NFPA
TECHNICAL COMMITTEE ON SPECIAL OPERATIONS
PROTECTIVE CLOTHING AND EQUIPMENT
Orlando, FL
January 15-17, 2013

AGENDA

Tuesday, January 15, 2013

1. **9:00 a.m.** Call to order - Chairman Dean Cox
2. Introduction of members and guests
3. Staff Liaison Report - Dave Trebisacci
4. Approval of the minutes of the meeting in San Diego, CA, March 14-16, 2012
5. Chairman’s remarks – Dean Cox
6. NFPA 1975 (F13 cycle) Public Comments (attached)
7. NFPA 1952 (F14 cycle) Public Input (attached)
8. NFPA 1953 (F14 cycle) Public Input (attached)
9. Old Business
10. New Business
11. **Adjourn** (no later than 2:00 PM, Thursday, January 17, 2013)
The meeting was called to order by Chairman Dean Cox at 08.00 on Wednesday, 14 March 2012.

The following members and guests were present:

**MEMBERS IN ATTENDANCE:**
Dean Cox, Chairman Fairfax County (VA) Fire & Rescue
Karen Lehtonen, Secretary Lion
Dave Trebisacci, Staff Liaison NFPA
Steve Corrado Underwriters Laboratories
Charles Dunn TenCate/Southern Mills
Jim Frank CMC Rescue
Dan Gohlke WL Gore and Associates
Bill Haskell NIOSH
Kim Henry PBI Performance Products (by phone)
Diane Hess PBI Performance Products
Tricia Hock SEI
Gavin Horn University of Illinois Fire Service Institute
Steve Hudson Pigeon Mountain Industries
George Krause Globe Manufacturing
Jeremy Metz West Metro Fire Rescue
Craig Mignogno Columbus (OH) Firefighters Union
James Murray FDNY
Robert Nelson Chula Vista Fire Department
Jack Reall Columbus (OH) Firefighters Union
Doug Stephenson City of Johns Creek Fire Department
Beverly Stutts Underwriters Laboratories

**GUESTS IN ATTENDANCE:**
Roger Barker NC State (by phone)
Shawn Deaton NC State (by phone)
Ben Favret Vestagen
Claire King Propel LLC
Amanda Newsome Underwriters Laboratories
Celia Powell Battelle/US Army
Mark Saner Workrite Uniform
Jeff Stull International Personal Protection (by phone)
Rich Young DuPont
Members and guests introduced themselves. The Staff Liaison read the Committee Procedures statement and provided a Staff Liaison report which included a cycle update for the various documents covered by this Technical Committee.

The Minutes of the last Committee meeting held in Alexandria, VA 12 -- 13 July 2011 were reviewed.

**Motion by Diane Hess, seconded by Bill Haskell**

To approve the Minutes of the 12 -- 13 July 2011 Alexandria, VA

**Motion passed**

**Chairman’s Remarks:**

Chairman Cox welcomed new member Rob Nelson from Chula Vista Fire Department; he also recognized several manufacturers are still awaiting appointment for balance. Chairman Cox also recognized Jim Murray’s task group and Jim Frank’s task group for getting their respective draft documents together and moving that work forward in the process. It was noted that new SCAM documents are on hold until further input/decisions are made regarding the publication of SCAM documents by Standards Council based on TCC input. This committee will provide our recommendation that SCAM documents being should remain stand-alone documents and not be included in the product documents to TCC Chairman Haskell.

**Technical Correlating Committee Update:**

The TCC last met at NFPA headquarters. The TCC spent much of their meeting time reviewing the new NPFA revision process. They also discussed with NFPA staff improvements that can be made within this Fire and Emergency Services project. There was discussion regarding the make-up of the TCC and the ability of committee chairmen to vote at the TCC level.

The concept of the merger of the NFPA TC on Emergency Medical Protective Clothing (NFPA 1999) with the Special Operations TC was discussed. Bill Haskell gave a brief description of the recent history of the EMS committee chairmanship and make up. At this time the technical committee needs a new chairman since Bill Haskell cannot serve as the TC Chair and the TCC Chair. Therefore at the last TCC meeting the option of merging these TC’s was discussed. This technical committee then had discussion on a potential merger; any further comments should be submitted to Chairman Haskell and Chairman Cox.

**The TC attended a breakout training session on the new NFPA document revision process**

**Presentation:** A presentation was provided to the TC on requirements for first layers in the military by C. King, Propel LLC and C. Powell, US Army. A copy of the presentation is attached to the minutes.

**NFPA 1975 First Draft**

The technical committee reviewed and took action on the Public Input received. The committee also generated First Revisions and Committee Input.
NFPA 1855 Public Comments

The technical committee reviewed and took action on the public comments received. No committee comments were generated.

Document Update and review of revision cycle calendar

NFPA 1951 – NITMAM update, next revision cycle TBD
NFPA annual meeting is the week of June 10th, NITMAM’s will be heard June 13/14. Staff Liaison Trebisacci explained the process to the TC. The next edition of NFPA 1951 is scheduled to be issued by the NFPA Standards Council on August 9, 2012 with an effective date of August 24, 2012 (PDF available August 27).

Contaminated Water PCE NFPA 1953 (SC agenda Aug 2012, requesting F14 cycle)
The TC letter ballot passed and is currently being balloted with TCC. Comments supporting the work on this document should be sent to Standards Council prior to their August meeting.

Rope and Harness SCAM NFPA 1858 (SC agenda Aug 2012, requesting F14 cycle)
A proposed draft was completed by the task group. Progression on the draft is on hold until Standards Council provides direction on how SCAM documents will be processed.


A task group reviewed the document for errors that were identified upon publication to determine how they can be addressed within the NFPA process (Errata, FL, TIAs, short cycle, etc). A small group will meet prior to FDIC to draft the necessary TIA’s and determine if short cycling the document is the solution.

Old Business:

Chairman Cox reaffirmed the TC’s position regarding SCAM documents and will forward the recommendation to TCC Chairman Haskell.

New Business:

The next meeting will be held January 8-10, 2013. The location is TBD but Key West or southern Florida are the preferred locations. This meeting will be to review the Second Draft of NFPA 1975 and the First Draft of NFPA 1953.

Motion by Jack Reall, second by Jeremy Metz
To adjourn
Motion passed

Chairman Cox adjourned the meeting at 10:00 on 16 March 2012.
Respectfully submitted,

Karen Lehtonen

Karen Lehtonen, Secretary
TC on Special Operations Protective Clothing and Equipment
Military Requirements Relating to NFPA 1975

14 March 2012
Overview

Current military requirements
- Flammability
- Comfort/Moisture Management
- Insect Repellency
- Antimicrobial

Concerns with current melt/stick tests
- NFPA 1975 – Oven Test
- NFPA 2112/2113 – No Test

Potential screening test
Army Requirements
Flammability

- **Inner Layers**
  - **Mounted Soldier**
    - Previously - cotton, wool or aramid
    - Short term update – ASTM 6413, max 6” char
    - Longer term – no melt / no drip / no stick
  - **Dismounted Soldier**
    - No current requirement – issued cotton underwear & polyester thermal base layers
    - Longer term – combine with Mounted Soldier for no melt / no drip / no stick
- Issue – no quick, simple, inexpensive test for no melt / no drip / no stick
Army Requirements
Flammability

- Outer Layers
  - Mounted Soldier
    - All outer layers FR – Duty Uniform & Cold Weather
    - ASTM D6413 – Max char 4” to 5” depending on item
  - Dismounted Soldier
    - FR Duty Uniforms in Middle East
    - ASTM D6413 – Max char 4” to 5” depending on item
    - Developing FR soft shell jacket
  - Instrumented manikin requirements
    - ASTM F1930, 4 second exposure
    - Updating duty uniform requirement to max 35%
predicted 2nd + 3rd degree burn (including head)

UNCLASSIFIED
Army Requirements
Comfort

- **Inner layers**
  - Air Permeability – min 120 to 300 cfm
  - Moisture Management – multiple internal tests
    - Vertical wicking
    - Horizontal wicking
    - Water absorption

- **Duty uniform**
  - Air Permeability
    - Min being raised from 10 to 25 cfm for FR ACU
    - ACS – varies depending on location in garment
      - Mesh torso – min 240 cfm
      - Printed sleeves/sides – min 30 cfm
  - Moisture Management – mainly internal tests
Insect Repellency

- Inner layers – not used

- Duty uniforms
  - Required for all woven uniforms, FR & non-FR
    - MIL-DTL-44411
    - Analysis for permethrin levels on fabric
    - Bite protection testing performed by USDA
    - Requirements stated for unwashed garments & after 20/50 laundering cycles
    - All treatment currently done on finished garments
  - Not currently required for Army Combat Shirt
    - Multiple fabrics in one garment
    - Effectiveness concerns give open knit fabric construction
Army Requirements
Antimicrobial

- Not widely used
- Concerns about
  - Skin sensitivity – removed from FREE Layer 1
  - Effectiveness on garments worn for long period
- Items with current requirement
  - USMC FR Combat Ensemble Shirt – log 2 requirement for knitted torso only
  - US Army Lightweight Protective Hood – log 1 requirement for lining fabric

UNCLASSIFIED
Concerns with Current Melt/ Stick Tests

- **ASTM D6413 – Melt/Drip Observations**
  - Very subjective – bits of falling char often reported as “flaming melt/drip”
  - Molten drips can damage burner

- **NFPA Thermal Shrinkage/Stability**
  - Oven test conditions not relevant to short duration threats like IED, flash fire or electric arc
  - Even aramid knits do not perform well
  - Safety concerns for test operators due to fumes
    - Natick Textile Material Evaluation & Testing lab will not run the test
  - Few 3rd party labs have capability for the test
Potential Test for Melt/Drip/Stick

- Based on ASTM D6413
- Cover back of specimen holder with foil
Potential Test for Melt/Drip/Stick

- Perform test per ASTM D6413
- Remove specimen from test chamber
- Slide foil and specimen from holder
Potential Test for Melt/Drip/Stick

- Observe for evidence of melting

- Lift corner of specimen to check for sticking
Potential alternate version – $45^\circ$ vs Vertical

Need to evaluate with more fabrics

May also be of interest for NFPA 2113
- Specifies “non-melting” underwear
- Does not state how to determine what is “non-melting”

Given advancements in comfort & moisture management in blends, we need to have a realistic screening test to move beyond cotton, wool or aramid for underlayers

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Questions?

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Thanks to
Clare King
Propel LLC
(401) 751-2216
www.propel-llc.com

Photos courtesy of
POLARTEC®
Propel’s Relevant Experience

• Currently involvement in several projects related to fire resistant base layer for Fire Service and US Military.
  – “Effect of Base Layers on Physiological and Perceptual Responses to Exercise in Personal Protective Equipment”, Professor Denise Smith (PI), Department of Health and Exercise Sciences, Skidmore College, Saratoga Springs NY. Funded by DHA FEMA FP&S Grant.

