



/ hide

A CLEANER
LEATHER.



HEMP BLACK™

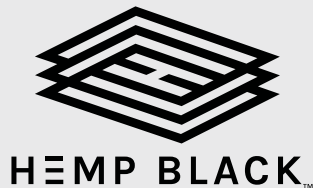
THIS LEATHER HAS IT ALL:

Antimicrobial. Durable. Sustainable Design.

HEMP BLACK / hide is an eco-conscious alternative to leather, engineered with our proprietary full spectrum hemp flower extract, delivering lasting antimicrobial and odor neutralizing performance.

The synthetic leather, when treated with our hemp flower extract, exhibits a 99.99% reduction of *S. aureus* and *E. coli*.

Available in 120+ colors and various textures, the durable and sustainable leather is ideal for any industry. From transportation seating, to small leather goods, the 'self-cleaning' HEMP BLACK / hide enhances luxury and peace of mind.



Style Number: *HBH300-010310-00*



Antimicrobial



Abrasion Resistant



Odor Neutralizing



Leather made from up to 60% recycled material
Knit backing made with 100% recycled polyester



No PVC, plasticizers, phthalates or heavy metals



Available in various stretch, finishes and hand

TECHNICAL SPECS

Thickness (nominal): 1.0 mm

Finished Product (nominal GSM): 488 GSM

Abrasion Resistance: ASTM D7255 (H-18 Wheel) > 2,000 Cycles PASS

Abrasion Resistance: ASTM D7255 (CS-10 Wheel) > 2,000 Cycles PASS

Tensile Strength: ASTM D2209 > 2318 psi Warp/Weft Average

Elongation at Break: ASTM D2209 > 132% Warp/Weft Average

Smolder Resistant: California Technical Bulletin 117: June 2013 PASS

Heat Crack Testing: SAE J323 NOV2009 (600 cycles) Warp/ Weft No Damage

Cold Crack Testing: SAE J323 NOV2009 (600 cycles) Warp/ Weft No Damage

*results for Style Number: *HBH300-010310-00*

Test Results:

Results against *S. aureus* ATCC#6538P:

| | | |
|-------------------|--|--------------------------|
| Untreated Control | U ₀ : Average of logarithm numbers of viable bacteria at Time= 0 | 4.23 |
| Untreated Control | U _t : Average of logarithm numbers of viable bacteria at Time= 24 h | 5.38 |
| VL4 | A _t : Average of logarithm numbers of viable bacteria at Time= 24 h | 0.47 |
| <u>Sample</u> | <u>Value of Antimicrobial Activity (R)</u> | <u>Percent Reduction</u> |
| VL4 | 4.91 | 99.998 |

Test Results:

Results against *E. coli* ATCC#8739:

| | | |
|-------------------|--|--------------------------|
| Untreated Control | U ₀ : Average of logarithm numbers of viable bacteria at Time= 0 | 4.15 |
| Untreated Control | U _t : Average of logarithm numbers of viable bacteria at Time= 24 h | 6.18 |
| VL4 | A _t : Average of logarithm numbers of viable bacteria at Time= 24 h | -0.20 |
| <u>Sample</u> | <u>Value of Antimicrobial Activity (R)</u> | <u>Percent Reduction</u> |
| VL4 | 6.38 | 99.99996 |

Test Results:

Results against *S. aureus* (MRSA) ATCC#33591:

| | | |
|-------------------|--|--------------------------|
| Untreated Control | U ₀ : Average of logarithm numbers of viable bacteria at Time= 0 | 4.37 |
| Untreated Control | U _t : Average of logarithm numbers of viable bacteria at Time= 24 h | 3.09 |
| VL4 | A _t : Average of logarithm numbers of viable bacteria at Time= 24 h | 1.29 |
| <u>Sample</u> | <u>Value of Antimicrobial Activity (R)</u> | <u>Percent Reduction</u> |
| VL4 | 1.80 | 98 |

ANTIMICROBIAL.

Germs are everywhere. Hotels, offices, automobiles, lobbies, and transportation systems have more pressure now than ever to provide users with safer environments.

HEMP BLACK / hide offers infection control materials without sacrificing durability or design.

