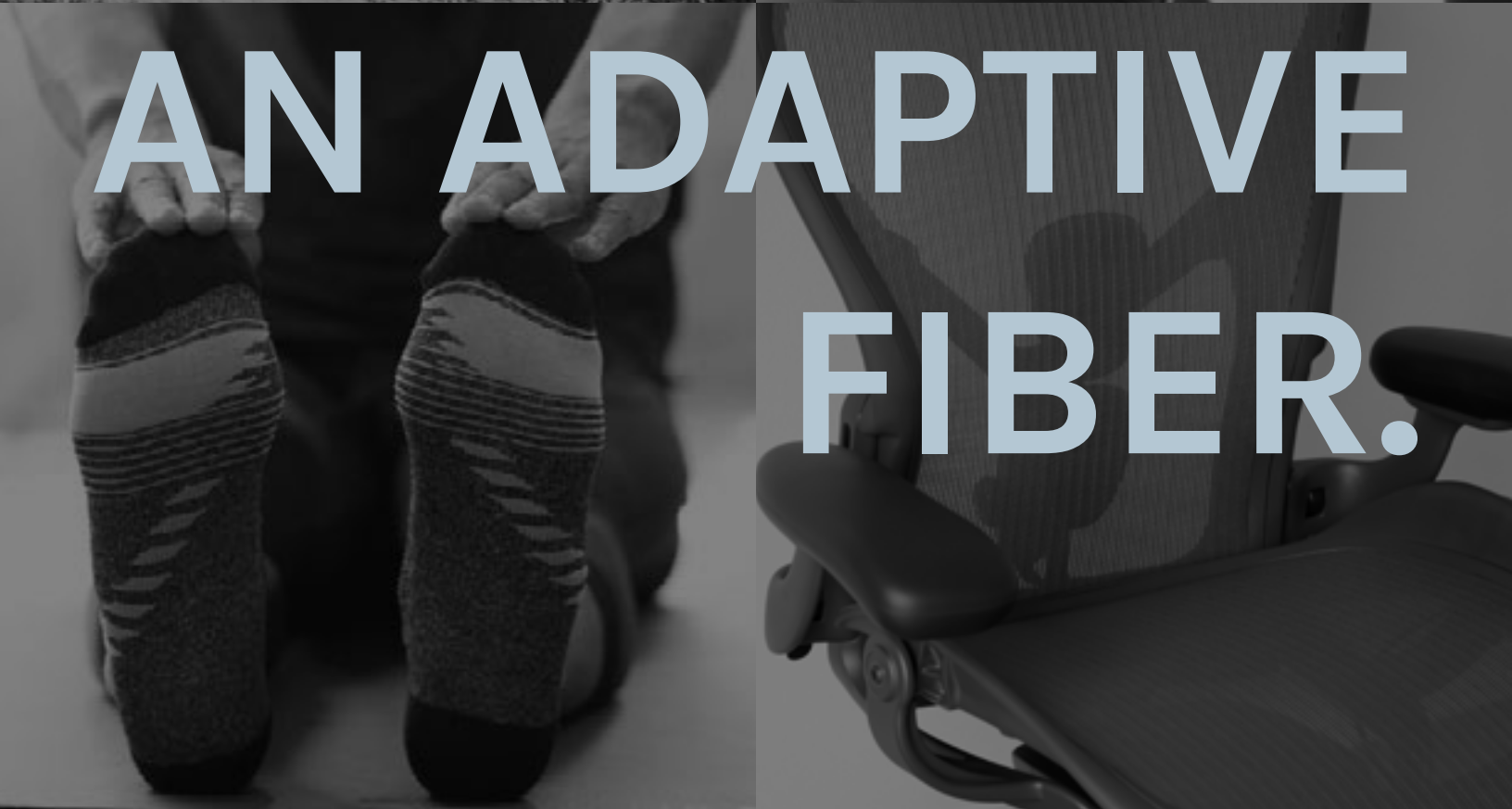




/ element



AN ADAPTIVE
FIBER.



HEMP BLACK™

ANTIMICROBIAL.

ASTM E2315

Standard Guide for Assessment of Antimicrobial Activity Using a Time-Kill Procedure

Test Results:

Results against *S. aureus* ATCC#6538:

Results for Golden Oil, Style Number: AH-GO

Sample	CFU/ ml	Percent Reduction
Control Time Zero	7.65+05	N/A
Control Time Final	a8.95+05	N/A
Hemp Extract	< 5.00E+00	>99.9993%

AATCC TM 100-2012

Test Results:

Results against *S. aureus* ATCC#6538:

Results for HEMP BLACK / element yarn, Style Number: XYB-YRN0000

Sample	Recovered Bacteria After Contact Time – 24 Hours	Percent Reduction
HB element KM1356	< 1.0 x 10 ²	> 99.96%

AATCC TM 100-2012

Test Results:

