

FEATURES OF A BOOT



[BACK TO TOP](#)

IMPORTANT CONSIDERATIONS IN SELECTING A BOOT

COMFORT

Traditional "Wellingtons" or "Gumboots" were notoriously uncomfortable making their extended use extremely tiring. They tended to be heavy and inflexible and caused blisters.

Wayne have gone to great lengths to ensure weight is minimised by concentrating the material where it is needed for protection and wear resistance and minimised on the boot where these characteristics are not required. This also ensures easier flexing in the vamp and calf regions so that blisters and chaffing are minimised. This also means the boot is as light as possible.

The shape of the human foot and leg have also been carefully considered throughout the design process. The boots are given adequate space inside and tend to be slightly wider in the toe box region. Comfort is critical to miners working long shifts underground and the Wayne boot range has been built around this experience.

The correct (optimal) toe spring makes walking much easier and less tiring than previous designs. At the same time less stress is placed on the flex-points of the boot giving it a longer life. The wearing of good quality cotton socks and use of cushion insoles (available as and optional extra) greatly enhance comfort (and hygiene).

DURABILITY

The dispersion of material to the parts of the boot that require thickness for safety and durability have been mentioned. The quality of materials used are also critical to the wear life of the boot and Wayne's adherence to international specifications in this regard ensures quality is maintained. Also important to a boot's life-span is to ensure the boot is designed to meet the challenges of a particular working environment. Choose the right boot for the job.

SAFETY

Safety optional extras are available in the form of steel toe caps, penetration resistant stainless steel midsoles, metatarsal protectors, shock absorbent padding in the heel, special PVC blends for static dissipation and resistance to oils, fats, blood, chemicals and acids.

"Wellingtons" are typically used in mining, quarrying and construction and these represent probably the toughest and most dangerous (for the feet) working conditions possible. Boots designed for these arduous conditions may include steel toe caps, penetration resistant midsoles and metatarsal protectors. Correct soil release pattern minimises a build-up of soil in the tread, making it less likely to slip and less abrasive wear on the sole.

In certain circumstances high visibility colours need to be used. Some are available as standard but any colour can be accommodated providing the order size makes this economical.

HYGIENE

The prime design purpose of protective waterproof footwear is to keep water and other liquids away from the feet. This causes the feet to sweat more than they would in conventional footwear and excessive sweat build-up can cause skin problems. Accordingly, the wearing of socks or fur liners is recommended as they can easily be removed and washed. Thick cotton socks allow good ventilation and comfort as well.

The finely knitted nylon liner used in Wayne boots makes the boot easier to wash and quicker drying than the visually more appealing fluffy brushed nylon. The fluffy brushed nylon has minimal comfort advantage, is too thin to absorb moisture and very difficult to keep clean and hygienic.

[BACK TO TOP](#)

CHEMICAL RESISTANCE OF PVC BOOTS

The following tables apply under most working conditions but should be used as a guide only. Factors such as concentration and duration of exposure and temperature of the chemicals can materially affect performance and safety in the working environment. Users should conduct their own trials to establish if, or not, performance levels are satisfactory. In addition, technical enquiries should be addresses to Wayne Plastics who will investigate and advise on options. In this case a detailed description of all factors, as indicated above, would be required. In general (but not always) a PVC/Nitrile rubber blend will improve chemical resistance.

CARE OF BOOTS

In hot conditions (underground mining) foot hygiene is especially important because the combination of warmth and sweat can become a breeding ground for bacteria or germs. The possibility of formulating fungicide into the PVC compound does exist but, because it is toxic, would be risky for human application.

The cleaning procedure described below should be applied but, in addition, the use of good quality cotton socks to absorb sweat should be worn. Clean socks must be worn each day.

Wayne gumboots all use a knitted nylon sock liner to prevent absorption of moisture and to make it easy to clean the inside of the boot. Brushed nylon liners look good when the boot is new, do not absorb sweat, make it more difficult to clean the interior of the boot and takes much longer to dry.

Clean exterior of the boot with mild soap and water. Never use chemicals or solvents as these will extract the plasticisers and make the boot brittle, causing it to crack. A mild disinfectant may be used in the interior of the boot but the boot must then be thoroughly rinsed.