• Sub-contractor support related to performance requirements and testing of textiles
• Developed FR yarns and textiles integrated into fielded US Army items
Soldier and Firefighter -
Same Need/Different Operational Modes

• Both Soldiers and Firefighters have an operational need for comfortable, durable, protective fire resistant clothing

• Soldiers wear base layers (knits) and Duty Uniform (woven)
  – extended time frame (days or even weeks) without change of clothes

• Firefighters wear T shirt (knit) and Station Uniform (woven)
  – generally have easy access to change clothing
  – may change next to skin T shirt 2 to 3 times a shift
Non FR vs. Inherently Fire Resistant Base Layer

- Firefighter now typically wear a Cotton T Shirt that is comfortable and very inexpensive - $6 to $10 per shirt
  - Poor moisture management
- Synthetics have better moisture management, are more expensive and a poor choice for protection from burn injury
- Inherently fire resistant base layers are significantly more expensive @ $35-40 per shirt
  - Good moisture management
  - Good protection
- Cost vs. performance for Non FR vs. inherently FR
- Testing always adds to cost
Thermal Shrinkage Testing

- Next-to-Skin FR base layer fabrics are light weight knit constructions with good air permeability for comfort and fit.
- Current NFPA 1975 standard (7.1) of no more than 10% shrinkage is consistent with the US Army requirements for woven textiles but is not consistent with that for Next-to-Skin knits.
- US Army’s only Next-to-Skin fabric Thermal Shrinkage requirement is 15% x 18% and NOT 10% x 10% as in NFPA 1975. (Fire Resistant Environmental Ensemble (FREE)).
- Heavier knits with tight constructions may be able to pass 10% shrinkage – but comfort and fit are compromised if used Next-to-Skin
- Not extending Thermal Shrinkage to Next-to-Skin base layers is consistent with US Military approach
TPP testing for Base Layers and Station Uniforms

- Thermal Protective Performance (TPP) testing is already used and well understood by the fire service (NFPA 1971)
- TPP has been adopted by US Military for base layers and the duty uniform
  - TPP of 7 for FR ACU
  - TPP range 6 to 10 for base layers
Comfort Testing – Air Perm vs. MVTR

• Air Permeability (ASTM D737) is a rapid, inexpensive and useful measure of comfort
  – Fabrics with higher air perm will provide more comfort and breathability
  – Moisture and heat escape with better air perm
  – US Army and USMC consistently use Air Perm for next to skin layers (200 to 300 cfm)

• Moisture Vapor Transmission Rate testing (e.g. ASTM E96) of base layers is
  – Much more costly than Air Perm testing
  – Generally used as test method for barrier properties e.g. breathable rain gear
  – Difficult to know where to set the standard
Commercial Challenges for Treating Textiles with Insect Repellant

• Insect Repellant processing can be done on textile roll goods BUT
  – Few US based processors with EPA certification to treat roll goods
  – Resistance by contractors to handling Permethrin treated roll goods due to health and safety concerns for workers

• US Military uses finished whole garments treatment process, BUT
  – there are a very limited number of processors
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Thanks to Celia Suratt Powell, US Army NSRDEC
News Releases By Date

“The North Face” Parent Company, “Saniguard” Marketers, and Califone Fined More Than $500,000 Over Antimicrobial Claims

Release Date: 05/06/2010
Contact Information: Nahal Mogharabi, 415-947-4307, mogharabi.nahal@epa.gov

(SAN FRANCISCO--5/6/10) The U.S. Environmental Protection Agency today announced that three California companies and one New Jersey firm will pay more than $500,000 to resolve cases involving unsubstantiated antimicrobial claims for commonly used products such as shoes, headphones and bathroom fixtures.

“EPA will take decisive action against companies making unverified public health claims,” said Jared Blumenfeld, Regional Administrator of EPA’s Pacific Southwest region. “Unless these products are registered with EPA, consumers have little or no information about whether their claims are accurate.”

San Leandro, Calif.-based VF Outdoor, Inc., will pay $207,500 for allegedly making unsubstantiated public health claims such as providing “antimicrobial protection” and inhibiting the growth of “disease-causing bacteria” for more than 60 shoe products it sold – a violation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The products were sold under The North Face label by VF Outdoor. Products discovered online and evidence found at a North Face retail store in San Francisco led EPA to issue a complaint against VF Outdoor in 2009.

EPA also recently fined Califone International, Inc., of San Fernando, Calif., $220,000 over unproven health claims for headphones. Califone, a designer and distributor of audiovisual equipment used in schools and other institutions, allegedly sold headphones claiming “to prevent the spread of bacteria, mold and mildew for student protection.”

Additionally, EPA fined Component Hardware Group, Inc., of Lakewood, N.J., and John S. Dull Associates, Inc. (d/b/a Food Service Parts in Garden Grove, Calif.), $98,300 following an inspection conducted by the California Department of Pesticide Regulation. The inspection revealed evidence that the companies were selling and distributing Saniguard products with unverified claims that they control growth of bacteria and contain antimicrobial technology that controls growth of E. coli, salmonella, staph, and pseudomonas on treated surfaces. The Saniguard products allegedly marketed to hospitals and other industries include faucets, spigots, handles, light switch and socket covers, door push and pull plates, and food service hardware.

EPA’s authority to assess penalties in these settlements stems from FIFRA, which requires that companies register pesticide products with EPA before making claims about their ability to control germs or pathogens. While the North Face, Califone, and Saniguard products all incorporated EPA-registered silver-based antimicrobial compounds to protect them against deterioration, they were never tested or registered to protect consumers against bacteria, fungus, mold, and/or mildew.

http://yosemite.epa.gov/opa/admpress.nsf/0/AC0C1AF1625888608525771B00561E83 3/9/2012
“We're seeing more and more consumer products making a wide variety of antimicrobial claims,” said Katherine Taylor, associate director of the Communities and Ecosystems Division in EPA's Pacific Southwest region. “Whether they involve shoes, headphones, or household fixtures, EPA takes these unsubstantiated public health claims very seriously.”

Under FIFRA, products that claim to kill or repel bacteria or germs are considered pesticides, and must be registered with the EPA prior to distribution or sale. The Agency will not register a pesticide until it has been tested to show that it will not pose an unreasonable risk when used according to the label directions. Consumers should be careful to look for the EPA registration number printed on product labels, and need to follow the label directions for use.

Fact sheet on consumer products treated with pesticides: http://www.epa.gov/pesticides/factsheets/treatart.htm


For more information on pesticides, please visit: http://www.epa.gov/pesticides

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Consumer Products Treated with Pesticides

Current as of August 2003
EPA 735-F-03-006

On This Page:

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Background

The presence of microorganisms (bacteria, fungi, and viruses) in or on various items has become of increased concern to consumers. In response to these concerns, many products (e.g., cutting boards, kitchen sponges, cat litter, toothbrushes, and juvenile toys) are being treated with antimicrobial pesticides. Antimicrobial pesticides are substances or mixtures of substances used to destroy or limit the growth of microorganisms, whether bacteria, viruses, or fungi -- many of which are harmful on inanimate objects and surfaces.

Treated articles typically refers to articles or products that are treated with an antimicrobial pesticide to protect the articles or products themselves. The pesticides are usually added to the products (e.g., plastic shower curtain) during manufacture; however, they may be added after manufacture but before use of the article (e.g., incorporation of a pesticide in paint).

These treated products often make implied or explicit public health pesticidal claims to protect the public against harmful microorganisms.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires the registration of any substance intended to prevent, destroy, repel, or mitigate pests. However, the Code of Federal Regulations prescribes the conditions under which an exemption from registration is allowed for treated articles or substances. It allows an exemption for:

- An article or a substance treated with or containing a pesticide to protect the article or substance itself (for example, paint treated with a pesticide to protect the paint coating, or wood products treated to protect the wood against insects or fungus infestation), if the pesticide is registered for such use.

Tips to Control Microorganisms

These are some common sense steps that consumers can take to reduce the spread of microorganisms. For example:

- Wash hands frequently and thoroughly, especially if you think you have been in contact with harmful microorganisms
- Wash surfaces that contact food (e.g., utensils, cutting boards, counter tops) with a detergent and warm water
- Wash children's hands and toys regularly
EPA grants the treated articles exemption for a non-public-health use of a pesticide that is intended to protect only the treated article or substance itself. Consumers may distinguish such products by the absence of the EPA's pesticide registration number (found on the product label) of the registered pesticide used for protecting the article itself. It should be noted here that the EPA registration number would also be absent from an illegal product that should be registered. Products that qualify for this exemption must display appropriate clarifying statements. For example:

- Claims for treated articles or substances are limited to the following statement, "This product contains a preservative (e.g., fungicide or insecticide) built-in or applied as a coating only to protect the product. An example of an acceptable label statement would be:
  - Antimicrobial properties are built-in to inhibit the growth of bacteria that may affect this product. The antimicrobial properties do not protect users or others against bacteria, viruses, germs, or other disease organisms. Always clean and wash this product thoroughly before and after each use.
- Treated kitchen accessories or other food contact articles such as a cutting board, high chair, or conveyor belt that may come in contact with food should carry an appropriately qualifying statement, such as:
  - This product does not protect users or others against food-born bacteria. Always clean and wash this product thoroughly before and after each use.
- Treated products such as bed pans and potty seats that involve potential human contact with bodily fluids or excrement (e.g., blood, vomit, saliva, urine, or feces) should carry an appropriate qualifying statement, such as:
  - This product does not protect users against bacteria, viruses or other disease organisms. Always clean and wash this product thoroughly before and after each use.
- In addition, it should be noted that:
  - The treated articles exemption is available only for the protection of the product and not for public health uses.
  - The preservative claim and qualifying statement on the product packaging (type, size color) must be given no greater prominence than other described product features.

Articles or products that claim to be effective in controlling microorganisms such as E.coli, S.aureus, Salmonella sp. or Streptococcus sp. must be registered as a pesticide. These articles or products make a public health claim that goes beyond the preservation of the treated article itself. EPA requires the submission of chemical data in support of the public health labeling claims and patterns of use of the product. If EPA determines that such a product is exempt from registration as a pesticide, the product may claim only that it contains a pesticidal preservative to protect the product itself. These pesticides are known as materials preservatives. In these cases, the pesticide is registered for the intended use, and the sole purpose of treatment is to protect the product itself. These pesticides are widely used in the manufacture of textiles, plastics, paper, adhesives, and coatings.

Any pesticide-treated product that is not registered by EPA must not make public health claims, such as "fights germs, provides antibacterial protection, or controls fungus." EPA's policy is predicated on the fact that no scientific evidence exists that these products prevent the spread of germs and harmful microorganisms in humans.

**Enforcement**

FIFRA does not allow companies to make public health pesticidal claims for any product distributed or sold unless the product has been approved and registered by EPA or is covered by an exemption from registration. EPA is concerned about these claims because, in addition to being unlawful, they are also potentially harmful to the public (e.g., if people believe that a product has a self-sanitizing
quality, they may become lax in their hygiene practices). Practicing standard hygiene practices has been proven to prevent the transmission of harmful microorganisms and, therefore, reduce the possibility of public health risk.

In response to the marketing of unregistered pesticide-treated products with illegal, unsubstantiated public health claims, EPA has acted quickly and decisively to prohibit sales of such products. It will continue to be the Agency's policy to take action against companies that make such illegal claims.

For More Information

To view or obtain an electronic copy of the guidance document (PR 2000-1), we invite you to visit EPA's Web site at http://www.epa.gov/opppmsd1/PR_Notices, or call the Antimicrobials National Hotline at (703) 308-0127.
March 6, 2000

PESTICIDE REGISTRATION (PR) NOTICE 2000 - 1*

NOTICE TO MANUFACTURERS, FORMULATORS, PRODUCERS
AND REGISTRANTS OF PESTICIDE PRODUCTS

ATTENTION: Persons Responsible for Registration of Pesticide Products

SUBJECT: Applicability of the Treated Articles Exemption to Antimicrobial Pesticides

This notice clarifies current EPA policy with respect to the scope of the "treated articles exemption" in 40 CFR 152.25(a). This exemption covers qualifying treated articles and substances bearing claims to protect the article or substance itself. EPA does not regard this exemption as including articles or substances bearing implied or explicit public health claims against human pathogens. This notice addresses the types of claims which are not permitted for antimicrobial pesticide products exempt from registration under this provision and gathers together in one place guidance the Agency has offered in recent years on labeling statements which it believes would or would not be covered under this provision. This notice also explains the requirement that the pesticide in a treated article be "registered for such use."

This notice provides guidance to producers and distributors of pesticide treated articles and substances, and to producers and distributors of pesticides used as preservatives to protect treated articles from microbial deterioration.

I. BACKGROUND

EPA regulations in 40 CFR 152.25(a) exempt certain treated articles and substances from regulation under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) if specific conditions are met. The specific regulatory language is:

Section 152.25 Exemptions for pesticides of a character not requiring FIFRA regulation

"(a) Treated articles or substances. An article or substance treated with, or containing, a pesticide to protect the treated article or substance itself (for example, paint treated with a pesticide to protect

* This version makes corrections to the February 3, 2000 PR Notice 2000-1. Corrections in bold/italics or editorial deletions were made on pages 3, 4, 7, and 9.
the paint coating, or wood products treated to protect the wood against insect or fungus infestation),
if the pesticide is registered for such use."

Known as the "Treated Articles Exemption," section 152.25(a) provides an exemption from all requirements of FIFRA for qualifying articles or substances treated with, or containing a pesticide, if:

(1) the incorporated pesticide is registered for use in or on the article or substance, and;
(2) the sole purpose of the treatment is to protect the article or substance itself.

