



Outlast Technologies, Inc.
presents

Flame Resistant 4oz Baselayer
with
Outlast® Fiber





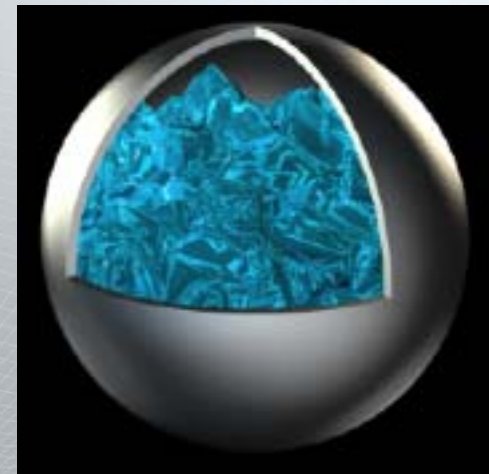
Outlast's patented technology

- Phase change material (PCM) is micro-encapsulated → mPCM
- mPCM is injected into polymer stream, spun as fiber
- Fiber is spun into yarn
- Yarn is knitted into fabric
- Fabric is cut & sewn into garments



Outlast® PCMs

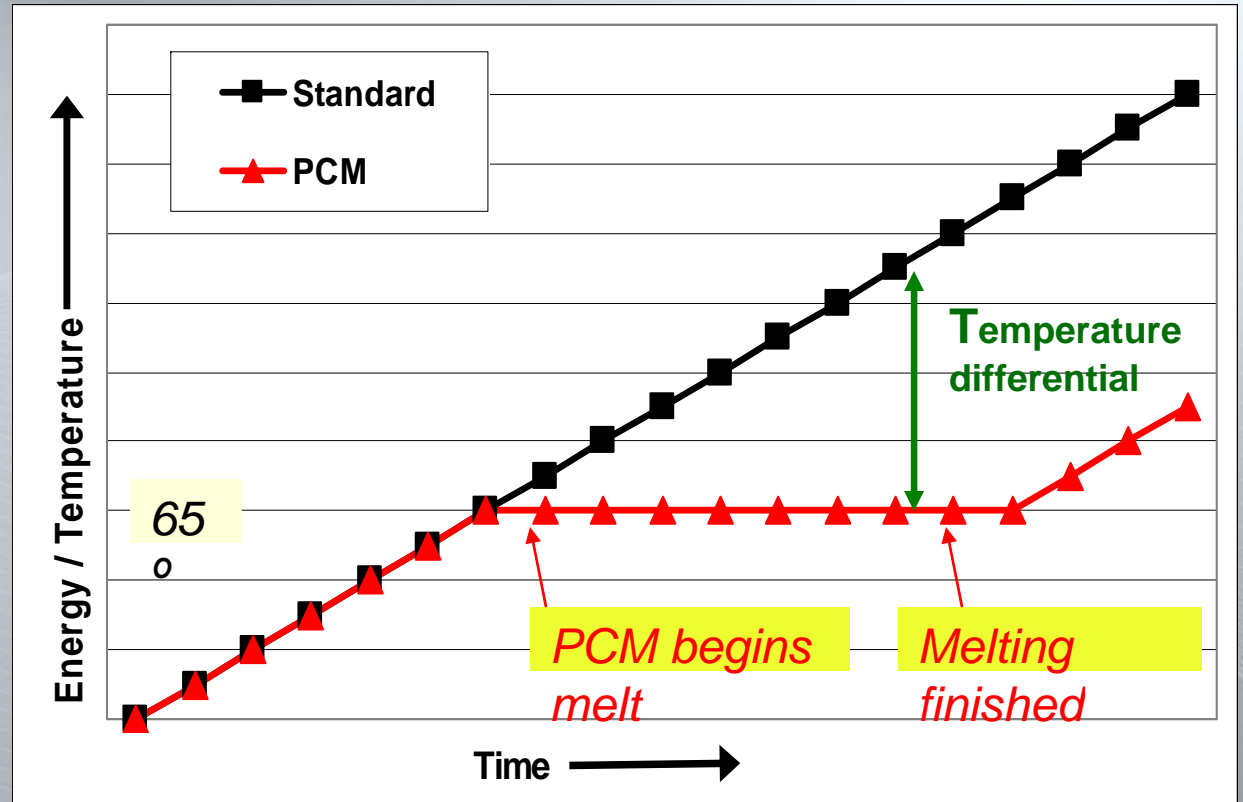
- PCM is contained in a durable outer plastic shell
- mPCMs are microscopic in size: 1000s fit on the head of a pin
- mPCMs are applied to fiber, fabric and foam





