estimates that about 23 percent of worker injuries and 36 percent of fatalities in the oil and gas industry are due to slips, trips and falls“““

Karen D Hamel. Feb 1st, 2021.

<https://ohsonline.com/Articles/2021/02/01/Preventing-Slip-and-Fall-Injuries-in-the-Oil-Gas-Industry.aspx>

[HTTPS://WWW.IOGP.ORG/BLOG/NEWS/FATALITIES-AND-INJURIES-DOWN-IN-2019-SAYS-NEW-IOGP-REPORT/](https://www.iogp.org/blog/news/fatalities-and-injuries-down-in-2019-says-new-iogp-report/)
INTERNATIONAL ASSOCIATION OF OIL AND GAS PRODUCERS.

SLIP RESISTANCE TESTING OVERVIEW

Under the existing ASTM 2413-2018 Footwear Testing Standard, there is currently No Requirement to Test for Slip Resistance.

ASTM F3445 – 21 Whole Shoe Test Method

- Standard Specification for Performance Requirements when Evaluating Slip Resistance of Protective (Safety) Footwear
- This standard covers minimum slip resistance requirements for the performance of protective (safety) footwear and is intended to help reduce potential injuries.

** Controlled laboratory tests used to determine compliance with this performance specification shall not be used to establish performance levels for all situations to which individuals may be exposed to.*

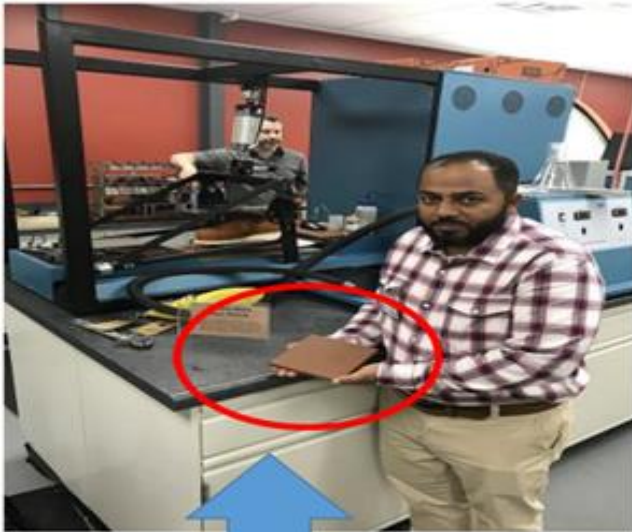


Slip Testing in the Lab

- Both heel and forepart modes are measured.
- Uses wet and dry quarry tile.



Figure 1. The STM 603 Slip Resistance Tester



RED WING TEST
LABORATORY:
EXAMPLE OF SLIP
RESISTANT TILE FOR SLIP
TESTING OF FOOTWEAR.



ACCEPTANCE CRITERIA

- Measurement Parameter: COF (Coefficient of Friction)
- ASTM F3445 Acceptance Criteria: **COF \geq 0.40** allowing footwear to be labeled **SR**.
- According to research, if the coefficient of friction value is below 0.24, it is highly likely that a slip will occur during normal walking.
- It is generally accepted that at a value of 0.36, the pedestrian has a low risk of slip.
- A higher value will reduce the likelihood of slipping accidents.
- Red Wing Shoe Co. does not sell footwear that has a COF of less than 0.30 when tested according to ASTM F2913 on wet and dry quarry tile.

OUTSOLE	ASTM F2913 Whole Shoe Test Wet Quarry Tile
Vibram Rubber PU XCLAIM TC-4 Plus 	0.62
Rubber EVA Stealth 	0.80
Stars and Bars 	0.71
Rubber EVA Traction Tred 	0.63
Afton Quest 	0.65
StarGrip 	0.68
SSRT Diamond 	0.67

EN ISO STANDARD

Marking of Product for Slip Resistance Properties	COF Flat	COF Heel	Marking code
Ceramic tile with sodium lauryl sulphate (soap)	0.32	0.28	SRA
Steel with glycerol	0.18	0.13	SRB
Meets Both	Same as Above	Same as Above	SRC

*Note: Slippage may still occur in certain environments.

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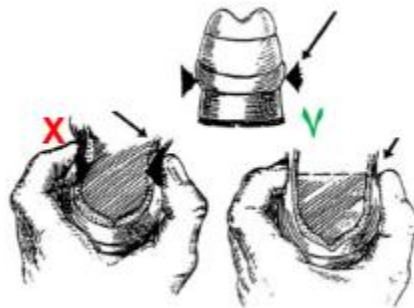
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TRACTION & BOOT STABILITY & FLEXIBILITY

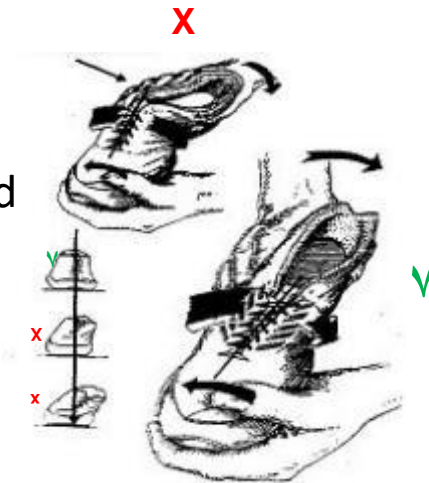
Heel Counter Stability:

- Stable heel counter
- Heel area width



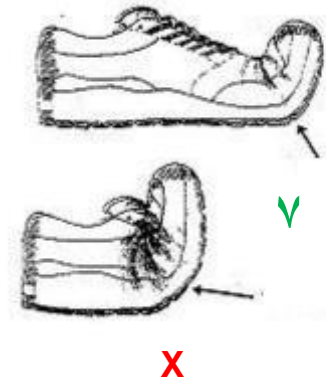
Torsion Stability:

- Mid-sole stability
- Construction method



Flexural Stability:

- Mid-sole stable in the arch area
- Mid-sole has arch support



OUTSOLE MATERIALS FOR SLIP RESISTANCE

Rubber

- Best material for achieving best in class slip.
- Best slip resistance is achieved with a combination of rubber blends and sole pattern.
- Only material that will achieve heat resistance – HRO level at 300°C

PU

- Organic polymer known for its resilience and compression resistance.
- Is much lighter material than rubber.
- Has better rebound than rubber.
- ShieldLite/ComfortMax is added BASF Hydrolysis plus.