The exemption gives two examples of treatments that are intended to protect only the treated article or substance itself. In the first case, paint is being protected from deterioration of the paint film or coating. In the second case, wood is being protected from fungus or insect infestations which may originate on the surface of the wood. Pesticides used in this manner are generally classified as preservatives. Other pesticides are incorporated into treated articles because of their ability to inhibit the growth of microorganisms which may cause odors or to inhibit the growth of mold and mildew. Because of this treatment, it is claimed that a fresher and more pleasing surface can be maintained.

To qualify for the treated articles exemption, both conditions stated above must be met. If both are not met, the article or substance does not qualify for the exemption and is subject to regulation under FIFRA.

In recent years, the marketplace has experienced a proliferation of products that are treated with pesticides and bear implied or explicit public health claims for protection against bacteria, fungi and viruses, as well as specific claims against pathogenic organisms which may cause food poisoning, infectious diseases or respiratory disorders. Examples of such articles include toothbrushes, denture cleansers, children’s toys, kitchen accessories such as cutting boards, sponges, mops, shower curtains, cat litter, vacuum cleaner bags, pillows, mattresses and various types of finished consumer textiles. In many cases, these products have made public health claims that extend beyond the protection of the article itself, and thus, they do not qualify for the treated articles exemption.

II. TYPES OF ANTIMICROBIAL CLAIMS

A. Public Health Claims

Because consumers have long associated the following widely used claims and references to microorganisms harmful to humans with products providing public health protection, EPA considers an article or substance to make a public health claim if any of the following claims are made either explicitly or implicitly:

1. A claim for control of specific microorganisms or classes of microorganisms that are directly or indirectly infectious or pathogenic to man (or both man and animals). Examples of specific microorganisms include *Mycobacterium tuberculosis*, *Pseudomonas aeruginosa*, *E. coli*, *HIV*,
Streptococcus and Staphylococcus aureus.

2. A claim for the product as a sterilant, disinfectant, virucide or sanitizer, regardless of the site of use of the product, and regardless of whether specific microorganisms are identified.

3. A claim of “antibacterial,” “bactericidal,” or “germicidal” activity or references in any context to activity against germs or human pathogenic organisms implying public health related protection is made.

4. A claim for the product as a fungicide against fungi infections or fungi pathogenic to man, or the product does not clearly indicate it is intended for use against non-public health fungi.

5. A claim to control the spread of allergens through the inhibition or removal of microorganisms such as mold or mildew.

6. A non-specific claim that the product will beneficially impact or affect public health by pesticidal means at the site of use or in the environment in which applied.

7. An unqualified claim of “antimicrobial” activity. Refer to Unit IV.C.

B. Non-Public Health Claims

EPA considers a product to make a non-public health claim if any of the following applies:

1. A claim to inhibit the growth of mildew on the surface of a dried paint film or paint coating.

2. A claim to inhibit microorganisms which may cause spoilage or fouling of the treated article or substance.

3. A claim to inhibit offensive odors in the treated article or substance.

4. EPA considers terms such as “antimicrobial,” “fungistatic,” “mildew-resistant,” and “preservative,” as being acceptable for exempted treated articles or substances provided that they are properly, and very clearly, qualified as to their intended non-public health use. Refer to Unit IV.C. Use of these terms in product names or elsewhere in the labeling in bolder text than accompanying information may render such qualifications inadequate.

III. PAST EPA LABELING CLAIMS INTERPRETATIONS

A. Odor and Mildew-Resistant Properties May Be Claimed

Over the past twenty-five years the Agency has issued several interpretations concerning the
exemption from FIFRA regulations of certain types of antimicrobial treated article claims associated with mildew-resistant paint, films and coatings. In the same period, EPA has also issued other interpretations concerning certain types of odor-resistant antimicrobial treated article claims.

During this period there has been widespread dissemination and adoption by the antimicrobial pesticide product community of these EPA interpretations regarding mildew-resistant and odor-resistant claims under the “treated articles exemption.” Furthermore, the Agency continues to treat these general types of claims as covered by the term “to protect the treated article or substance itself” because mitigation of these non-public health related organisms can contribute to the protection of the appearance and maintenance of the intended useful life of the treated article or substance. Because during this period, there has also been widespread misinterpretation of EPA’s guidance, the Agency has developed a representative set of statements designed to clarify its position in this area. Consequently, if they otherwise qualify for the exemption, properly labeled treated articles and substances bearing claims such as those described under Unit IV.B. continue to be eligible for the treated articles exemption.

B. Product Names May Not Contain Public Health Claims

The Agency regards trademarked product names of treated articles or substances [or references to trademarked names of registered pesticides] as potential sources of public health claims that could render a product ineligible for the “treated articles exemption” just as could other direct or indirect public health claims on or in a product’s packaging or in its labeling or advertising literature. The Agency has maintained this position in enforcement actions against pesticide-treated articles, such as pesticide-treated cutting boards and other items, which bore names suggesting health or other benefits beyond mere preservation of the treated article itself. In determining the eligibility of a treated article or substance for the exemption, the Agency will examine the product name, its context, labeling claims and other related elements on a case-by-case basis.

IV. TREATED ARTICLE LABELING CLAIMS

Products treated with antimicrobial pesticides with claims such as those described in Section A below are likely to not be acceptable under the “treated articles exemption” because they imply or express protection that extends beyond the treated article or substance itself. Products treated with antimicrobial pesticides registered for such use and which only bear claims for protection of the article or substance itself such as those described in Section B below are likely to be acceptable and eligible for the “treated articles exemption”, assuming all other conditions have been met. Section C below contains examples of appropriate qualifying and prominence statements which have been extracted from multiple enforcement proceedings dealing with claims that can be made for treated articles without obtaining registration.

A. Examples of Labeling Claims That the Agency is Likely to Consider Unacceptable Under the Exemption
The following examples are not intended to be an all-inclusive listing of unacceptable treated article labeling claims. If persons are not sure whether their antimicrobial pesticides are covered by the provisions of this section, the Agency encourages them to request a written opinion from the Antimicrobials Division at one of the addresses listed under Unit VII.

These examples represent claims or types of claims for a treated article that would lead to a requirement to register the article as a pesticide product.

- Antibacterial
- Bactericidal
- Germicidal
- Kills pathogenic bacteria.
- Effective against E. coli and Staphylococcus.
- Reduces the risk of food-borne illness from bacteria.
- Provides a germ-resistant surface.
- Provides a bacteria-resistant surface.
- Surface kills common gram positive and negative bacteria.
- Surface controls both gram positive and negative bacteria.
- Surface minimizes the growth of both gram positive and negative bacteria.
- Reduces risk of cross-contamination from bacteria.
- Controls allergy causing microorganisms.
- Improves indoor air quality through the reduction of microorganisms.

B. Examples of Labeling Claims the Agency is Likely to Consider Acceptable Under the Exemption

The following examples are not intended to be an all-inclusive listing of acceptable treated article labeling claims. If persons are not sure whether their antimicrobial pesticides are covered by the provisions of this section, the Agency encourages them to request a written opinion from the
Antimicrobials Division at one of the addresses listed under Unit VII.

1. Mold and Mildew Resistant Claims

- This article has been treated with a fungistatic agent to protect the product from fungal growth.

- Mildew Resistant - treated with a fungistatic agent to protect the paint itself from the growth of mildew.

- Mildew Resistant - This paint contains a preservative which inhibits the growth of mildew on the surface of this paint film.

- Mildew Resistant - Extends useful life of article by controlling deterioration caused by mildew.

- Algae Resistant - This article contains a preservative to prevent discoloration by algae.

- A fungistatic agent has been incorporated into the article to make it resistant to stain caused by mildew.

- Article treated to resist deterioration by mold fungus.

- Article treated to resist deterioration from mildew.

- The fungistatic agent in this article makes it especially useful for resisting deterioration caused by mildew.

- Dry coating of this paint mildew resistant.

- Dried paint film resists mold fungus.

- Dry enamel coating resists discoloration from mildew.

- Cured sealant is mildew resistant.

- Dried film resists stains by mold.

- A mold or mildew resisting component has been incorporated in this article to make its dry film mildew resistant.

- Specially formulated to resist mildew growth on the paint film.

- Gives mildew-resistant coating.
o The mildew resistance of this outside house paint film makes it especially useful in high humidity areas.

o Retards paint film spoilage.

o Resists film attack by mildew.

2. Odor Resistant Claims

o This product contains an antimicrobial agent to control odors.

o This product contains an antimicrobial agent to prevent microorganisms from degrading the product.

o Resists Odors - This product has been treated to resist bacterial odors.

o Inhibits the growth of bacterial odors.

o Resists microbial odor development.

o Retards the growth and action of bacterial odors.

o Guards against the growth of odors from microbial causes.

o Guards against degradation from microorganisms.

o Reduces odors from microorganisms.

o Odor-resistant.

o Acts to mitigate the development of odors.

C. Antimicrobial Qualifying and Prominence Considerations

EPA does not believe that claims such as “antimicrobial,” “fungistatic,” “mildew-resistant,” and “preservative” or related terms are consistent with the intent of 40 CFR 152.25(a) if they are: (1) part of the name of the product; or (2) not properly qualified as to their intended non-public health use. Examples of permissible statements would include, but not be limited to: “Antimicrobial properties built in to protect the product” and “Provides mildew-resistant dried paint coating.” All references to the pesticidal properties and the required qualifying statements should be located together, should be printed in type of the same size, style, and color, and should be given equal prominence. Moreover, such references should not be given any greater prominence than any other described product feature.
In addition, treated articles or substances intended for microbial odor control or article preservation in areas where food-borne or disease-causing organisms may be present have the potential to create the impression that the article provides protection against food-borne and disease-causing bacteria. This potential should be addressed through very careful narrowing and qualification of the non-public health claims. A complete assurance that there is no misleading impression could be achieved through use of language like: “This product does not protect users or others against food-borne (or disease-causing) bacteria. Always clean this product thoroughly after each use.” or “This product does not protect users or others against bacteria, viruses, germs or other disease organisms. Always clean this product thoroughly after each use.”

V. ADDITIONAL INFORMATION

A. Registration of Treated Articles Making Public Health Claims

Treated articles or substances with implied or explicit public health claims or which otherwise fail to qualify for exemption are pesticide products subject to all requirements of FIFRA. They may not be legally sold or distributed unless they are registered with EPA or unless such claims have been removed and the article otherwise qualifies for exemption. To obtain a registration, an applicant must submit acceptable data supporting all the proposed claims under which the product will be marketed and meet all other applicable registration requirements. Refer to 40 CFR Parts 152, 156, and 158.

The Agency currently has no established protocols for the development of data to support public health claims on treated articles for which registration is sought. Acceptable protocols for product testing reflecting actual use conditions need to be submitted and approved by EPA prior to the development of these data. As part of this review process, the Agency will require that these protocols be independently validated for accuracy and reproducibility. Antimicrobial treated articles requiring registration must meet the same efficacy performance standards that are required for corresponding antimicrobial public health products. For any questions regarding the need for registration or the registration requirements for specific treated articles or substances, contact the Antimicrobials Division at the address listed under Unit VII.

B. The Term “Registered for Such Use”

In order to qualify for the treated articles exemption, 40 CFR 152.25(a) specifies that an article or substance must be treated with, or contain, a pesticide to protect the treated article or substance itself. The terms “treated with, or containing, a pesticide” and “if the pesticide is registered for such use” in 40 CFR 152.25(a) refer to actual incorporation or adding of an antimicrobial pesticide specifically registered for that use. To qualify under the “treated articles exemption” (assuming the article or substance otherwise qualifies), it is not sufficient that the antimicrobial pesticidal substance in the treated article merely resemble or have activity like a registered pesticide. The antimicrobial pesticide in the treated article or substance must be present in the article or substance solely as the result of
incorporating an antimicrobial pesticide which is registered for treating the specific article or substance.

Because of the wide range of exposure scenarios associated with the use of treated articles such as cutting boards and conveyor belts used in the food processing industry, and the wide range of household consumer uses, the Agency has interpreted 40 CFR 152.25(a) to mean that the registration and the labeling of the antimicrobial pesticide intended for incorporation into the treated article or substance needs to include specific listings of the articles or substances that may be treated. Accordingly, in registration actions over the past several years, EPA has not permitted broad general use patterns, such as the preservation of hard surfaces, plastics, adhesives or coatings for the registered pesticide. Instead, it has required that specific listings such as toys, kitchen accessories and clothing articles be reflected in the product registration and labeling as a prerequisite for incorporation of the pesticide into an article or substance under 40 CFR 152.25(a).

