

FOR THE FIRST TIME

# LASTING LIGHTWEIGHT IS COMBINED WITH ROBUSTNESS AS WELL AS SUSTAINABILITY

EXTRAGUARD upper technology sets new standards  
for GORE-TEX police boots.

**GORE-TEX**  
PRODUCTS



# ABSTRACT

Police officers need robust, waterproof and breathable footwear that also offers reliable protection in all weathers, during dangerous encounters, when responding fast, or policing demonstrations. In the past, robust protection has often automatically been associated with heavier footwear and less comfort for the feet. Now, the new three-layer EXTRAGUARD upper technology is paving the way for the manufacture of a totally new class of GORE-TEX safety

footwear. This footwear is lightweight and also remains lightweight even when police officers are having to stand for hours in rain, when policing demonstrations, for example. The boots are robust, quick to dry and can be worn again in comfort a couple of hours later.

Another key feature of innovative EXTRAGUARD upper material is its low carbon footprint.

## THE CHALLENGE

Robust, waterproof safety footwear for the police helps to provide protection against injuries to feet. However, heavier footwear is often associated with less comfort. This dilemma intensifies when boots are worn for hours in wet conditions. Over time, the water repellent finish wears off and the boot uppers absorb more and more water, the longer wearers spend standing, walking or running in rain. Although the boots remain waterproof, they become heavier as the outer surface gets saturated with water, restricting the wearers' mobility. Wetness also robs the feet of warmth and can cause conductive heat loss. Furthermore, once the boots are wet, they cannot be worn again for quite some time because they need so long to dry.

## THE GOAL

Police officers have to operate in a wide range of situations and weather conditions. Their footwear has to meet the demands of the job. They need boots that provide durable protection against mechanical impacts, common chemicals, flames, cold and wet. They also want footwear that is lastingly lightweight, highly breathable, and extremely comfortable to wear – ideally it should be barely noticeable. Last but not least, they want to know how the boots have been made. The police are increasingly aware of sustainability factors when buying equipment and it is important to them that the carbon footprint of their boots is as low as possible.