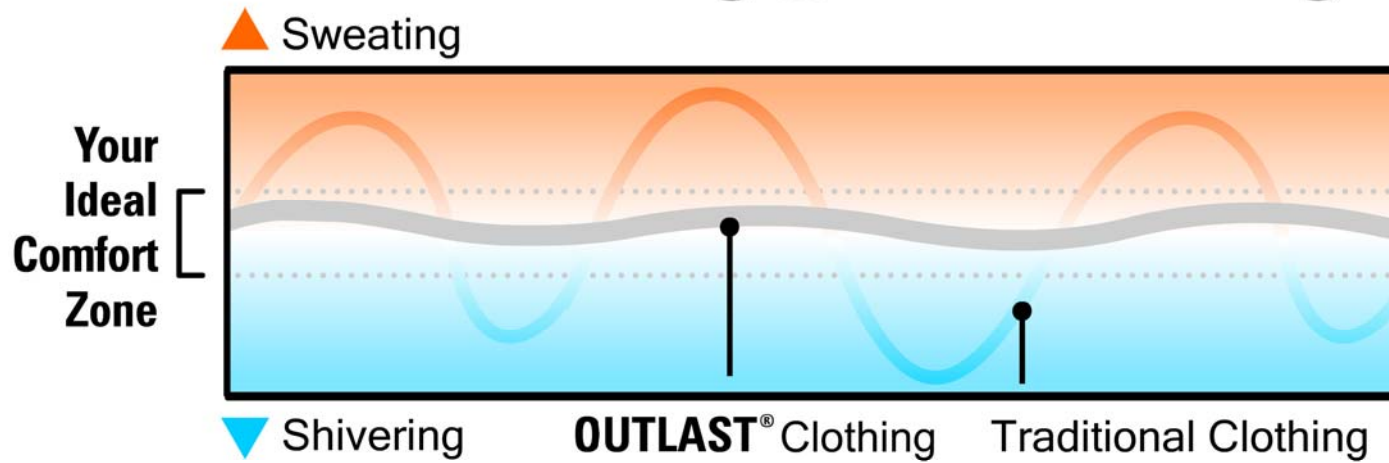
What are PCMs?

- Thermal Capacitors...
 - Can prevent temperature/energy change in narrow ranges.





OUTLAST Clothing vs. Traditional Clothing





Performance of Outlast® FR T-Shirts in Cold & Warm Environments

—

A physiological study
with human test subjects



The Test

- FR Tee is worn under BDU blouse, with jeans
 - Outlast® 4oz t-shirt : Modacrylic/Outlast® Rayon knit
 - Control 4oz t-shirt : Modacrylic/FR Rayon knit
 - Tested per ASTM D6413-99 Flame Resistance of Textiles (Vertical)
- Temperature-controlled chamber, 2 protocols --
 - Cold 46 °F (7.8 °C)
 - Warm 75 °F (23.9 °C)
 - One hour sessions, treadmill @ 3 mph, short rests
 - 5min rest, 15 walk, 5 rest, 15 walk, 5 rest, 15 walk
- Skin temp & RH captured by data loggers