VI. EFFECTIVE DATE AND PROCEDURES

In order to remain in compliance with FIFRA and avoid regulatory or enforcement consequences as described here and below, it is the Agency’s position that producers, distributors, and any other person selling or distributing pesticide treated articles and substances not in compliance with the Agency’s interpretation of 40 CFR 152.25(a), as clarified by this notice, need to bring their products, labeling and packaging, any collateral literature, advertisements or statements made or distributed in association with the marketing (sale or distribution) of the treated article or substance into full compliance with the regulation as clarified by this notice as soon as possible.

Because some of the elements of this interpretation may not have been well understood by the regulated community, the Agency expects that some companies may need up to a year in order to comply with those elements that have been clarified by this notice. Therefore, for the present, the Agency is following the approach set forth in the April 17, 1998 Federal Register (63 FR 19256). Although non-public health claims for microbial odor control and mold and mildew claims associated with deterioration, discoloration, and staining were not specifically mentioned in the April 17, 1998 Federal Register, such claims are also consistent with the enforcement approach set forth in that notice, as well as with this guidance, provided that they are properly, and very clearly, qualified as to their non-public health use. The Agency will begin to rely on the guidance provided in this Notice on February 11, 2001. Products in commerce after that date which make statements, etc. that do not reflect the clarification offered in this notice would risk being considered out of compliance with 40 CFR 152.25(a).

VII. ADDRESSES

By mail:
Antimicrobials Division (7510C)
U. S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D. C. 20460-0001
By courier:
Antimicrobials Division (7510C)
U. S. Environmental Protection Agency
Room 300, Crystal Mall 2
1921 Jefferson Davis Highway
Arlington, VA 22202-4501

VIII. FOR FURTHER INFORMATION CONTACT

If you have questions about the content of this notice, you should contact Debra Edwards at (703) 308-7891.

/signed/

Marcia E. Mulkey, Director
Office of Pesticide Programs
There are several sections that refer to either odor control or odor resistance. The task group recommends that the optional requirement be referred to as "odor control". All references to odor resistance should be changed to odor control.

Statement of Problem and Substantiation for Public Comment

Task group has identified several references of "odor control" and "odor resistance". Odor resistance should be changed to odor control for consistency.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 18:57:24 EST 2012

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Throughout the document, replace the terms "station/work uniform" and "station/work uniforms" with "work apparel".

Statement of Problem and Substantiation for Public Comment

This change in terminology aligns the entire document with the title change in FR21. See comment on FR21 to change title. This change increases readability and usability of the document.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 09:34:54 EST 2012

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Annex B will require revision based on any changes or modifications the technical committee makes to Chapter 7 or 8 of this document. Revisions will need to be made at the public comment meeting.

Statement of Problem and Substantiation for Public Comment

This comment is to serve as a reminder and placeholder that Annex B will require revision based on any modifications made at the public comment meeting.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:48:40 EST 2012

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1.1.5
This standard shall also specify optional requirements for flame resistance, moisture management, odor resistance, water resistance, insect repellancy, and visibility markings where such options are specified or claimed to be used in construction of station/work uniforms.

Statement of Problem and Substantiation for Public Comment

See public comment #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 18:58:55 EST 2012

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1.2.1.3
This standard shall also provide optional moisture management requirements and tests to verify the moisture management of textiles where the authority having jurisdiction specifies the use of moisture management textiles for the construction of station/work uniforms, or where the manufacturer represents station/work uniform textiles as having moisture management properties.

1.2.1.4
This standard shall also provide optional odor control requirements and tests to verify the odor control properties of textiles where the authority having jurisdiction specifies the use of odor control textiles for the construction of station/work uniforms, or where the manufacturer represents station/work uniform textiles as having odor control properties.

1.2.1.5
This standard shall also provide optional liquid resistance requirements and tests to verify the liquid resistance of textiles where the authority having jurisdiction specifies the use of liquid resistant textiles for the construction of station/work uniforms, or where the manufacturer represents station/work uniform textiles as having liquid resistant properties.

1.2.1.6
This standard shall also provide optional insect repellency requirements and tests to verify the insect repellency of textiles where the authority having jurisdiction specifies the use of insect repellent textiles for the construction of station/work uniforms, or where the manufacturer represents station/work uniform textiles as having insect repellent properties.

Statement of Problem and Substantiation for Public Comment

Adds the optional requirements to the Purpose section to maintain consistency within the document.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:06:26 EST 2012
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Public Comment No. 31-NFPA 1975-2012 [Section No. 2.3.1]

2.3.1 AATCC Publications.
American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

Statement of Problem and Substantiation for Public Comment

Updates referenced publications to current edition.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 14:05:29 EST 2012

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Public Comment No. 43-NFPA 1975-2012 [Section No. 2.3.1]

2.3.1 AATCC Publications.
American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

Statement of Problem and Substantiation for Public Comment
See PC#40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:00:12 EST 2012

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Public Comment No. 32-NFPA 1975-2012 [ Section No. 2.3.2 ]

2.3.2 ASTM Publications.
ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.
ASTM D 3940, Standard Test Method for Bursting Strength (Load) and Elongation of Sewn Seams of Knit or Woven Stretch Textile Fabrics, 1983 (Withdrawn 1995).

Statement of Problem and Substantiation for Public Comment

Updates referenced publications to current edition.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 14:09:56 EST 2012

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2.3.2 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.


ASTM D 3940, Standard Test Method for Bursting Strength (Load) and Elongation of Sewn Seams of Knit or Woven Stretch Textile Fabrics, 1983 (Withdrawn 1995).


Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:16:50 EST 2012

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2.3.4 ISO Publications.
International Organization for Standardization, 1, rue de Varembé, Case postale 56, CH-1211 Geneve 20, Switzerland.
ISO 27, Guidelines for corrective action to be taken by a certification body in the event of misuse of its mark of conformity, 1983.
ISO/IEC 65, General requirements for bodies operating product certification systems, 1996.
ISO 9001, Quality management systems — requirements, 2000.
ISO/IEC 17021, Conformity assessment — Requirements for bodies providing audit and certification of management systems, 2006.
ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories, 2005.

Statement of Problem and Substantiation for Public Comment

Updates referenced publications to current edition.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 14:12:31 EST 2012

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3.3.18 Moisture Management Fabric.
A fabric that has the properties of wickability, air permeability or breathability, and moisture vapor transfer properties as certified by the performance requirements of this standard.

Statement of Problem and Substantiation for Public Comment
See PC #40

Submitter Information Verification
Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:01:05 EST 2012

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3.3.18 Moisture Management Fabric.
A fabric that has the properties of wickability, air permeability, or breathability, and moisture vapor transfer properties as certified by the performance requirements of this standard.

Statement of Problem and Substantiation for Public Comment

Per the comment made by Dan Gohlke in the first revision ballot process - in common terms breathability is associated with moisture vapor transport as often as it is associated with air permeability. When the skin breathes it is evaporating water.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 07:22:26 EST 2012

Copyright Assignment

I, Karen Lehtonen, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

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3.3.20  Odor Control Resistance

A finish or an inherent property that guards against, minimizes, the growth of odors from microbial causes.

Statement of Problem and Substantiation for Public Comment

The odor control and odor resistance are both used in the optional requirements provided in this standard. Slightly different criteria are provided for both requirements and this difference should be resolved by the technical committee. It appears that the criteria are redundant and that one definition should be used. The use of the term odor resistance is recommended.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 22:11:36 EST 2012

Copyright Assignment

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### 3.3.29 Water Resistance.
A finish or an inherent property that repels, and prevents the absorption of water and other fluids.

### Statement of Problem and Substantiation for Public Comment

The provided definition is not consistent with the proposed performance criteria associated with this optional requirement. Water resistance should include both repellency and water absorption resistance.

### Submitter Information Verification

**Submitter Full Name:** Jeffrey Stull  
**Organization:** International Personnel Protection, inc.  
**Submittal Date:** Wed Nov 14 21:40:43 EST 2012

### Copyright Assignment

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3.3.29 Water Resistance.
A finish or an inherent property that repels water and other fluids limits the absorption of water.

Statement of Problem and Substantiation for Public Comment

The water resistance properties are based on a water absorption test so it is better described as a limitation of water absorption than water repellence.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 07:26:56 EST 2012

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Public Comment No. 82-NFPA 1975-2012 [ New Section after 4.1.3 ]

4.1.3.1 Where station/work uniform garments are manufactured with moisture management textiles, the entire garment shall be certified as compliant with the requirements of Section 7.9, Optional Requirements for Moisture Management Station/Work Uniforms, in addition to all other requirements of this standard.

4.1.3.2 Where station/work uniform garments are manufactured with odor control textiles, the entire garment shall be certified as compliant with the requirements of Section 7.10, Optional Requirements for Odor Control Station/Work Uniforms, in addition to all other requirements of this standard.

4.1.3.3 Where station/work uniform garments are manufactured with liquid resistant textiles, the entire garment shall be certified as compliant with the requirements of Section 7.11, Optional Requirements for Liquid Resistant Station/Work Uniforms, in addition to all other requirements of this standard.

4.1.3.4 Where station/work uniform garments are manufactured with insect repellent, the entire garment shall be certified as compliant with the requirements of Section 7.12, Optional Requirements for Insect Repellency Station/Work Uniforms, in addition to all other requirements of this standard.

4.1.3.5 Where station/work uniform garments are manufactured with visibility markings, the entire garment shall be certified as compliant with the requirements of Section 7.6, Optional Requirements for Visibility Markings, in addition to all other requirements of this standard.

Statement of Problem and Substantiation for Public Comment

Additional language is being recommended to specify that in addition to the optional requirements all other requirements of the standard need to be met for the options that were added in the first revision. Currently this is only specified for the flame resistant option and should be specified for all options. NOTE: if comment 99 to reformat Chapter 7 then the references in this comment need to be changed as follows 7.5=7.2, 7.9=7.6, 7.8=7.7, 7.11=7.8, 7.12=7.9

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 07:56:39 EST 2012
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4.1.3
Where station/work uniform garments are manufactured with flame resistant textiles, the entire garment shall be certified as compliant with the requirements of Section 7.5.2, Optional Requirements for Flame Resistant Station/Work Uniforms, in addition to all other requirements of this standard.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:11:07 EST 2012

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4.1.7.2
Where station/work uniform garments are certified as compliant with the optional requirements specified in Section 7.5, Optional Requirements for Flame Resistant Station/Work Uniforms, 2 through 7.9, in addition to all other requirements of this standard, the product label shall bear the text specified in 5.1.6.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen  
Organization: Lion Apparel, Inc.  
Submittal Date: Fri Nov 16 11:15:14 EST 2012

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Public Comment No. 83-NFPA 1975-2012 [ Section No. 4.1.7.2 ]

4.1.7.2
Where station/work uniform garments are certified as compliant with any of the optional requirements specified in Section Sections 7.5, Optional Requirements for Flame Resistant Station/Work Uniforms through 7.12, in addition to all other requirements of this standard, the product label shall bear the appropriate text specified in 5.1.6.

Statement of Problem and Substantiation for Public Comment

The current draft only specifies additional labeling requirement evaluations for the flame resistant option. The proposed text adds language for labeling evaluations for all options added in the first draft revision.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:08:19 EST 2012

Copyright Assignment

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4.1.9
The certification organization shall not issue any new certifications to the 2004 the 2009 edition of NFPA 1975, Standard on Station/Work Uniforms for Fire and Emergency Services, on or after the NFPA effective date for NFPA 1975, Standard on Station/Work Uniforms for Emergency Services, 2009-2014 edition, which is 29 December 2008 November 12, 2013.

Statement of Problem and Substantiation for Public Comment

Updates administrative dates to reflect current cycle.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 09:47:01 EST 2012

Copyright Assignment

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4.1.10
The certification organization shall not permit any manufacturer to continue to label any products that are certified as compliant with the 2004, the 2009 edition of NFPA 1975, Standard on Station/Work Uniforms for Fire and Emergency Services, on or after 30 June 2009 12 November 2013 plus 12 months.