Infections are transmitted through two primary avenues: from person to person or by coming in contact with a contaminated surface. Data from multiple studies reveal that many industries fail to provide clean spaces despite allocating considerable financial and personnel resources towards sanitation. Airplanes are equipped with HEPA filters to remove infectious particles from the air, but materials remain a threat. Two recent independent studies revealed that headrests, tray tables, arm rests, and seatback pockets housed more bacteria than the plane's bathroom. The organisms identified cause infections in humans, and several high-contact surfaces were contaminated with *E. coli*, suggesting fecal contamination. Other modes of travel reveal similar problems. A study by microbiologist Charles Gerba revealed MRSA on Amtrak trains and *E. coli* on buses. New York City's public transportation system revealed an average of more than two million colony-forming units (CFUs) per square inch. Even those who opt out of traveling with the masses encounter risk, as a 2019 study discovered six million CFUs per square inch in ride share vehicles, and two million CFUs in rental cars. For context, the average household toilet seat is home to 172 CFUs.

Once individuals arrive at their destination, the data remains alarming. According to a study from the American Society of Microbiology,

81% of hotel surfaces held at least some fecal bacteria. The same researchers demonstrated to Food and Environmental Virology that housekeeping often fails at infection control efforts: The scientists planted a virus in a hotel bathroom and then observed as cleaning staff spread the virus to at least three other rooms. Other settings reveal similar stories. Cruise ships are notorious incubators, and casinos have been identified as the origin of several outbreaks, including a 2019 norovirus surge which infected hundreds of people in just a few days. Materials in lobbies, waiting rooms, cafeterias, spas, and even offices facilitate disease spread. A 2012 study cultivated viable pathogens "off nearly every surface," identifying phones and chairs as the dirtiest office furniture.

Fortunately, integrating antimicrobial materials into design elements is possible. These self-disinfecting surfaces offer healthier, safer environments. HEMP BLACK / hide accredited tests from an ISO-certified laboratory demonstrated a 98% to 99.9999% kill on common infectious organisms, including *E. coli* and MRSA. The material's antiseptic source, hemp flower extract, offers cleaner surfaces without the risks posed by other mechanisms. First, serial passage studies confirmed that HEMP BLACK / hide kills organisms without contributing to the global threat of antimicrobial resistance. Additionally, regular exposure to alternative antimicrobial materials can pose alternative and future health consequences, such as inflammation, cell disruption, and environmental pollution. HEMP BLACK / hide is a safe, sustainable solution.

DURABLE.

As a finished product made with REPREVE[®] backing, Polyurethane (PU), and a hemp flower extract topcoat, HEMP BLACK/ hide exhibits durability and safety in physical test results. The leather meets FAA flammability requirements through its inherent fire-retardant and smolder resistant properties. In both heat and cold crack testing, our hide demonstrates no discoloration or cracks in any layer, including the topcoat. The flexibility, drape, and stiffness can be engineered for specific product applications.

MECHANICAL TESTING RESULTS

Peel Testing Max Adhesion: ISO 11644 > 34.36 (N/cm)² Warp/Weft Average

Peel Testing Average Adhesion: ISO 11644 > 22.72 (N/cm)² Warp/Weft Average

Abrasion Resistance: ASTM D7255 (H-18 Wheel) > 2,000 Cycles PASS

Abrasion Resistance: ASTM D7255 (CS-10 Wheel) > 2,000 Cycles PASS

Tensile Strength: ASTM D2209 > 2318 psi Warp/Weft Average

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* results for Style Number: *HBH300-010310-00*

TECHNICAL SPECS

Thickness (nominal): 1.0 mm

PU Coating (nominal GSM): 256 GSM

Back Cloth (nominal GSM): 232 GSM

Finished Product (nominal GSM): 488 GSM

* results for Style Number: *HBH300-010310-00*

SUSTAINABLE DESIGN.

Sustainable in design, HEMP BLACK / hide is produced with 90% less energy and 80% less solvents than conventional synthetic leather. Our materials contain no vinyl monomers (PVC free), plasticizers, phthalates, or heavy metals.

Emissions produced during manufacturing are significantly reduced through the use of our Catalytic Recuperative Oxidizer (CRO), which removes 98% of emissions.



The leather is backed by REPREVE[®] performance fiber made from recycled plastic bottles. Products made with REPREVE[®] help conserve energy and natural resources. For every square yard of HEMP BLACK / hide, 11.7 green plastic bottles that may have never been recycled, are recovered.

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Our highly versatile and allergen-free luxury leather, which is completely customizable to be single or double layer with various prints, textures and 120+ colors, is perfect for the following:

- Furniture
- Wall Coverings And Hotel Headboards
- Stadium Seating
- Healthcare
- Automotive
- Airline Seating
- Cruise Ships
- Passenger Rail Car
- Yacht / Marine
- Footwear
- Fashion Accessories
- Travel Goods