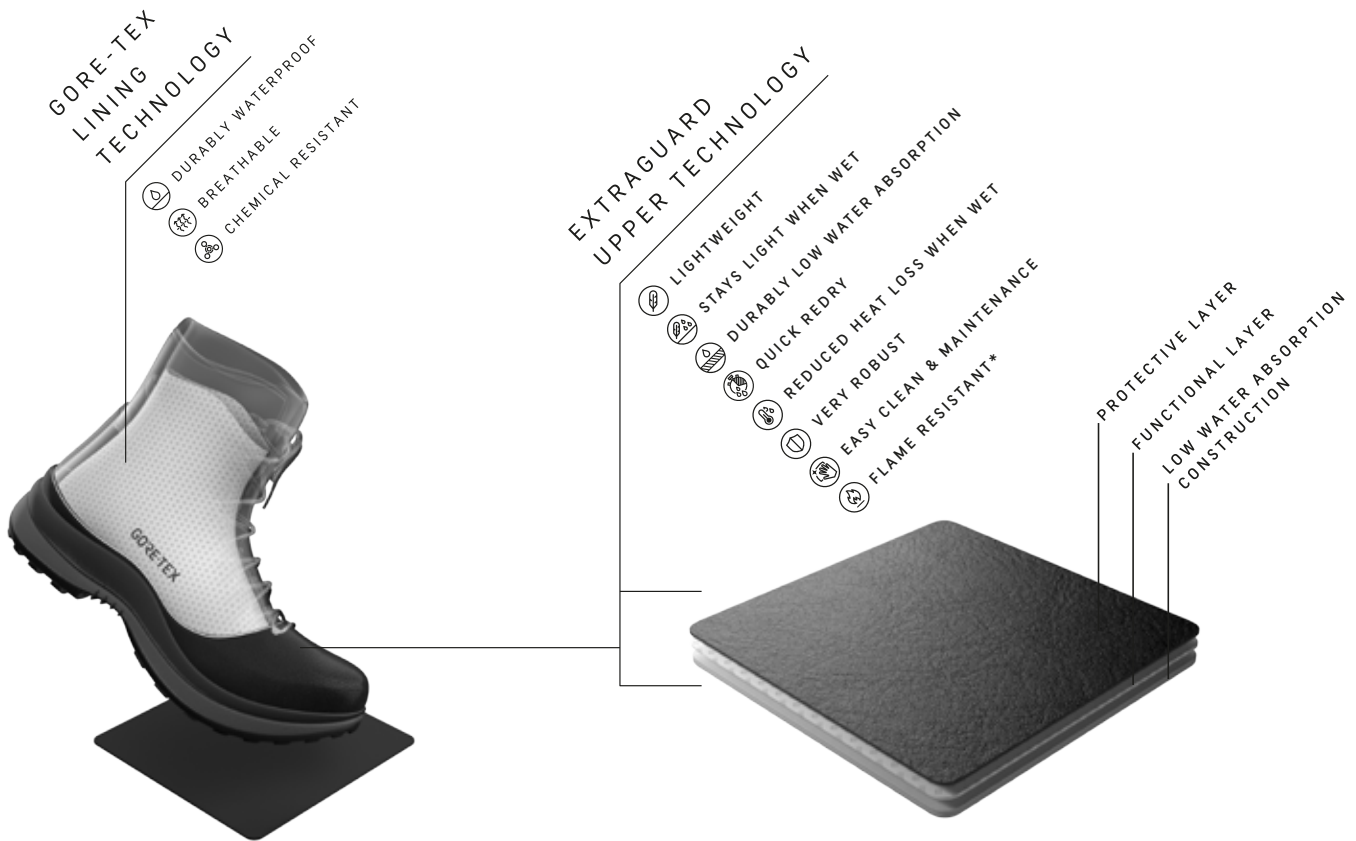
# INNOVATIVE UPPER

EXTRAGUARD is a new, sustainable, upper technology from Gore that combines the benefits of a robust upper material with the advantages of lightweight, flexible and breathable textiles. This paves the way for the manufacture of a whole new class of GORE-TEX police boots.

The new EXTRAGUARD upper is made of 3 layers:

1. A highly abrasion-resistant and flame-retardant protective layer
2. A functional layer, providing physical protection
3. An innovative low water absorption construction.

This 3-layer upper is sealed with GORE SEAM® Tape and, together with the GORE-TEX lining (inner bootie construction), integrated into the boot. Seam sealing prevents moisture from making its way into the boot through the seams. The EXTRAGUARD upper technology ensures that the boot only absorbs a minimal amount of water, even after months of extensive use and loss of the water repellent finish. The GORE-TEX bootie ensures the durable waterproofness of the boots even after the water repellent finish has worn off, or the upper material has been damaged. The GORE-TEX EXTRAGUARD boot combines the following features and benefits:



## GORE-TEX EXTRAGUARD POLICE FOOTWEAR

\* acc. to DIN EN 15090

3-layer technically engineered upper construction – seam-sealed with GORE SEAM® Tape – and GORE-TEX lining (bootie construction).



# GORE-TEX POLICE BOOTS WITH EXTRAGUARD UPPER

GORE-TEX EXTRAGUARD police boots are **durably water-proof and breathable**. They exceed the requirements of EN ISO 20345/347.

GORE-TEX boots engineered with EXTRAGUARD upper technology are **very robust** and yet comfortable right from the start. They need no breaking in and don't change their shape or colour. These boots provide protection against sharp objects, common chemicals, abrasion, and wetness.

They also provide flame protection according to DIN EN 15090. All these functional features translate into a long product life.



DURABLY  
WATERPROOF



BREATHABLE



VERY ROBUST



CHEMICAL  
RESISTANT



Even after months of use under extreme weather conditions the GORE-TEX boot with EXTRAGUARD upper (right) doesn't change its shape, colour or function.