Statement of Problem and Substantiation for Public Comment


Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 09:57:06 EST 2012

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4.1.11 The certification organization shall require manufacturers to remove all certification labels and product labels indicating compliance with the 2004, the 2009 edition of NFPA 1975, *Standard on Station/Work Uniforms for Fire and Emergency Services*, from all products that are under the control of the manufacturer on 30 June 2009 12 November 2013 plus 12 months, and the certification organization shall verify that this action is taken.

**Statement of Problem and Substantiation for Public Comment**

Updates administrative dates to reflect current cycle.

**Submitter Information Verification**

Submitter Full Name: Steven Corrado  
Organization: UL LLC  
Submittal Date: Wed Nov 14 10:01:58 EST 2012

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Each station/work uniform garment shall have the minimum following compliance statement a product label or labels permanently and conspicuously attached to it. (See A.4.1.8.) “THIS GARMENT MEETS NFPA 1975 (2013 ED).” The required label shall be permitted to be printed directly on the compliant product.

Statement of Problem and Substantiation for Public Comment

Current 5.1.1 text contains standard wording for the label requirement and should not be deleted. Text proposed in FR15 should be moved to 5.1.5 to replace the current compliance statement. Allows for the option to print the required label information directly onto the product.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 10:17:25 EST 2012

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5.1.5
Where the station/work uniform garment is certified as compliant with only the mandatory requirements of this standard, and is not certified with the optional flame resistance requirements, the following statement shall be printed legibly on the product label. All letters shall be at least 2.5 mm (3/32 in.) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975 STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 -2014 EDITION.

THIS GARMENT IS NOT FLAME RESISTANT!
DO NOT REMOVE THIS LABEL!"

Statement of Problem and Substantiation for Public Comment

This comment relocates the reduced label text from First Revision No. 23 into 5.1.5. The statement "This garment is not flame resistant" was removed because garments meeting only the mandatory requirement do not meet ANY of the optional requirements (e.g. moisture management, odor control, etc.).

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 10:21:18 EST 2012

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5.1.6
Station/Work Uniforms, the following statement shall be printed:

Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard, and also certified as compliant with one or more of the optional requirements of this standard, the following statement shall be printed legibly on the product label. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION.

DO NOT REMOVE THIS LABEL!"

5.1.6.1
Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard and also certified as compliant with the optional moisture management requirements specified in Section 7.9, Optional Requirements for Moisture Management, 5.1.5 shall be printed legibly on the product label.

All letters must be at least 2.5 mm (\(\frac{3}{32}\) in) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION, AND THE OPTIONAL MOISTURE MANAGEMENT TEXTILE REQUIREMENTS OF NFPA 1975. DO NOT REMOVE THIS LABEL!"

5.1.6.2
Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard and also certified as compliant with the optional odor control requirements specified in Section 7.8, Optional Requirements for Odor Control Station/Work Uniforms, the following statement shall be printed on the product label. All letters must be at least 2.5 mm (\(\frac{3}{32}\) in) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION, AND THE OPTIONAL ODOR CONTROL TEXTILE REQUIREMENTS OF NFPA 1975. DO NOT REMOVE THIS LABEL!"

5.1.6.3
Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard and also certified as compliant with the water penetration resistance requirements specified in Section 7.11, Optional Requirements for Liquid Resistant Station/Work Uniforms, the following statement shall be printed on the product label. All letters must be at least 2.5 mm (\(\frac{3}{32}\) in) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION, AND THE OPTIONAL LIQUID RESISTANCE TEXTILE REQUIREMENTS OF NFPA 1975. DO NOT REMOVE THIS LABEL!"
“THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION, AND THE OPTIONAL WATER RESISTANT TEXTILE REQUIREMENTS OF NFPA 1975. DO NOT REMOVE THIS LABEL!”

6.1.6.4 —
Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard and also certified as compliant with the optional insect repellent requirements specified in Section 7.12 .Optional Requirements for Insect Repellency Station/Work Uniforms, the following statement shall be printed on the product label. All letters must:

The label shall also indicate the applicable optional requirement(s) by either the symbol or statement as identified in Table 5.1.6. Where the symbol is used to identify compliance with the optional requirement(s), the statement shall be included in the user information to explain that symbol. All letters shall be at least 2.5 mm (\(\frac{3}{32}\) in.) high.


**Table 5.1.6.**

Where the station/work uniform is certified as compliant with one or more of the following optional requirements of this standard, a symbol may be printed or applied in close proximity to the compliance statement in 5.1.6 to identify the garment as compliant with the respective optional requirement(s). All letters shall be at least 2 mm (\(\frac{1}{16}\) in.) high.

**Label Symbols and Statements for Optional Requirements of Station/Work Uniforms**

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<th>Symbol</th>
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http://submittals.nfpa.org/TerraViewWeb/ContentFetcher?commentParams=%28Comment...
7.9 Optional Requirements for Moisture-Management Station/Work Uniforms

7.10 Optional Requirements for Odor Control Station/Work Uniforms

7.11 Optional Requirements for Liquid-Resistant Station/Work Uniforms

7.12 Optional Requirements for Insect Repellency Station/Work Uniforms
Additional Proposed Changes

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Statement of Problem and Substantiation for Public Comment

The labeling requirements identified in the first draft do not reduce labeling text desired by the committee (see committee statement for Log #FR39). This comment allows the use of a symbol or a shortened compliance statement on the label or garment element. Where a symbol is used, it is required that the statement accompany the garment element in the user information. Removed sub-paragraphs to 5.1.6 since these are redundant to the table.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 10:40:18 EST 2012

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5.1.6.1
Where the station/work uniform garment is certified as compliant with the mandatory requirements of this standard and also certified as compliant with the optional moisture management requirements specified in Section 7.9, Optional Requirements for Moisture Management Station/Work Uniforms, the following statement shall be printed on the product label. All letters must be at least 2.5 mm (\(\frac{3}{32}\) in) high.

"THIS GARMENT MEETS THE REQUIREMENTS OF NFPA 1975, STANDARD ON STATION/WORK UNIFORMS FOR EMERGENCY SERVICES, 2013 EDITION, AND THE OPTIONAL MOISTURE MANAGEMENT TEXTILE REQUIREMENTS OF NFPA 1975. DO NOT REMOVE THIS LABEL!"

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:02:09 EST 2012

Copyright Assignment

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5.1.6.5
Where the station/work uniform is certified as compliant with one or more of the following optional requirements of this standard, a symbol may be printed or applied in close proximity to the compliance statement in 5.1.6 to identify the garment as compliant with the respective optional requirement(s). All letters shall be at least 2 mm (1/16 in.) high.

Table 5.1.6.5 Label Symbols for Station/Work Uniforms

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<th>Symbol to be Printed on Label</th>
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<td>7.9 Optional Requirements for Moisture Management Station/Work Uniforms</td>
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<tr>
<td>OC</td>
<td>7.10 Optional Requirements for Odor Control Station/Work Uniforms</td>
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<tr>
<td>WR</td>
<td>7.11 Optional Requirements for Liquid Resistant Station/Work Uniforms</td>
</tr>
<tr>
<td>IR</td>
<td>7.12 Optional Requirements for Insect Repellency Station/Work Uniforms</td>
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</table>

Statement of Problem and Substantiation for Public Comment

Remove MM marking. Need to update table.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:05:36 EST 2012

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5.2.1
The product label for the portions of the product label information not specified in 5.1.1 through 5.1.4 shall be permitted to be a hang tag affixed to each station/work uniform or shall be permitted to be printed on a sheet that is inserted and sealed in the packaging that immediately contains the station/work uniform.

Statement of Problem and Substantiation for Public Comment

This paragraph is a label requirement and not a user information requirement. This statement was deleted because the proposed revisions to 5.1.6 allow for the use of the symbol or the verbiage. The use of the symbol will allow for a sufficient reduction in size of the label to allow for its placement on the product.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 10:57:57 EST 2012

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6.1.4
Where station/work uniforms are constructed from flame resistant textiles, station/work uniforms shall meet all requirements specified in Section 7.5.2, Optional Requirements for Flame Resistant Station/Work Uniforms, to be certified as complying with the optional flame resistance requirements.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:18:32 EST 2012

Copyright Assignment

I, Karen Lehtonen, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

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6.1.4

Where station/work uniforms are constructed from flame resistant textiles, station/work uniforms shall meet all requirements specified in Section 6.1.4 intended meet the optional flame resistance properties, the garment shall meet the requirements of Section 7.5, Optional Requirements for Flame Resistant Station/Work Uniforms, to be certified as complying with the optional flame resistance requirements.

Statement of Problem and Substantiation for Public Comment

The proposed wording clarifies the requirement in that it applies only to those products intended to be sold and marketed as complying with the optional requirements. Additional changes make wording consistent with other requirements in this section.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:26:59 EST 2012

Copyright Assignment

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6.1.5—
Where station/work uniforms are constructed from flame resistant textiles, the garments shall be stitched with thread of an inherently flame-resistant fiber.

Statement of Problem and Substantiation for Public Comment

This design requirement is redundant to the Thread Heat Resistance test. If threads meet the performance requirement, the fiber composition should not be relevant. This requirement also prohibits the use of non-inherently flame resistant threads that would be acceptable for these products.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:10:00 EST 2012

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Public Comment No. 103-NFPA 1975-2012 [Section No. 6.1.6]

6.1.6
Where station/work uniforms are manufactured with the optional moisture management properties, the garment shall meet the requirements of Section 7.9.6 Optional Requirements for Moisture Management Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:19:54 EST 2012

Copyright Assignment

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Public Comment No. 16-NFPA 1975-2012 [Section No. 6.1.6]

6.1.6
Where station/work uniforms are manufactured with intended to meet the optional moisture management properties, the garment shall meet the shall comply with the requirements of Section 7.9 Optional Requirements for Moisture Management Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

The proposed wording clarifies the requirement in that it applies only to those products intended to be sold and marketed as complying with the optional requirements.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:13:30 EST 2012

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6.1.6—
Where station/work uniforms are manufactured with the optional moisture management properties, the garment shall meet the requirements of Section 7.9—Optional Requirements for Moisture Management Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:06:37 EST 2012

Copyright Assignment

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By checking this box I affirm that I am Jeremy Metz, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
Public Comment No. 78-NFPA 1975-2012 [Sections 6.1.6, 6.1.7, 6.1.8, 6.1.9]

6.1.6—Where station/work uniforms are manufactured with the optional moisture management properties, the garment shall meet the requirements of Section 7.9 Optional Requirements for Moisture Management Station/Work Uniforms.

6.1.7—Where station/work uniforms are manufactured with the optional odor control properties, the garment shall meet the requirements of Section 7.8 Optional Requirements for Odor Resistant Station/Work Uniforms.

6.1.8—Where station/work uniforms are manufactured with the optional water resistance properties, the garment shall meet the requirements of Section 7.11.1 Optional Requirements for Liquid Resistant Station/Work Uniforms.

6.1.9—Where station/work uniforms are manufactured with the optional insect repellency, the garment shall meet the requirements of Section 7.12 Optional Requirements for Insect Repellancy Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

The proposed paragraphs for deletion are not design criteria. These criteria are already addressed in Chapter 5 for labeling and in Chapter 7 for performance criteria.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 23:18:27 EST 2012

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6.1.7
Where station/work uniforms are manufactured with the optional odor control properties, the garment shall meet the requirements of Section 7.8.7. Optional Requirements for Odor Resistant Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:21:31 EST 2012

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6.1.7
Where station/work uniforms are manufactured with intended to meet the optional odor control properties, the garment shall meet the comply with requirements of Section 7.8 Optional Requirements for Odor Resistant Station/Work Uniforms..

Statement of Problem and Substantiation for Public Comment

The proposed wording clarifies the requirement in that it applies only to those products intended to be sold and marketed as complying with the optional requirements.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:19:49 EST 2012

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Statement of Problem and Substantiation for Public Comment

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6.1.8
Where station/work uniforms are manufactured with intended to meet the optional water resistance properties, the garment shall comply with the requirements of Section 7.11.1 - Optional Requirements for Liquid Resistant Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

The proposed wording clarifies the requirement in that it applies only to those products intended to be sold and marketed as complying with the optional requirements.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:22:59 EST 2012

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Public Comment No. 107-NFPA 1975-2012 [Section No. 6.1.9]

6.1.9
Where station/work uniforms are manufactured with the optional insect repellency, the garment shall meet the requirements of Section 7.12.9—Optional Requirements for Insect Repellancy Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:24:40 EST 2012

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6.1.9
Where station/work uniforms are manufactured with intended to meet the optional insect repellency properties, the garment shall meet the shall comply with the requirements of Section 7.12 Optional Requirements for Insect Repellancy Station/Work Uniforms.