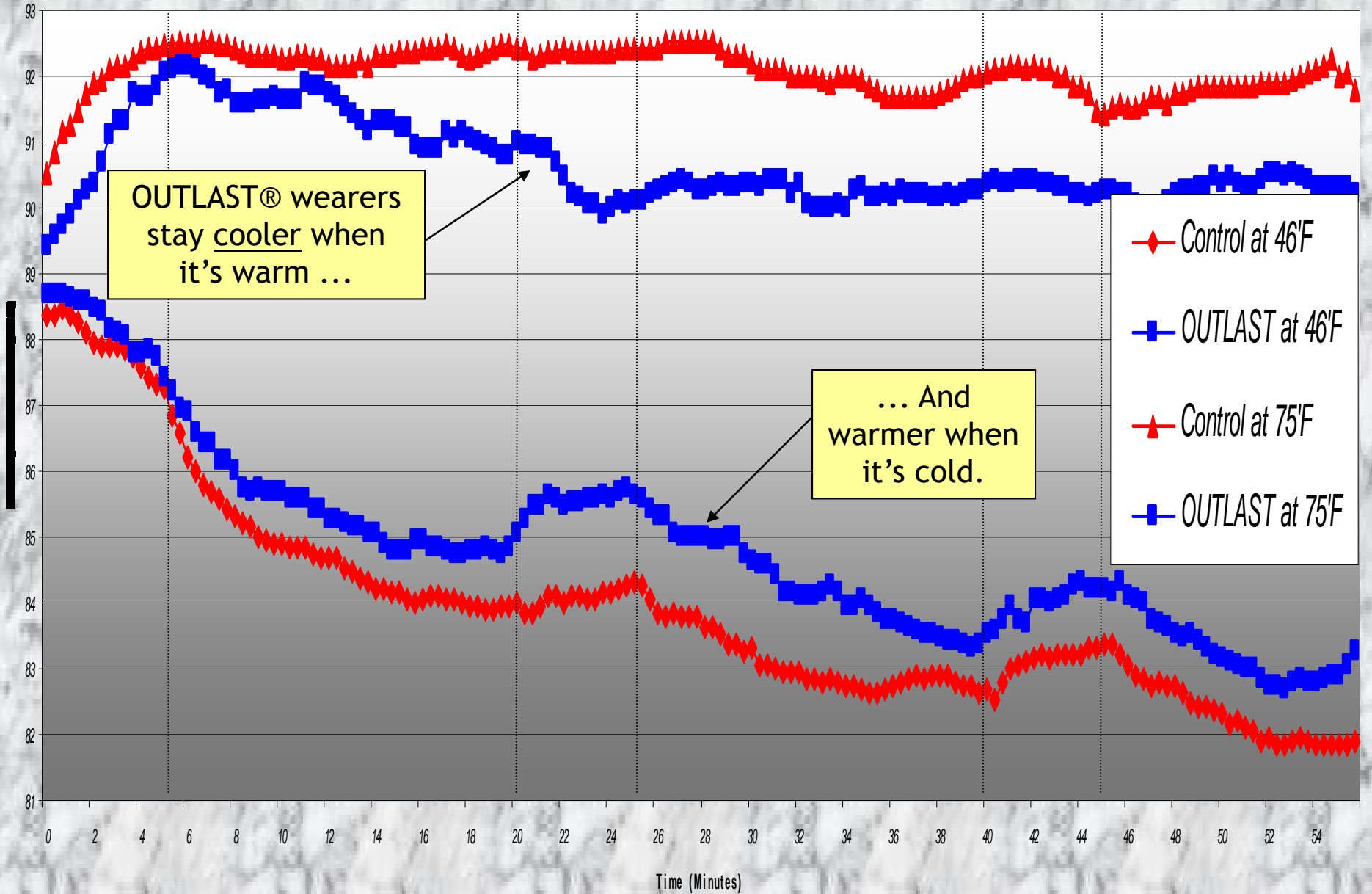


Outlast
environmental
lab
Boulder, Colorado

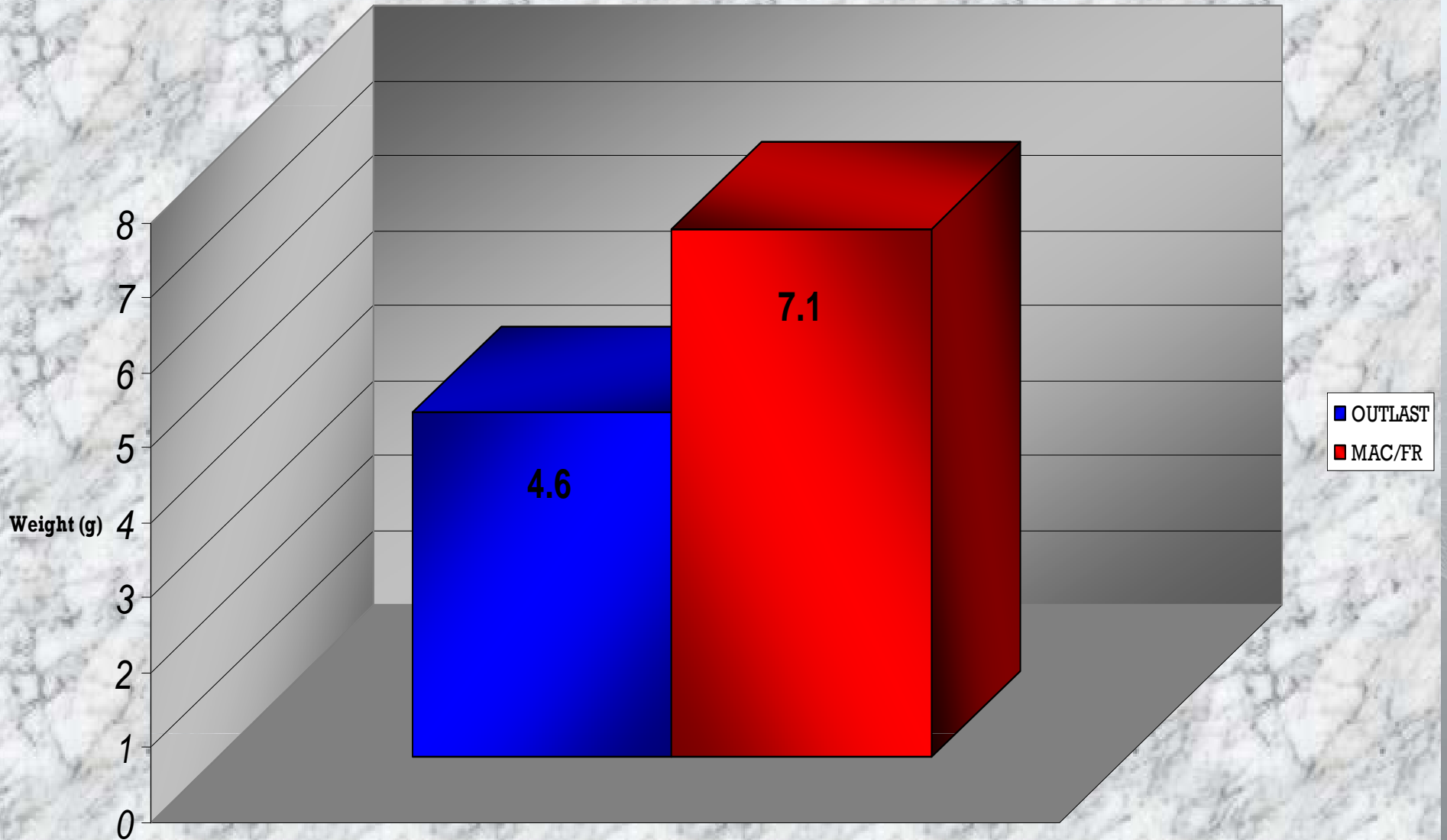


Thermal Test of MAC/FR and OUTLAST Viscose T-Shirts

MAC/FR Silk Weight vs. MAC/Outlast Viscose Silk Weight
Comparative Graph of Testing Conducted at 75°F and 46°F



Sweating was 34.8% lower with Outlast®
at 75°F





Benefits of FR T-Shirt with Outlast® Rayon

- Reduced compromise to the cold-weather clothing system from sweat-through & chilling
 - Warmer skin temp when it's cold
 - Cooler skin temp when it's hot
 - Less sweating, in hot or cold environment
- Better metabolic conservation
- Better over-all comfort
- Fire resistant per ASTM D6413-99
- Antimicrobial odor control
- Berry compliant