## MATERIAL PROPERTIES OF EXTRAGUARD UPPER:

- ◆ Consistent quality: even thickness, no colour variations, leather look but no scars and scratch marks
- ◆ Form stability: no need for additional reinforcements in the boot construction
- ◆ Material can be seam-sealed with GORE SEAM® Tape
- ◆ Multiple design options: stick-on reflective elements, protective or colour patches, printing, PU castings (plastic) and other applications.

When dry, the robust and abrasion resistant EXTRAGUARD upper material construction is **40 percent lighter\*** than leather. Due to the low water absorption construction on the outside, it remains lightweight when integrated into GORE-TEX police boots engineered with EXTRAGUARD upper. GORE-TEX EXTRAGUARD police boots retain their functional features even after months of use and constant wear in wet environments. They also retain them once the water repellent finish has worn off, which is not always the case with conventional boots.



LIGHTWEIGHT



STAYS LIGHT  
WHEN WET

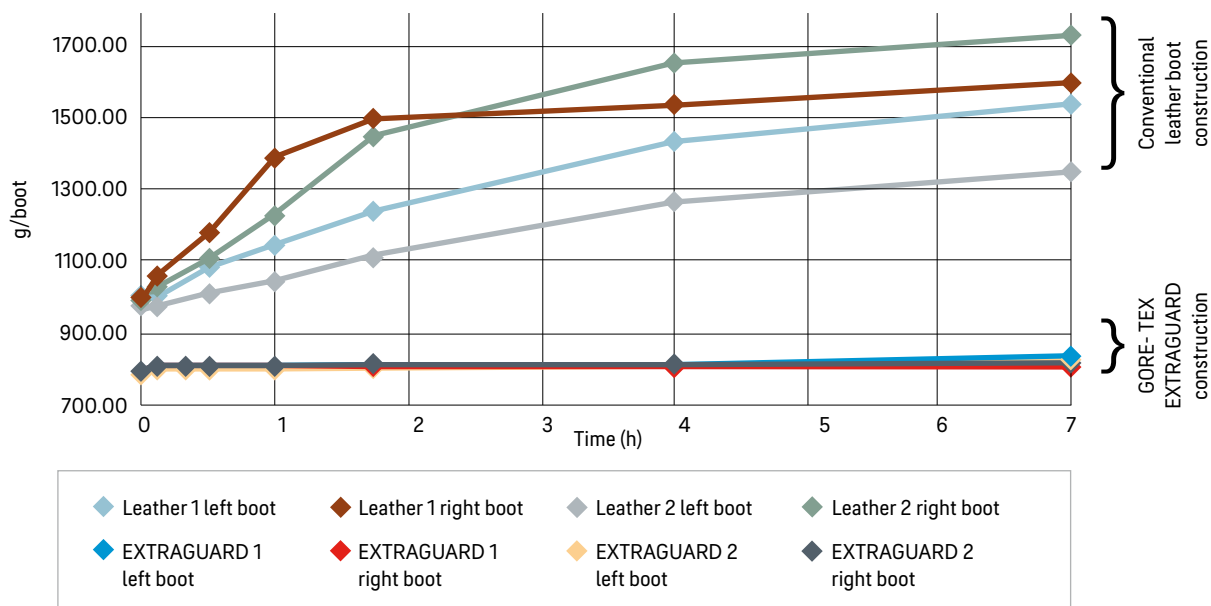


DURABLY LOW  
WATER ABSORPTION



\*Compared with full grain leather. Thickness measurement calculated in accordance with DIN 53326.