Statement of Problem and Substantiation for Public Comment

The proposed wording clarifies the requirement in that it applies only to those products intended to be sold and marketed as complying with the optional requirements. Additional changes make requirement consistent with other in this section.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 11:25:04 EST 2012

Copyright Assignment

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6.2.1
Station/work uniform garments designed for the upper torso shall be permitted to be configured as follows:

(1) Shirt, with collar, full-length front opening, either long sleeve or short sleeve
(2) Polo or golf-style shirt, with collar, pullover with partial front opening, either long sleeve or short sleeve
(3) Tee shirt, pullover without front opening, without collar, either long sleeve or short sleeve (See A.1.1.2.)
(4) Sweatshirt, pullover, with or without collar, either long sleeve or short sleeve
(5) Jacket, with or without collar, with full front opening and long sleeves.

Statement of Problem and Substantiation for Public Comment

Section 1.1.2 does not prohibit outerwear. This clarifies the configuration of acceptable outerwear.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 12:56:21 EST 2012

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Chapter 7  Performance Requirements

7. 1 Base Requirements for Station Work Uniforms

7.1. 1  Heat and Thermal Shrinkage Resistance.
(See Section B.1.)

7.1.1. 1  Woven and nonwoven textiles, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, and shall not shrink more than 10 percent in any direction.

7.1.1. 2  Knits, excluding interlinings shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 18 percent in any direction.

7.1.1. 3  Findings and visibility markings — excluding both emblems and collar stays, elastic, and hook and pile fasteners when placed where they will not come into direct contact with the body — shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite.

7.1. 2  Thermal Stability.
(See Section B.2)

7.1.2. 1  Textiles, excluding interlinings, shall be tested individually for thermal stability as specified in Section 8.3, Thermal Stability Test, and shall not melt, ignite, or stick to the glass plates and shall have a rating of resistance to blocking of 1 or 2.

7.1.2.2  All thread utilized in the station/work uniform garments shall be tested for heat resistance as specified in Section 8.7, Thread Heat Resistance Test, and shall not melt at or below 260°C (500°F). (See Section B.6.)

7.1. 3  Seam Strength.

Garment major seams shall be tested for seam strength as specified in Section 8.4, Seam Breaking Strength Test, and shall have a minimum breaking strength of 133 N (30 lb) for either thread or fabric. (See Section B.3.)

7.1. 4  Product Label Printing Durability.

Product labels shall be tested for printing durability as specified in Section 8.5, Label Print Durability Test, and shall be legible. (See Section B.4.)

7.5 2 * Optional Requirements for Flame Resistant Station/Work Uniforms.

7.5 2.1
Where station/work uniforms are represented as being flame resistant, textiles, excluding interlinings, emblems, labels, elastic, hook and pile fastener, and closure tape, shall be tested individually for flame resistance as specified in Section 8.6, Flame Resistance Test, and shall have an average char length of not more than 150 mm (6 in.), shall have an average afterflame of not more than 2.0 seconds, and shall not melt or drip. (See Section B.5.)

7.52.2
Where station/work uniforms are represented as being flame resistant, visibility markings and small textile items, excluding interlinings, emblems, labels, elastic, hook and pile fastener, and closure tape, that are not large enough to meet the specimen requirements specified in 8.6.3.1 shall be tested for flame resistance as specified in Section 8.6, Flame Resistance Test, and shall not be totally consumed, shall not have afterflame of more than 2.0 seconds, and shall not melt or drip. (See Section B.5.)

7.52.3
Where station/work uniforms are represented as being flame resistant, woven and nonwoven textiles, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, and shall not shrink more than 10 percent in any direction.

7.52.4
Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

7.6 Optional 3 Optional Requirements for Visibility Markings.

7.63.1
Where visibility markings are used on garments, the visibility markings shall comply with the requirements of 7.1.2.

7.63.2
Where the garment is certified to the optional flame resistance requirement, the visibility markings shall comply with the optional flammability requirements in 7.52.2.

7.7 Optional 4 Optional Requirements for Moisture-Wicking Station/Work Uniforms.

Where station/work uniforms are represented as being moisture-wicking, textiles, excluding interlinings and reinforcements, shall be tested for the liquid wicking rate, as specified in Section 8.8, Liquid Wicking Rate Test, and shall have a water rise time of 30 seconds.

7.8 Optional 5 Optional Requirements for Odor Resistant Station/Work Uniforms.

Where station/work uniforms are represented as having odor resistant properties, textiles shall be tested for the microbial resistance, as specified in Section 8.9, Odor Resistance Effectiveness Test, and shall have a 99.9% reduction of bacteria.

7.9 Optional 6 Optional Requirements for Moisture Management Station/Work Uniforms.

7.96.1
Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.10, Liquid Moisture Management Properties, and shall have a minimum Overall Moisture Management Capability (OMMC) grading of 0.8.
7.9.6.2
Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.12, Vertical Wicking Test with a minimum wicking rate of 2" in 20 minutes.

7.9.6.3
Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.13, Air Permeability Test, and shall have a minimum air flow rate of 200 cfm/ft².

7.10. Optional Requirements for Odor Control Station/Work Uniforms.

7.10.7.1
Where station/work uniforms are represented as being odor control, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.11, Antibacterial Finish Test, and shall have a minimum reduction of 99.0 percent in 24 hours.

7.11. Optional Requirements for Liquid Resistant Station/Work Uniforms.

7.11.8.1
Where station/work uniforms are represented as water resistance textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape shall be tested as specified in Section 8.14 Water Absorption Resistance Test, and shall have a water absorption of 15percent or less.

7.12. Optional Requirements for Insect Repellency Station/Work Uniform.

7.12.9.1
Where station/work uniforms are represented as having insect repellency properties, textiles, excluding interlinings and reinforcements, shall be tested for insect repellency as specified in Section 8.15, and shall have 0.52 percent of permethrin weight/weight ± 10 percent.

Statement of Problem and Substantiation for Public Comment

Reorganization of Chapter 7 is being proposed to clarify the base requirements for all station/work uniforms in one section (new 7.1) and the optional requirements (new 7.2, 7.3, etc). This will help clarify that all the requirements in 7.1 are required to label station/work uniforms as compliant with NFPA 1975. The remaining sections are identified as optional.

If this proposal is accepted changes to references in 4.1.3, 4.1.7.2, 6.1.4, 6.1.6, 6.1.7, 6.1.8, 6.1.9, 8.2.3.1 and A.7.5 will need to be made. Comments to these sections were also made as related to this comment.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:00:09 EST 2012
I, Karen Lehtonen, hereby irrevocably grant and assign to the National Fire Protection Association (NFPA) all and full rights in copyright in this Public Comment (including both the Proposed Change and the Statement of Problem and Substantiation). I understand and intend that I acquire no rights, including rights as a joint author, in any publication of the NFPA in which this Public Comment in this or another similar or derivative form is used. I hereby warrant that I am the author of this Public Comment and that I have full power and authority to enter into this copyright assignment.

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7.1.2 Knits, excluding interlinings shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 18% 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

There are 100% cotton and FR knit fabrics which meet this minimum requirement and are currently certified to this standard, therefore the requirements should not be relaxed to allow other knit fabrics, which shrink more than 10%, to be certified.

Also, there hasn't been any field data or study submitted to the committee which substantiates increasing the shrinkage requirements from 10% to 18%. The TCC has submitted a comment to the technical committee requiring data backed substantiation for changing this requirement.

Submitter Information Verification

Submitter Full Name: Kimberly Henry
Organization: PBI Performance Products, Inc.
Submittal Date: Fri Nov 16 11:40:52 EST 2012

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7.1.2
Knits, excluding interlinings shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite. They shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 18 percent in any direction.

Statement of Problem and Substantiation for Public Comment

Many inherently FR materials will go through physical changes to the molecular structure. This can inhibit the ability of the fiber to stretch to its original shape and yet still provide heat and FR protection. For instance, an inherently FR filament rayon will begin the process of carbonizing at 260C. It will lose its ability to stretch but will provide FR and heat resistant properties to the garment.

Submitter Information Verification

Submitter Full Name: Wendy Horowitz
Organization: ICF Mercantile
Submittal Date: Fri Nov 16 15:49:13 EST 2012

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7.1.2  
Knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 18 percent in any direction.

Statement of Problem and Substantiation for Public Comment

The requirement to stretch a knit fabric back to its original size after being exposed to high heat is not realistic and unnecessary to measure the thermal shrinkage. Thermal exposure will likely make the fabric brittle after it cools and will therefore not allow the fabric to be stretched back to its original size if at all. Being able to stretch the fabric has nothing to do with its thermal properties and it should be able to be measured without the need to stretch it back to the original size.

Submitter Information Verification

Submitter Full Name: Mark Saner
Organization: Workrite Uniform Company, Inc.
Submittal Date: Mon Sep 10 14:19:06 EDT 2012

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7.1.2 Knits, excluding interlinings shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

The 18 percent shrinkage requirement for knits was arbitrarily chosen at the First Revision meeting to act as a placeholder. If no data is submitted for review by the technical committee - the requirement should remain at 10 percent.

Submitter Information Verification

Submitter Full Name: Steven Corrado  
Organization: UL LLC  
Submittal Date: Wed Nov 14 13:16:55 EST 2012

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### 7.1.2

Knits, excluding interlinings shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

### Statement of Problem and Substantiation for Public Comment

The draft standard separates wovens and nonwovens from knits. Placing a higher level for knits constitutes dual requirements on thermal shrinkage. In addition, high levels of thermal shrinkage constitute a hazard for increased burn injury from conductive heat. The committee thoughts may have been that knits tend to have a higher degree of stretch. This is untrue as a person who worked in knitting mills for a number of years, I have designed knits with virtually no stretch in them. This is accomplished by stitch type and runner lengths. They perform just like a woven in all cases. Therefore separating knits from wovens and nonwovens isn't correct.

### Submitter Information Verification

- **Submitter Full Name:** Harry Winer
- **Organization:** HIP Consulting LLC
- **Submittal Date:** Wed Nov 14 15:14:57 EST 2012

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7.2.1 Textiles, excluding interlinings and knits intended for base layer garments, shall be tested individually for thermal stability as specified in Section 8.3, Thermal Stability Test, and shall not melt, ignite, or stick to the glass plates and shall have a rating of resistance to blocking of 1 or 2.

Statement of Problem and Substantiation for Public Comment

When this test requirement was adopted in the fourth edition of the standard it was because flame resistance requirements were removed as a requirement and the concern was that materials like nominally 100% wool fabrics could be used for station wear. The argument was that because of the very nature of emergency services, emergency personnel can be exposed to unknown and unexpected ignition sources during non-emergency situations when primary protective clothing is not being worn. The intent was for station wear and not for base layer garments. This requirement eliminates all but 2 knit materials available on the market today. Base layer requirements should be do no harm. This test exceeds the oven test requirements for primary protective clothing.

Submitter Information Verification

Submitter Full Name: Kathleen McNutt
Organization: Globe Manufacturing Co
Submittal Date: Tue Nov 20 10:17:20 EST 2012

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7.3.1 Seam strength shall be considered acceptable where the fabric strength is less than the required seam strength specified in 7.3, provided the fabric fails without seam failure below the applicable forces specified in 7.3.

Statement of Problem and Substantiation for Public Comment

In other NFPA standards if the fabric strength is less than the sewn seam strength the seam strength is deemed acceptable. This caveat is being added to this standard for consistency.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:13:27 EST 2012

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New 7.5.2.1
For the purpose of determining whether small textile items are not large enough to meet the specimen requirements in 8.6.3.1, small textile items that are only available in widths less that 75 mm (3.0 in.) shall be excluded from flame resistance testing.

