

LEATHER AUXILIARIES

WATERPROOFING SYSTEMS

Products and technologies



ZSCHIMMER & SCHWARZ

WATERPROOFING AGENTS



OMBRELLON 072 N | New Generation hydrophobing agent for base waterproofing

- ▶ Excellent waterproof figures
- ▶ Results in tight and firm leathers
- ▶ Easy handling and short process
- ▶ Excellent water vapour performance
- ▶ Non yellowing
- ▶ Excellent area yield compared to classical waterproofing products
- ▶ Good finish adhesion
- ▶ Lightweight and relaxed leathers
- ▶ Excellent wearing comfort
- ▶ Single waterproofing agent for all articles, or in combination with OMBRELLON S (and/or OMBRELLON WD)

OMBRELLON HOT | High performance waterproofing agent

- ▶ Outstanding Maeser results
- ▶ Medium softness
- ▶ Tight grain, pleasant silky touch
- ▶ Liquid, easy to handle
- ▶ For all high performance leathers
- ▶ Hassle-free finishing
- ▶ To be used alone or in combination with OMBRELLON S (and/or OMBRELLON WD)

OMBRELLON HSL | Waterproofing agent especially for firm to medium soft leathers

- ▶ Fulfills highest requirements
- ▶ Controlled softness, firm and tight grain
- ▶ Effective even with low quantities
- ▶ Level dyeings
- ▶ Combination with booster gives outstanding result
- ▶ Liquid, easy to handle

OMBRELLON S | Waterproofing booster

- ▶ Improves waterproofing values
- ▶ Imparts fullness and softness
- ▶ Excellent for milled articles
- ▶ Pleasant to touch, round handle
- ▶ Versatile to use
- ▶ Single use possible

OMBRELLON WD | Polymeric all-round waterproofing agent

- ▶ Retaining and waterproofing in one agent
- ▶ Washable leathers including dry cleaning
- ▶ Imparts good grain tightness
- ▶ Liquid, easy to handle
- ▶ Excellent filling
- ▶ Moderate softening
- ▶ Very good exhaustion and fixation
- ▶ Can be combined with OMBRELLON S to reach higher hydrophobing effect

OMBRELLON WR-N | Classic highly softening waterproofing agent

- ▶ Waterproofing agent especially for split and suede
- ▶ Imparts excellent softness
- ▶ Very good exhaustion and fixation
- ▶ Shiny suede surface
- ▶ Writing effect on suede
- ▶ Rich and silky touch
- ▶ May also be used for washable leathers including dry cleaning

REQUIREMENTS

The aim of processing value added waterproof leather is to produce leather which has an appealing appearance and results for example in shoes or motorbike garment with high wearing comfort even under wet and cold conditions. The skin protects humans against external influences; however, it also allows the body to regulate its temperature by perspiration. Leather shall act as a second breathing skin. Waterproof leather literally stands for leather which water does not penetrate, however, the leather shall additionally allow a high water vapour permeability and to a certain extent the reversible water up-take to remove perspiration from the human skin. The leather should offer thermal insulation and be lightweight. The common testing procedure for waterproofness has to be seen in the context of the use of this leather.

THE PRINCIPLES OF OPEN WATERPROOFING

The waterproofing of leather is a fine tradition. Famous examples are the housing of the Native Americans – the wigwams – and the boats of the Inuit -the umiat. Waterproof leathers were commonly used in military clothing and in cavalry boots. Leather was soaked with water repellent oils

for such purposes, e.g. cavalry boots can be made of leather, which had been subsequently treated with chrome stearates and waxes. Such boots are heavy and the perspiration humidity cannot escape. Therefore, the feet might feel wet and get cold during wear.

USAGE REQUIREMENTS

- ▶ No surface wetting
- ▶ No water penetration
- ▶ Controllable up-take of perspiration humidity
- ▶ Removal of perspiration humidity
- ▶ Heat and cold insulation
- ▶ Lightweight
- ▶ Wearing comfort

TESTING REQUIREMENT

- ▶ Water droplet test (EN ISO 15700, IUF/420)
- ▶ Bally penetrometer (EN ISO 5403, IUP/10)
- ▶ Maeser (ASTM D 2099)
- ▶ Soaking-up test (Wicking-test)
- ▶ Absorption of water (EN ISO 2417, IUP/7)
- ▶ Water vapour absorption (EN 420)
- ▶ Water vapour permeability (EN ISO 14268, IUP/15)
- ▶ No test, effect influenced by moisture content
- ▶ Specific weight and haptic assessment
- ▶ No test

SEE THE DIFFERENCE IN WEARING COMFORT

The so-called open waterproofing is the smartest approach to make waterproof leather. Openly waterproof treated leathers act like a membrane. The internal surface of the leather – the fibrils and elementary fibres – is coated by a waterproof agent that binds to the internal surface through its functional groups. Hence, the internal surface possesses a very low surface tension.

Water vapour can penetrate into the fibre network; however, the "hydrophilic water" droplets possess a high surface tension. They cannot spread over and therefore, wet the internal surface. Water cannot penetrate. Water vapour permeates always from the side with higher water vapour concentration to the side with lower concentration, from the side with higher temperature to the side with lower temperature.

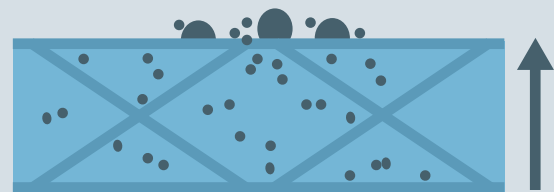
The open waterproof effect can be visualised by an example from nature. Water striders can walk and jump over water. Their torsus is covered with numerous fine hydrophobic hairs that cannot submerge into the water. Therefore, the water striders stay on the water. Similarly, the internal

surface of waterproof leather cannot be wetted. In addition, the lotus effect, the self cleaning of the lotus flower in the rain, which is commercialised in wall paints and car window care, is based on the same physical background.

Additional benefits of openly waterproofed leathers are the lightness of the leathers and the fact that this kind of treatment does not cause any area loss, which often takes place when waterproof leathers are processed.

FIGURE MODEL OF ACTION LEATHER AS MEMBRANE

Low temperature (shoe/garment exterior)



High temperature (shoe/garment interior)



Chemistry tailor-made

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