# WEIGHT GAIN OF BOOTS\* WHEN WET

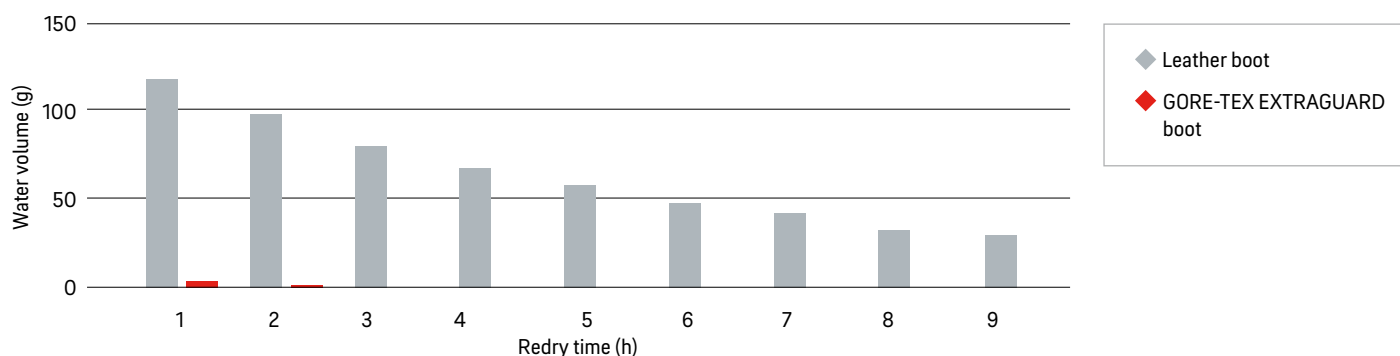


Compared with conventional boots, GORE-TEX EXTRAGUARD boots have very low water absorption, confirmed by the water bucket test.

## COMPARISON OF REDRY TIMES\*

When compared with traditional leather police boots, the low water absorption construction of GORE-TEX EXTRAGUARD footwear ensures **quick redry**. In wet environments, the upper materials used in conventional footwear absorb considerable amounts of water as soon as the water repellent finish wears off.

This increases the weight and often makes them feel damp and cold. By comparison, GORE-TEX EXTRAGUARD boots hardly absorb any moisture on the outside. This translates into significantly faster drying times when compared with standard boots.



As GORE-TEX EXTRAGUARD boots only absorb minimal moisture from the outside, they dry considerably faster than standard boots.

GORE-TEX EXTRAGUARD boots are **easy to clean**. They can be rinsed under the tap or hosed down. Specific care products needed for leather are not necessary.



QUICK REDRY



EASY CLEAN & MAINTENANCE

\*Artificially aged to replicate 2-3 months of wear.

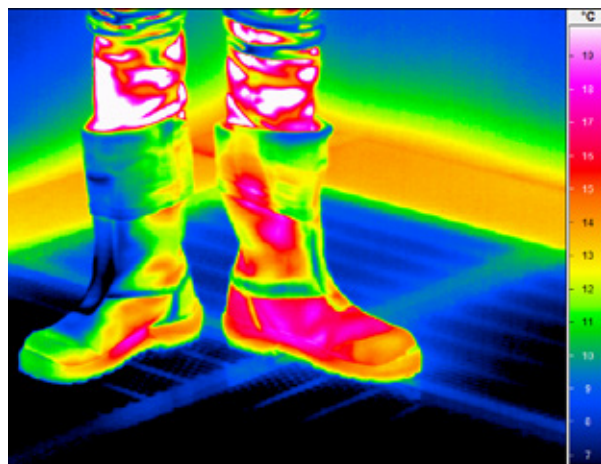
# COMPARISON OF RESISTANCE TO CONDUCTIVE HEAT LOSS (RCT)

Water from the outside only ever gets as far as the innovative low water absorption construction where it is prevented from penetrating further.