Statement of Problem and Substantiation for Public Comment

The criteria for excluding small specimens based on the flame resistance specimen size requirement in 8.6.3.1 (75 mm x 300 mm) is unclear. The proposed language provides instructions based on the available width of the material for making this determination.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Tue Nov 13 22:56:34 EST 2012

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NEW 7.5.2.2
Where emblems or other small textile items are applied or affixed to exterior uniform layers and have an overall area that is larger than 22500 mm² (36 in²), those emblem or small textile items shall be tested for flame resistance in accordance with 8.6, Flame Resistance Test, using the small small specimen test procedures provided in 8.6.11.

Statement of Problem and Substantiation for Public Comment

In the exclusion of emblems from being subjected to flame resistance testing, the assumption is made that these items are relatively small and do not present a significant hazard. However, it is possible and has been observed that very large emblems can be used on station/work uniforms. A requirement has been proposed to provide a means for making a determination that the emblem is not small and could be a hazard based on the respective total area of a normal flame resistance specimen 22500 mm² or 36 in².

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Tue Nov 13 22:59:40 EST 2012

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Public Comment No. 3-NFPA 1975-2012 [Sections 7.5.3, 7.5.4]

Sections 7.5.3, 7.5.4

7.5.3
Where station/work uniforms are represented as being flame resistant, woven and nonwoven textiles, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, and shall not shrink more than 10 percent in any direction.

7.5.4
Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

I don't see any reason to differentiate between wovens and knits, so I am suggesting we combine these two sections and refer to textiles rather than wovens or knits.

Submitter Information Verification

Submitter Full Name: Mark Saner
Organization: Workrite Uniform Company, Inc.
Submittal Date: Mon Sep 10 14:28:25 EDT 2012

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7.5.4
Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

This change would bring the requirements in line with 7.1.2. In addition NPFA 1971 only requires the outershell not to break when exposed to 260°C for 5 minutes. As station wear, this garment, when FR, must meet a higher level of testing than the primary protective garment.

Submitter Information Verification

Submitter Full Name: Wendy Horowitz
Organization: ICF Mercantile
Submittal Date: Fri Nov 16 16:06:06 EST 2012

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7.5.4
Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10-18 percent in any direction.

Statement of Problem and Substantiation for Public Comment
Framing eliminates many materials from being considered for base layers. Base layer requirements should be do no harm. Requiring that the material be framed is not necessary. Framing is optional in the AATCC 135, Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics. Change thermal shrinkage to replicate FREE Level 1 spec which is 18% and 10% is recognized as being too stringent for knits.

Submitter Information Verification
Submitter Full Name: Kathleen McNutt
Organization: Globe Manufacturing Co
Submittal Date: Tue Nov 20 10:16:12 EST 2012

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Public Comment No. 30-NFPA 1975-2012 [Section No. 7.5.4]

7.5.4
Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

Many fabrics (knits and woven's) which have thermal shrinkage less than the required 10% after oven exposure cannot be pulled out to their original dimensions without breaking. This is because thermal shrinkage is generally not recoverable the way that laundry shrinkage is. Some flame resistant fabrics currently on the market today, which easily meet the generally more critical requirements of NFPA 2112 (Standard on Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire) with excellent after thermal exposure physical properties (tear, tensile strength) may tear if the fabric is forced to its original dimensions after thermal exposure.

For example a commercially available 6.5 osy inherently flame resistant knit fabric which is certified to NFPA 2112 gave a 12.3% body burn when tested on the thermal manikin by UL. This is a lower burn injury that obtained when 7.5 osy Nomex twill is tested similarly. However, because this commercially available knit fabric cannot be stretched to its original shape after oven testing and would fail the proposed standard. The use of a fabric stretcher is optional in ASTM F2894 (Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven). The fabric stretcher was developed for stretching knits after laundering. This is because knit fabrics after laundering will relax and recover to their original dimensions if tension is applied uniformly to the fabric for a period of time. Fabrics that shrink thermally generally do not recover due to thermally induced changes the fiber structure.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 14:02:10 EST 2012
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7.5.4 Where station/work uniforms are represented as being flame resistant, knits, excluding interlinings, shall be tested individually for heat resistance as specified in Section 8.2, Heat and Thermal Shrinkage Resistance Test, and shall not melt, drip, separate, or ignite, shall be able to be stretched to the original dimensions, shall not break, and shall not shrink more than 10 percent in any direction.

Statement of Problem and Substantiation for Public Comment

First we didn't place in the standard a test method for how we stretch the material out or how we break the material. do I stretch it by hand or use a machine under a given pressure?
Second why are we stating this requirement just for knits and not wovens or non wovens. What if I have a knit that was designed with little or no stretch in it, you would not be able to stretch it out since it reacts the same as a woven material. My shrinkage in this case maybe well below 10% but I would fail because the material cannot be stretched.
Third shall not break, I'm not sure how to break the fabric we don't state a test method. Does breaking a fabric mean that I have two or more pieces or a whole in the fabric. If the committee was worried about strength of the fabric after oven exposure they should have placed in the test method a tensile or bursting strength test after heat exposure.

Submitter Information Verification

Submitter Full Name: Harry Winer
Organization: HIP Consulting LLC
Submittal Date: Fri Nov 16 11:00:03 EST 2012

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Public Comment No. 24-NFPA 1975-2012 [Section No. 7.6]

7.6 Optional Requirements for Visibility Markings—

7.6.1 Where visibility markings are used on garments, the visibility markings shall comply with the requirements of 7.1.2.

7.6.2 Where the garment is certified to the optional flame resistance requirement, the visibility markings shall comply with the optional flammability requirements in 7.5.2.

Statement of Problem and Substantiation for Public Comment

This section is redundant as these requirements are in 7.1.3 and 7.5.2. Additionally, Visibility Markings are not one of the new "Optional Requirements".

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:31:09 EST 2012

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7.6.1
Where visibility markings are used on garments, the visibility markings shall comply with the requirements of 7.1.2.3.

Statement of Problem and Substantiation for Public Comment

Reference correction.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:17:07 EST 2012

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7.7 Optional Requirements for Moisture-Wicking Station/Work Uniforms.

Where station/work uniforms are represented as being moisture-wicking, textiles, excluding interlinings and reinforcements, shall be tested for the liquid wicking rate, as specified in Section 8.8, Liquid Wicking Rate Test, and shall have a minimum water rise time rate of 30 X inches 30 seconds.

Statement of Problem and Substantiation for Public Comment

Since this test measures the wicking rate of the fabrics, a minimum length in 30 seconds has to be included.

Submitter Information Verification

Submitter Full Name: Kimberly Henry
Organization: PBI Performance Products, Inc.
Submittal Date: Fri Nov 16 15:15:15 EST 2012

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7.7 Optional Requirements for Moisture-Wicking Station/Work Uniforms.
Where station/work uniforms are represented as being moisture-wicking, textiles, excluding interlinings and reinforcements, shall be tested for the liquid wicking rate, as specified in Section 8.8, Liquid Wicking Rate Test, and shall have a water rise time of 30 seconds.

Statement of Problem and Substantiation for Public Comment
This section is redundant to Section 7.9.

Submitter Information Verification
Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:34:04 EST 2012

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7.7 Optional Requirements for Moisture-Wicking Station/Work Uniforms.

Where station/work uniforms are represented as being moisture-wicking, textiles, excluding interlinings and reinforcements, shall be tested for the liquid wicking rate, as specified in Section 8.8, Liquid Wicking Rate Test, and shall have a water rise time of 30 seconds.

Statement of Problem and Substantiation for Public Comment

This section should not have been submitted from the first draft meeting and should be deleted. It is duplicate information in 7.9

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 18:39:41 EST 2012

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7.7 Optional Requirements for Moisture-Wicking Station/Work Uniforms.

Where station/work uniforms are represented as being moisture-wicking, textiles, excluding interlinings and reinforcements, shall be tested for the liquid wicking rate, as specified in Section 8.8, Liquid Wicking Rate Test, and shall have a water rise time of 30 seconds.

Statement of Problem and Substantiation for Public Comment

The intent of the task group was to establish performance requirements of fabrics that make claims that the garment controls moisture by various fabric designs or inherent property. Further research has determined that quantifying a moisture management fabric or garment is a complicated matter. Testing apparatus and test methods available to the industry may indicate false positive or negative findings and do not accurately represent or duplicate the implied comfort or moisture management properties of a given garment. NFPA 1975 is a safety standard and should not attempt to quantify claims of moisture management of a manufacturer. The NFPA 1975 task group recommends that all moisture management requirements and inferences be stricken from the document.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 18:43:55 EST 2012

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7.8 Optional Requirements for Odor Resistant Station/Work Uniforms.

Where station/work uniforms are represented as having odor resistant properties, textiles shall be tested for the microbial resistance, as specified in Section 8.9 - Odor Resistance Effectiveness. Antimicrobial Test, and shall have a 99.9% reduction of bacteria.

Statement of Problem and Substantiation for Public Comment

Name change more accurately describes the test.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Fri Nov 16 15:10:09 EST 2012

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7.8  Optional Requirements for Odor Resistant Station/Work Uniforms.

Where station/work uniforms are represented as having odor resistant properties, textiles shall be tested for the microbial resistance, as specified in Section 8.9, Odor Resistance Effectiveness Test, and shall have a 99.9% reduction of bacteria.

Statement of Problem and Substantiation for Public Comment

This section is redundant to section 7.10.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:35:11 EST 2012

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7.8 Optional Requirements for Odor Resistant Station/Work Uniforms.

Where station/work uniforms are represented as having odor resistant properties, textile fabrics shall be tested for the microbial resistance, as specified in Section 8.9, Odor Resistance Effectiveness Test, and shall have a 99.9% reduction of bacteria.

Statement of Problem and Substantiation for Public Comment

A separate public comment has been provided to remove 8.9 because it is redundant with 8.11. As a result of this change, the reference in this requirement is changed to a test method that is nearly identical.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 21:59:46 EST 2012

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7.8 Optional Requirements for Odor Resistant Station/Work Uniforms.

7.8.1 Where station/work uniforms are represented as having odor resistant properties, textile fabrics shall be tested for the microbial resistance, as specified in Section 8.9, Odor Resistance Effectiveness Test, and shall have a 99.9% reduction of bacteria.

7.8.2 Where station/work uniforms are represented as having odor resistance properties, textile fabrics shall be tested for water absorption resistance, as specified in 8.13, Water Absorption Test, and shall have a water absorption of 15% or less.

7.8.3 Where station/work uniforms are represented as having odor resistance properties, textile fabrics shall be tested for water repellency, as specified in 8.16, Water Repellency Test, and shall have a spray rating of 80 or better.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Comment

The effectiveness of antimicrobial finishes on fabrics is partly dependent on the bioburden present in the fabric. Fabrics that absorb large quantities of liquid or those that do not repel liquids are far more likely to prevent the growth of microorganisms that lead to odor and other problems. The need to maintain a low bioburden has been demonstrated in research by Margaret P. Cotton, Thomas J. Walsh, and Matthew J. Hardwick, Fabric Challenge Assays: new standards for the evaluation of the performance of textiles treated with antimicrobial agents, at MedStar Health Research Institute and the Weill Cornell University Medical Center.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 22:03:19 EST 2012

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Public Comment No. 48-NFPA 1975-2012 [Section No. 7.9]

7.9 Optional Requirements for Moisture Management Station/Work Uniforms—

7.9.1 Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.10, Liquid Moisture Management Properties, and shall have a minimum Overall Moisture Management Capability (OMMC) grading of 0.8—

7.9.2 Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.12, Vertical Wicking Test with a minimum wicking rate of 2” in 20 minutes—

7.9.3 Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.13, Air Permeability Test, and shall have a minimum air flow rate of 200 cfm/ft².

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:07:39 EST 2012

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7.9.1

Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.10, Liquid Moisture Management Properties, and shall have a minimum Overall Moisture Management Capability (OMMC) grading of 0.8.

Statement of Problem and Substantiation for Public Comment

The representative for the manufacturer of the equipment used in AATCC 195 stated that it was a developmental tool and did not recommend incorporating the results of its testing into a performance standard.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 14:57:37 EST 2012

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Public Comment No. 112-NFPA 1975-2012 [ Section No. 7.9.3 ]

7.9.3
Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fastners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.13, Air Permeability Test, and shall have a minimum air flow rate of 200 cfm/ft².