SuperSole PU

- Legacy style – iconic platform in RW Brand.
- Lightweight single density, flexible.
- Re-soleable in Red Wing, Minn.

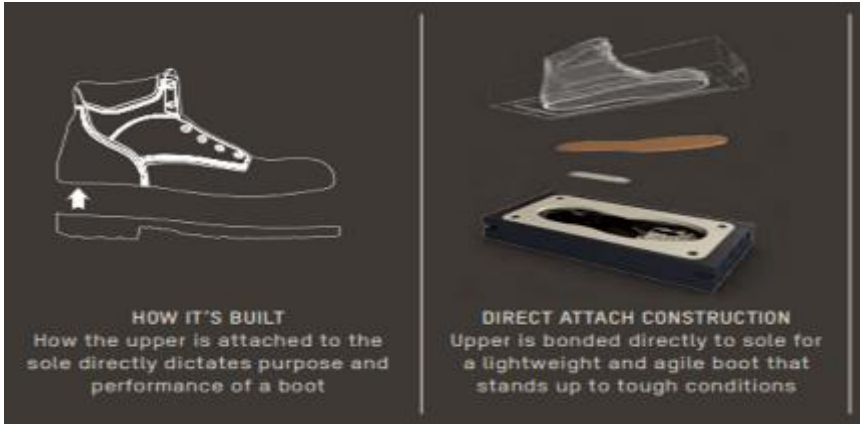
Users should consider the interplay between slip resistance and durability!

Increased slip resistance may mean less durability and, conversely, increased durability may mean less slip resistance.



RED WING

PETROKING BOOTS SLIP RESISTANT FEATURES



PETROKING TECHNOLOGY

Protection and comfort that extends underfoot.

- 01 - NYLON COVERED POLYURETHANE FOOTBED
Combines the shock absorption and breathability of open-cell polyurethane with the durable plushness of nylon.
- 02 - PUNCTURE-RESISTANT INSOLE
Non-metallic insole provides maximum protection from foot injuries due to sole puncture. Material is lightweight, flexible and thermal-insulated for comfort.
- 03 - COMFORTGARD MIDSOLE/OUTSOLE SYSTEM
Superior cushioning and traction for the toughest work environments
- 04 - POLYURETHANE MIDSOLE
Underfoot comfort and stability
- 05 - TREDMAX RUBBER OUTSOLE
Exceptional slip-resistant performance
- 06 - RUBBER OUTSOLE PLATFORM
Non loading, best oil, slip and heat resistance



SRC HRD



- 01 - NON-LOADING LUG DESIGN
Minimizes material buildup for enhanced slip resistance
- 02 - PERIMETER LUGS
Improve traction on angled surfaces
- 03 - STATIC-DISSIPATIVE OPTION
Prevents static electricity transmission



BOA®



LACE

BOA laces routinely tolerate the toughest environments and field tests, and are expertly configured for performance. Designed with 49 strands of stainless steel wrapped in nylon. Strong and flexible.



DIAL

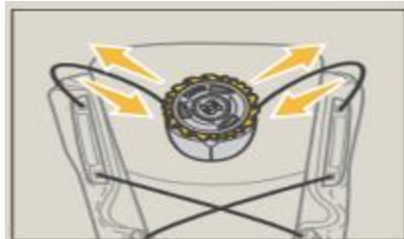
LACE

LACE STOP



DIAL

BOA dials fine-tune fit with precision, allowing for fast and effortless adjustment.



BOA® LACING SYSTEM

Makes getting in and out of lace-up boots fast and easy. Simply turn the dial to tighten to a perfect tension without pressure points. One pull instantly releases the laces.

LACE STOP

The lace stop creates a fixed point to hold lace and provide security should the lace break while in use. Think of it as a run-flat tire for your shoe.



SAFETY SOLUTIONS

REDWINGSAFETY.COM



OIL & GAS FOOTWEAR SOLUTIONS >2020

RED WING BOA®

NEW 2020 STYLES



PETROKING



PETROKING



How to Avoid Slips

- Take shorter strides.
- Slowing down the pace at which you are walking increases your chances of detecting and avoiding hazardous surfaces.
- Keep your work area clear of debris.
- Test the walking surface to ascertain whether or not it can sustain your weight before committing your whole weight to it.
- Practice walking in new work boots, especially walking up or down stairs. Many employees fall on staircases simply because they catch the toe of their boots on the lip of a stair or catch the heel of their boot on a step.
- Care for your boots after every use. Remove any dirt or debris from the treads of your boots – even the best treads are nullified by mud caked between them.
- Spills - Clean Up. Clean Up any liquids and practice good housekeeping.
- Good lighting in walkways and good hand rails installed.
- Wear Socks. Sweaty Feet can be Slippery Feet.





THANK YOU

QUESTIONS

HEAD-TO-TOE