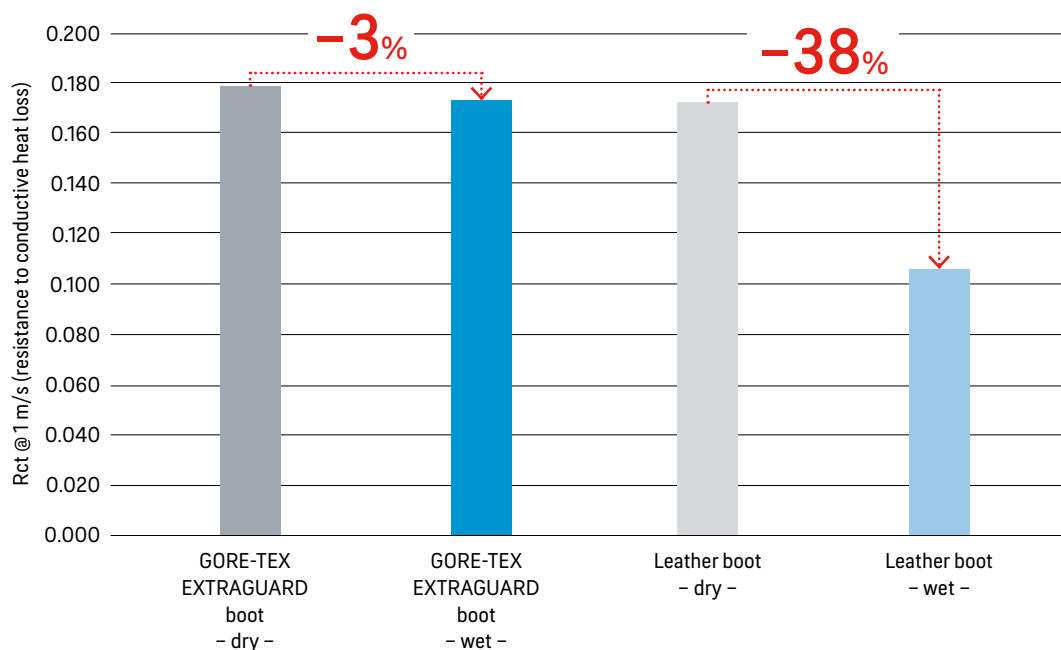
No moisture accumulates between the upper material and the waterproof inner bootie. This reduces **conductive heat loss\***, which can occur in footwear using conventional upper materials in wet and cold environments. Feet stay dry and comfortable, even in cold and wet conditions.



REDUCED HEAT LOSS  
WHEN WET



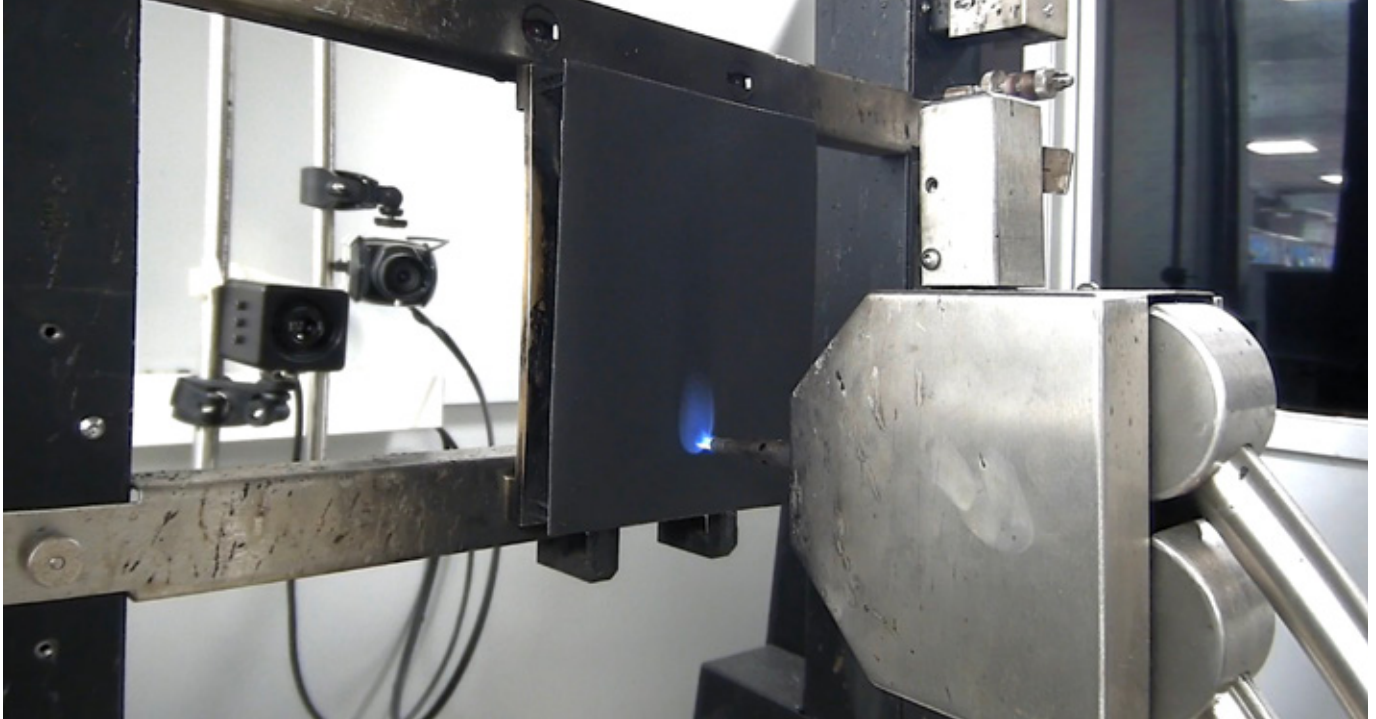
Conductive heat loss of a GORE-TEX EXTRAGUARD boot is considerably less than that of an identical leather version.