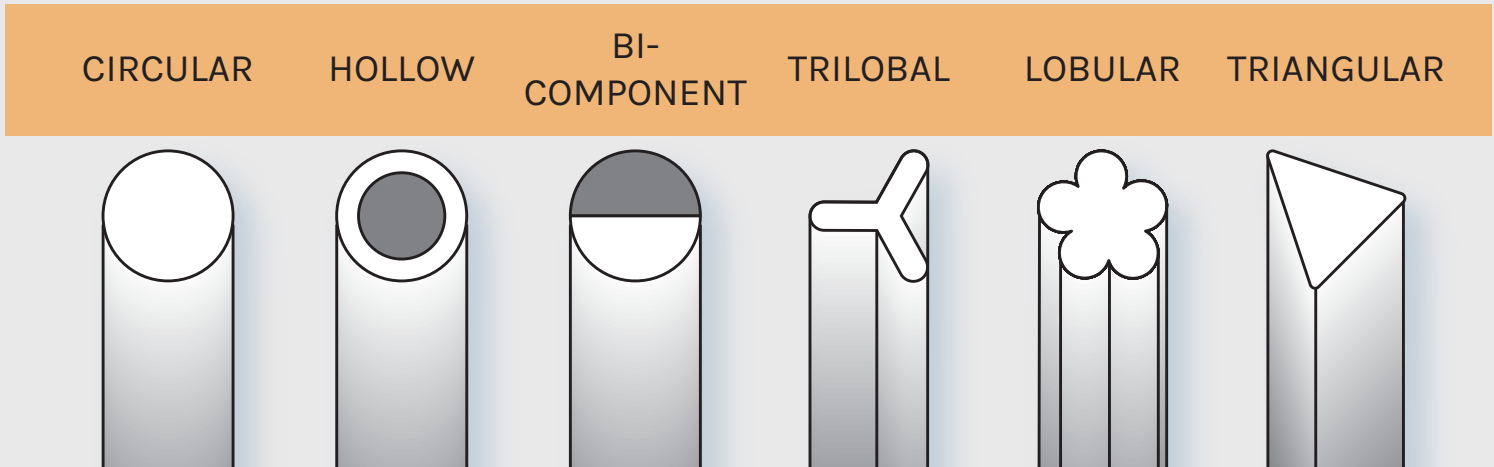
Results against *S. aureus* (MRSA) ATCC#33591

Results for Herman Miller suspension fabric, HB-HRM0001

Sample	Recovered Bacteria After Contact Time – 24 Hours	Percent Reduction
A	1.2 x 10 ³	99.7%
B	3.5 x 10 ²	99.91%
C	2.0 x 10 ²	99.95%

MASTERBATCH TECHNOLOGY.

Your choice performance and technology on demand. Our full spectrum hemp extract is used in a series of polymeric matrices such as recycled polyester and nylons, virgin polyesters and nylons, PLA, and Polyurethane.



Cross sectional shaping available for optimal technology assets. This shape determines a fiber or filament's properties and therefore the yarn and fabric characteristics. The above illustrations represent a small, diverse group of cross-sectional shapes – many more are available in our engineering process.

Engineered fiber deniers are manufactured for a variety of applications from industrial to next to skin comfort and performance.

- Apparel
- Footwear
- Soft home goods
- Suspension fabrics
- Automotive
- Hospital
- Cruise Ships
- Carpeting
- Turf
- Hotel



PERFORMANCE.

All HEMP BLACK / element fibers with state-of-the-art masterbatch formulation specifications can be modified to meet a particular end result or product demand. Sustainable technologies and processes are engineered into each material.

SUSTAINABLE.

By solution dyeing (pigment added directly to polymer), our process uses less water than traditional dyeing methods. Each batch is solution dyed to conserve water, improve colorfastness, and increase stain resistance, limiting the need for certain topical finishes which may wash off.

Solution/Dope Dyeing	Piece/Stock/Batch Dyeing
<ul style="list-style-type: none"> • Global Warming - 6.77E-02 kgCO2e/kg • Up to 96% CO2 emissions reduction • Water Use – 1.3 L/kg (1.3e-03m3) • Up to 90% reduction in water use • Retains color longer • Stain-resistance • Superior colorfastness • Almost no pigment is lost during dyeing, therefore less pigment/dye is needed 	<ul style="list-style-type: none"> • Global Warming Potential – 2.05 kgCO2e/kg • Water Use – 13.5 L/kg (1.35e-02m3) • Up to 3.5-11L of water/yard of fabric • Generates up to 18 liters of wastewater/kg of yarn • High potential to contaminate nearby water sources • Dye is only applied to exterior of fiber • Reduced colorfastness • Reduced fiber durability

TESTING RESULTS

Absorbency: AATCC TM 79-2018 > 0.2 seconds*

Vertical Wicking Short Period: AATCC TM 197-2018 > 0.55 mm/s*

Vertical Wicking Long Period: AATCC TM 197-2018 > 0.18 mm/s*

Oil Transfer: Average % change in weight (24 hrs) > 0.80%*

Tensile Strength: ASTM D3822 > 3.64 g/den**

Break Strength: ASTM D3822-96 > 359 g**

Elongation: ASTM D3822 > 22.7%**

Tenacity: ASTM D3822 > 4.02 g/den**

*Results for Style Number: QB-SF5579HBE-HEAVYCOZY

** Nominal results for Style Number: XYB-YRN0000

ODOR NEUTRALIZING.