To remove soil build-up in the sole tread pattern use mild soap and water and a scrubbing brush.

The interior of the boot should be washed with mild detergent which will both clean and deodorise. The nylon sock liner is designed to minimise liquid absorption and dry more quickly.

Place the boot in a place where air circulation can assist drying (outside in the fresh air is good). Never use heat to accelerate the drying process.

[BACK TO TOP](#)

SPECIFICATIONS AND COMPLIANCE

WHOLE FOOTWEAR

Specific Ergonomic Features	Complies EN ISO20344 (5.3.4)
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DIMENSIONS

All the above footwear complies with international dimensional specifications for this category of footwear. This ensures maximum comfort and protection to the feet throughout the life of the product.

STEEL TOE CAPS

Impact resistance	200 joules ± 4 EN ISO20344 (5.4)
Compression resistance	Withstands a compression load of 15 kN ± 1 EN ISO20344 (5.5)
Corrosion Resistance	Complies to EN ISO20344 (5.6)

STAINLESS STEEL MIDSOLES

Penetration resistance	1100 N in accordance with EN ISO20344 (5.8) (CSA requires penetration resistance of 1200 N and provision can be made for this if required.)
Dimensions	Fits within 6.5mm of the feather edge of the last all round.
Flex resistance	Complies EN ISO20344 (5.9)
Corrosion resistance	Complies with En 345 : 4.3.3.2.3
Bonding	PVC coating ensures a unitary bound between steel midsole and PVC component. This ensures that flexing and distortion of the footwear in use will not cause the midsole to move and damage the boot.

ELECTRICAL RESISTANCE

Electrical Resistant properties can be incorporated into boots if circumstances require. In this case boots are made to comply to EN 345 S5 specifications.

Anti-static footwear should be used to minimise electrostatic build-up by dissipating electrostatic charges. Examples could be when handling explosives or when the possibility of electric shock exists.

This type of footwear does not guarantee protection from electroshock because they only offer resistance between the wearer's foot and the floor. Users must ensure that adequate safety measures are in place and that on-going checks are conducted on all aspects of the working environment. Users must develop and carry out regular and frequent safety checks and tests.

It is important that the usage instructions supplied with anti-static footwear is complied with to optimise user safety.

SOLE SPECIFICATIONS

Fuel oil resistance outer sole	Increase in volume complies to test method EN ISO 20344 test procedure 8.6
Flex Resistance	Cut growth less than 4 mm before 30 000 flexes cycles in accordance with EN ISO20344 test procedure 8.4
Abrasion Resistance	Complies with EN 345 : 4.8.4 when tested with method A of ISO 4649 : 1985 for polymeric material.
Slip Resistance	SRA - Requirement of the standard EN ISO20345:2004/A:2007 concerning the value of the coefficient of friction of ceramic tiles floor with detergent solution

PROTECTION FROM FATS, OILS, ACIDS AND SOLVENTS

Specifications exist only with regard to resistance to fuel oil sole and, in this regard, boots manufactured to comply with EN 345 : 4.8.9 employ a 25 PHR Nitrile rubber/PVC blend compound.

Specifications cannot be established for all fats, oils, acids and solvents due to the infinite variety of concentrations, temperatures, working environments, duration of exposure, care of footwear, etc. Tests need to be conducted in the specific working environment to which the footwear will be subjected. As a basic guideline a “Chemical Resistance Chart” can be provided.

DURABILITY

No specification exists to define durability. However the interests of the user is taken into account in the specifications that “Safety Footwear for Professional Use” has to comply with. These are detailed above. Wayne’s range of footwear achieves maximum durability by employing the most up to date design features and the highest quality materials available. This aspect is a tradition brought about by years of satisfying the stringent demands of the mining industry.

This has been achieved through:

Ensuring distribution of material in the boot is concentrated where required for strength and durability while minimised elsewhere to achieve a balance between optimum life and comfort.

Toe spring designed to minimise flex cracking in the toe region which is subject to the greatest stress.

Nitrile rubber/PVC blends provide maximum resistance to chemical degradation and maximum abrasion and slip resistance where required.

NB : Life of footwear is greatly affected by proper cleaning after use.