Identical boots were compared when dry and when wet. The potential heat loss of wet leather boots is significantly higher than that of wet GORE-TEX EXTRAGUARD boots.

\*Conductive heat loss: conductive heat loss occurs when the outer surface of a boot becomes saturated with water. This wet surface draws heat away from the foot (passive heat loss) far faster than when the surface is dry. The only way that wearers can compensate for this is if they keep moving. Otherwise they get cold feet. Very often, it will feel like feet are uncomfortably damp and clammy. Some people even assume that the boots are leaking, and that water is penetrating, even though that's not the case.

# FLAME RESISTANT ACCORDING TO DIN EN 15090



GORE-TEX EXTRAGUARD upper material does not inflame when exposed to a Bunsen burner for 10 seconds.

GORE-TEX EXTRAGUARD police boots provide flame protection according to DIN EN 15090. When exposed to an open flame for 10 seconds in accordance with DIN EN ISO 15025-A / DIN EN 15090 GORE-TEX EXTRAGUARD boots do not show an afterflame.



FLAME RESISTANT \*

## EXTRAGUARD UPPER MATERIAL AND SUSTAINABILITY

Gore is committed to continuously improving the environmental impact of its products without compromising on durable performance. Thus, all new product technologies need to support the Sustainability Strategy, for example by selecting sustainable materials, reducing manufacturing waste or using simpler transport solutions.

The EXTRAGUARD upper is a great example due to its robust and durable performance, prolonging product life. This is confirmed by a variety of tests carried out under laboratory and real-life conditions. The material also sets new standards in terms of the low environmental impact of its production, using few resources and minimizing CO<sub>2</sub> emissions.



“ Backed by decades of experience working with police forces across the world, we know exactly what level of comfort and protection police boots need to offer and share the desire of wearers to continuously improve their performance. Gore is proud that the years of research that have gone into the development of its EXTRAGUARD upper technology have made a significant contribution to raising comfort levels in terms of key features such as weight, redry and breathability. As a result, we are now able to offer wearers a sustainable technology that will protect them in their everyday work. Initial reactions from wearers confirm this and promise a revolution in the field of police boots.

Johannes Krieg, GORE-TEX Professional Product Specialist

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## PRODUCT BENEFITS:

- ◆ Extremely lightweight
- ◆ Stays light when wet
- ◆ Durably low water absorption
- ◆ Quicker redry
- ◆ Reduced heat loss when wet
- ◆ Very robust
- ◆ Easy clean and maintenance
- ◆ Flame resistant acc. to DIN EN 15090
- ◆ Reduced environmental footprint