Unlike typically applied solutions, our DNA masterbatch technology ensures lasting antimicrobial and odor neutralizing efficacy after repeated use and laundering.

Due to HEMP BLACK / element's anti-odor properties being derived from our gentle hemp extract, issues such as skin irritation, DNA , and cell damage caused by other odor solutions currently on the market¹, are greatly reduced.

50% of assessors classified the odor of the saturated HEMP BLACK / element fabric (Fabric A) as wood/earth while 50% classified the odor of the saturated polyester fabric (Fabric C) animal/sweat. The half of the assessors who detected odor characteristics on the HEMP BLACK / element control (Fabric B) detected earth and floral characteristics.

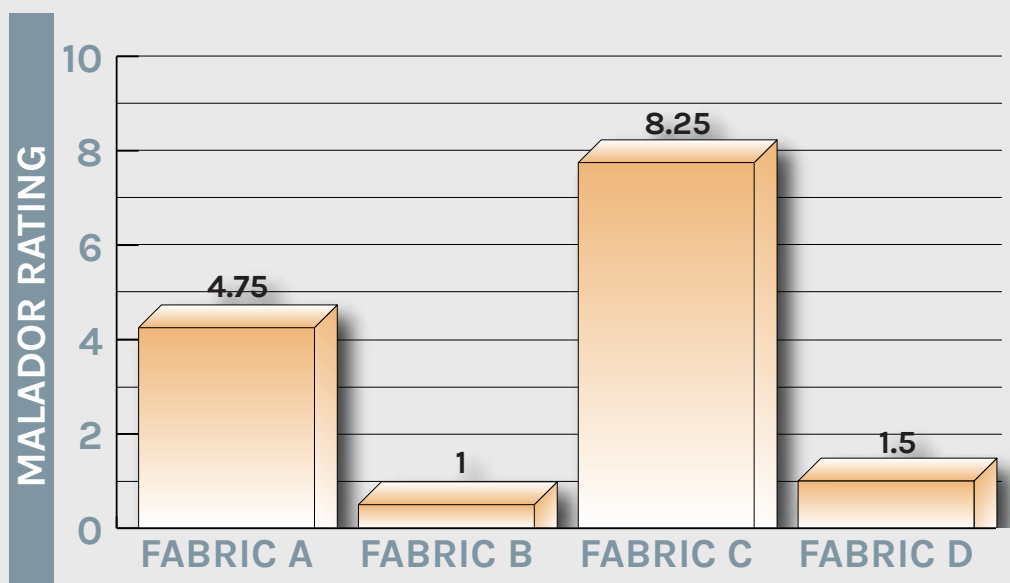
Legend:

Fabric A: HEMP BLACK / element fabric saturated with an odorant

Fabric B: HEMP BLACK / element fabric control (no odorant)

Fabric C: Polyester fabric saturated with an odorant

Fabric D: Polyester fabric control (no odorant)



Average malodor rating for four fabric samples, half saturated in diluted artificial perspiration. Each score is an average of the subject scores from assessor responses. 0 being no odor, 10 being most intense odor.***

¹Trafton, A. (2014, April 08). Tiny particles may pose big risk: Some nanoparticles commonly added to consumer products can significantly damage DNA. Retrieved July 17, 2020, from <https://news.mit.edu/2014/tiny-particles-may-pose-big-risk>

***Results for Style Number: QB-HSS80HBE-JERSEYMOSSOLID-JBLACK

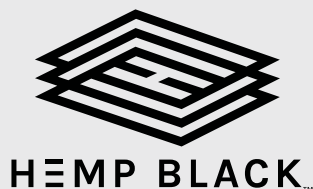
THOUGHTFULLY ENGINEERED:

Antimicrobial. Performance. Masterbatch Technology.

Our patented process utilizes advanced seed genetics and certified growing farms in the United States to produce our 100% non-GMO full spectrum hemp extract.

This proprietary extract is fused with advanced polymeric matrices, creating new exclusive material technology.

The adaptive, strategically engineered fiber derived from this process, HEMP BLACK / element, delivers antimicrobial and odor neutralizing performance.



Style number: *HB-ELE0000*



Antimicrobial



Odor Neutralizing



Moisture Wicking



Masterbatch Technology



Solution Dyed



Non-GMO Hemp Extract

PERFORMANCE RESULTS

Absorbency: AATCC TM 79-2018 > 0.2 seconds*

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Oil Transfer: Average % change in weight (24 hrs) > 0.80%*

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Elongation: ASTM D3822 > 22.7%**

Tenacity: ASTM D3822 > 4.02 g/den**

*Results for Style Number: QB-SF5579HBE-HEAVYCOZY

** Nominal results for Style Number: XYB-YRN0000