



U.S. AIR FORCE

# Fire Resistant Air Force Equipment (FIRESAFE)



*Dominant Air Power: Design For Tomorrow...Deliver Today*



**Airman Battle System- Ground  
Core layers:  
-Airman Battle Shirt  
-Airman Battle Ensemble  
CWU-27P Flight Suit**



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# Overview

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- Urgent Operation Need Requirements
- Airman Battle System- Ground
- Current Status
- New Projects
- DSCP
- AF FR Testing Specification



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# Urgent Operational Need Requirements

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- Burn Injury Protection\*
- Thermal Protective Performance \* \*\*
- Moisture Wicking \*
- Light Weight
- High Air Permeability \*
- Durable
- Anti-microbial \*
- Insect Resistant Capability
- Water Resistant \*
- Near-Infrared Signature Reduction \*
- Electro Static Discharge (ESD)

\* Indicates the property is garment dependant

\*\* Thermal protection is a dependant on layers worn



# Threshold Requirements



- FR properties for items:
  - Fabric
    - 2 sec after-flame, 3 sec afterglow,
    - 6 inch char length max (undergarments),
    - 3.75 inch char length max for (outergarments)
      - Both warp and fill directions, no melt, no drip. (ASTM D 6413)
  - Garment
    - ASTM F 1930-00 4-10 sec burn 2 cal/sec/cm<sup>2</sup> configuration dependant, provided upon request (Outer Garments only)



# Threshold Requirements Cont.



- Thermal Protection (Extreme weather gear only)
  - ASTM-F-1291 clo rating of 3.5 (when tested as a system)
- Moisture wicking (Undergarments only)
  - 3 inches (method will be provided upon request)
- Durability
  - Pilling resistance ASTM-D-3512 rating of 3.5
  - Colorfastness ratings of 4
  - Abrasion resistance (fabric dependant)
- Anti-microbial properties for items contacting skin:
  - 99.9% reduction in bacteria. (AATCC 100-2004)
  - 99.9% reduction in fungus (socks only)
- Insect resistant properties
  - 70% bite protection after 25 washings. (MIL-PRF-MCCUU)



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# Threshold Requirements Cont.



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- Water Resistance properties
  - AATCC 22-2005 spray test rating of 85.
- Near infrared signature reduction
  - Provided upon request (outergarments only)
- Fabric ESD requirements
  - TBD



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# Airman Battle System- Ground



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- Individual Airman FR Protection Equipment
  - Items include
    - Base layer: FR Undergarments, FR Short Sleeve Shirt, FR Long Underwear, FR Socks
    - Core layer: Airman Battle Ensemble (ABE), Airman Battle Shirt (ABS), FR Gloves, FR Balaclava
    - Outer layer: FR light weight Jacket and Pants
    - Extreme Cold Weather: FR Outer Shell Parka and Pants, Heavy Wt FR Gloves, Heavy Wt FR Balaclava



# Current Status



- Spring 09 User Assessment (ABS and ABE)
  - CONUS User test at training bases, includes Civil Engineering, Security Forces, and Explosive Ordinance Disposal
  - CONUS Human Factors Assessment
  - OCONUS Electronic Data Collection from deployed airmen
- Expect Future User Assessments with more ABS-G items
- Working with US Army on Joint Combat Shirt Configuration to submit to DSCP



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# New Projects (FY09/10)

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- FR Cold Weather
  - FR Light weather jacket/pants
  - FR Extreme Cold Weather Jacket
- FR Balaclava
- Better Flight Suit Material
  - Lower Cost
  - 4 second FR protection
  - Better Durability



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# DSCP

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- ABE (Aka: FR ABU)
  - AF New Combat Airman Configuration
  - Shoulder and Forearm pockets
  - Trouser pockets
  - Hook and Loop for Aircrew Style Name Patch
- Joint ABS
  - Army/Air Force Configuration



# AF FR Testing Specifications

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- Battlefield Airman FR Approved Product List
  - Mostly Items already GSA Contracted
  - Submit Independent test data on end item
    - Test data analysis by Government
  - Mainly for Base Layers
  - Avenue for Airman/Units to have FR item knowledge
- Air Force FR Specification
  - Developing Spec, based off of Army and ASTM standards



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# Points of Contact

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