Statement of Problem and Substantiation for Public Comment

The air permeability requirement of 200 is excessive for a minimum standard. It will prevent woven fabrics from qualifying for the moisture management option and mean that only knit fabrics can be used in this application. Fabrics with good moisture management properties are very comfortable even without high air permeability. In addition very high air permeability can result in fabrics which do not have acceptable durability due to poor abrasion resistance. Finally moisture management is important for garments used in both hot and cold environments. In the case of cold environments high air permeability is not desirable while good moisture management is because it keeps the wearer dry.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Fri Nov 16 14:48:53 EST 2012

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7.9.3 Where station/work uniforms are represented as managing moisture, textiles, excluding emblems, labels, elastic, hook and pile fastners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.13, Air Permeability Test, and shall have a minimum air flow rate of 200 cfm/ft².

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 20:12:40 EST 2012

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7.10 Optional Requirements for Odor Control Station/Work Uniforms —

7.10.1 Where station/work uniforms are represented as being odor control, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.11, Antibacterial Finish Test, and shall have a minimum reduction of 99.0 percent in 24 hours.

Statement of Problem and Substantiation for Public Comment

This requirement appears to be redundant with the optional requirement provided in 7.9.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 23:15:04 EST 2012

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7.10.1 Where station/work uniforms are represented as being odor control, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.11, Antibacterial Finish Test, and shall have a minimum reduction of 99.0 percent in 24 hours 1 hour.

Statement of Problem and Substantiation for Public Comment

Model test procedure indicates 1 hour test duration to achieve a 99% reduction.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 22:16:22 EST 2012

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Where station/work uniforms are represented as being odor control, textiles, excluding emblems, labels, elastic, hook and pile fasteners, and closure tape, when placed where they will come in contact with the body/skin, shall be tested individually as specified in Section 8.11, Antibacterial Finish Test, and shall have a minimum reduction of 99.0 percent in 24 hours.

Additional Proposed Changes

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<td>EPApr2000-1.pdf</td>
<td>EPA public release substantiating that odor control does not require EPA registration</td>
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Statement of Problem and Substantiation for Public Comment

Substantiation that odor control does not need to be regulated or registered with the EPA.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Thu Nov 15 22:01:36 EST 2012

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NEW 7.11.2
Where station/work uniforms are represented as having water resistance, textile fabrics, excluding emblems, labels, interlinings, hook and pile fasteners, and closure tape, shall be tested as specified in 8.16, Water Repellency Test, and shall have a spray rating of 80 or better.

Statement of Problem and Substantiation for Public Comment

The use of a water absorption test alone is insufficient for characterizing a station/work uniform as water resistance. An industry standard test method has been proposed in a separate comment to address the demonstration of water repellency as part of the proposed optional water resistance requirement.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc
Submittal Date: Wed Nov 14 21:50:20 EST 2012

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7.11.1
Where station/work uniforms are represented as providing water resistance-
textiles, textile fabrics, excluding emblems, labels, elastic, hook and pile
fasteners, and closure tape, shall be tested as specified in Section 8.14
Water Absorption Resistance Test, and shall have a water absorption of
15 percent or less.

Statement of Problem and Substantiation for Public Comment

The proposed changes are editorial and are intended to clarify the application of the
optional requirements.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 21:25:08 EST 2012

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Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box,
I am creating an electronic signature that will, upon my submission of this form, have the same legal force and
effect as a handwritten signature.
Add new section 7.12.2

NEW:

7.12.2

Where station/work uniforms are represented as having insect repellency properties as specified in Section 7.12.1 and are also represented as having flame resistant properties as specified in Section 7.5, textiles, excluding interlinings and reinforcements, shall be individually re-tested (after treatment for insect repellency) for flame resistance as specified in Section 8.6, Flame Resistance Test, and shall have an average char length of not more than 150 mm (6 in.), shall have an average afterflame time of not more than 2.0 seconds, and shall not melt or drip. (see Section B.5)

Statement of Problem and Substantiation for Public Comment

If applied improperly, the insect repellency treatments can render an FR garment flammable. As such, it is imperative to re-test for flame resistance AFTER the insect repellency is added to a garment that has been designated to be flame resistant.

Submitter Information Verification

Submitter Full Name: Brian Shiels
Organization: PBI Performance Products, Inc.
Submittal Date: Fri Nov 09 08:54:19 EST 2012

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☑️ By checking this box I affirm that I am Brian Shiels, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
8.2.1.4 Modifications to this test method for testing knits shall be as specified in 8.2.10.

Statement of Problem and Substantiation for Public Comment

There are specific requirements for testing knits but there is no reference to these modifications in the application section.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:20:05 EST 2012

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By checking this box I affirm that I am Karen Lehtonen, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
Public Comment No. 108-NFPA 1975-2012 [Section No. 8.2.3.1]

8.2.3.1
Heat resistance testing only shall be conducted on a minimum of three specimens for each finding not excluded in 7.1.1.3.

Statement of Problem and Substantiation for Public Comment

If comment 99 is accepted to reformat chapter 7 this reference change is necessary.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 11:26:21 EST 2012

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Public Comment No. 111-NFPA 1975-2012 [Sections 8.2.4, 8.2.5]

Sections 8.2.4, 8.2.5

8.2.4 Apparatus.

8.2.5 Procedure.
Testing shall be performed in accordance with ASTM F 2894 with ISO 17493, Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven, using the following parameters:

1. Procedure 7.1 in ISO 17493 for flat textile and other sheet materials shall be used.
2. The test temperature shall be 260°C, +6/-0°C (500°F, +10/-0°F).
3. The optional stretching frame shall be used to evaluate knit materials. Specimen marking and measurements shall be conducted in accordance with the procedure specified in AATCC 135, Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics.

Statement of Problem and Substantiation for Public Comment

Keep the ISO method which is currently used in NFPA 1975, 2009 edition. The ASTM method includes a stretching frame as an option, and none of the interlab studies required testing using the stretching frame, therefore the ASTM test has not been vetted using the proposed current text.

The current ISO method requires a stretching frame so no need to change to the ASTM version. We have seen recently that changing an NFPA test method automatically to an ASTM method does not always translate as expected or correlate well with the results generated by the NFPA method.

Submitter Information Verification

Submitter Full Name: Kimberly Henry
Organization: PBI Performance Products, Inc.
Submittal Date: Fri Nov 16 13:55:24 EST 2012
Copyright Assignment

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☑ By checking this box I affirm that I am Kimberly Henry, and I agree to be legally bound by the above Copyright Assignment and the terms and conditions contained therein. I understand and intend that, by checking this box, I am creating an electronic signature that will, upon my submission of this form, have the same legal force and effect as a handwritten signature.
8.2.5 Procedure.
Testing shall be performed in accordance with ASTM F 2894, Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven, using the following parameters:

1. The test temperature shall be 260°C, +6/-0°C (500°F, +10/-0°F).
2. The optional stretching frame shall be used to evaluate knit materials.

Statement of Problem and Substantiation for Public Comment

Framing eliminates many materials from being considered for base layers. Base layer requirements should be do no harm. Requiring that the material be framed is not necessary. Framing is optional in the AATCC 135, Dimensional Changes in Automatic Home Laundering of Woven and Knit Fabrics.

Submitter Information Verification

Submitter Full Name: Kathleen McNutt
Organization: Globe Manufacturing Co
Submittal Date: Tue Nov 20 10:14:26 EST 2012

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Public Comment No. 55-NFPA 1975-2012 [ Section No. 8.2.5 ]

8.2.5 Procedure.
Testing shall be performed in accordance with ASTM F 2894, Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven, using the following parameters:

(1) The test temperature shall be 260°C, +6/-0°C (500°F, +10/-0°F).
(2) The optional stretching frame may be used to evaluate knit materials fabrics per the manufacturer's instructions.

Statement of Problem and Substantiation for Public Comment

The stretching frame test should not be required to be used for the percentage stretching test. This test is normally used to evaluate shrinkage from repeat laundering and is not necessarily intended to be used effectively for thermal shrinkage. The task group recommends that the stretching frame be an optional test, specified by submitting manufacturer.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:30:23 EST 2012

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8.2.5 Procedure.
Testing shall be performed in accordance with ASTM F 2894, Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven, using the following parameters:

1. The test temperature shall be 260°C, +6/-0°C (500°F, +10/-0°F).
2. The optional stretching frame shall be used to evaluate knit materials.

Statement of Problem and Substantiation for Public Comment

Section 8.2 or ASTM F-2894 does not reference a stretcher frame or how to operate the stretcher frame. So to state that you should use this stretcher frame is incomplete and should be deleted from the text. You would need to reference a particular frame and method of operation.

Submitter Information Verification

Submitter Full Name: Harry Winer
Organization: HIP Consulting LLC
Submittal Date: Fri Nov 16 10:41:16 EST 2012

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Public Comment No. 87-NFPA 1975-2012 [Section No. 8.2.8]

8.2.8 Specific Requirements for Testing Woven and Nonwoven Textiles.

8.2.8.1 Each specimen shall be 380 mm × 380 mm, ±13 mm (15 in. × 15 in., ± 1/2 in.).

8.2.8.2 Testing shall be performed as specified in 8.2.2 through 8.2.7.

Statement of Problem and Substantiation for Public Comment

Editorial correction.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:23:28 EST 2012

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8.2.10.3
Observations of ignition, melting, dripping, separation, breaking, or inability to be stretched to the original dimensions for each specimen shall be recorded and reported.

Statement of Problem and Substantiation for Public Comment

First I do not have a definition of breaking. There is no test method in 8.2 to tell me how to break the specimen. I assume the committee was interested in the fabric if it broke open on this imaginary stretch frame that was mentioned above. Knits shouldn't be individually singled out to be stretched back to its original dimensions, if this is what the committee wants then it should apply to all materials, since I can design knits to react the same as wovens.

Submitter Information Verification

Submitter Full Name: Harry Winer
Organization: HIP Consulting LLC
Submittal Date: Fri Nov 16 11:20:27 EST 2012

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Public Comment No. 109-NFPA 1975-2012 [ Section No. 8.2.10.4 ]

8.2.10.4
Any evidence of ignition, melting, dripping, separation, breaking, or inability to be stretched to the original dimensions shall constitute failing performance.

Statement of Problem and Substantiation for Public Comment

See substantiation on public comment 104

Submitter Information Verification

Submitter Full Name: Harry Winer
Organization: HIP Consulting LLC
Submittal Date: Fri Nov 16 11:30:03 EST 2012

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Public Comment No. 33-NFPA 1975-2012 [Section No. 8.2.10.4]

8.2.10.4
Any evidence of ignition, melting, dripping, separation, breaking, or inability to be stretched to the original dimensions shall constitute failing performance.

Statement of Problem and Substantiation for Public Comment

Many fabrics (knits and woven's) which have thermal shrinkage less than the required 10% after oven exposure cannot be pulled out to their original dimensions without breaking. This is because thermal shrinkage is generally not recoverable the way that laundry shrinkage is. Some flame resistant fabrics currently on the market today, which easily meet the generally more critical requirements of NFPA 2112 (Standard on Flame Resistant Garments for Protection of Industrial Personnel Against Flash Fire) with excellent after thermal exposure physical properties (tear, tensile strength) may tear if the fabric is forced to its original dimensions after thermal exposure.

For example a commercially available 6.5 osy inherently flame resistant knit fabric which is certified to NFPA 2112 gave a 12.3% body burn when tested on the thermal manikin by UL. This is a lower burn injury that obtained when 7.5 osy Nomex twill is tested similarly. However, because this commercially available knit fabric cannot be stretched to its original shape after oven testing and would fail the proposed standard.

The use of a fabric stretcher is optional in ASTM F2894 (Standard Test Method for Evaluation of Materials, Protective Clothing and Equipment for Heat Resistance Using a Hot Air Circulating Oven). The fabric stretcher was developed for stretching knits after laundering. This is because knit fabrics after laundering will relax and recover to their original dimensions if tension is applied uniformly to the fabric for a period of time. Fabrics that shrink thermally generally do not recover due to thermally induced changes the fiber structure.

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 14:09:58 EST 2012

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8.3.1 Application.
This test method shall apply to textiles excluding knits intended for base layer garments.

Statement of Problem and Substantiation for Public Comment

Base layer requirements should be do no harm. The oven temperature is 265 °C or 510 °F for a 6 hour exposure. This test exceeds the oven test requirements for even primary protective clothing.

Submitter Information Verification

Submitter Full Name: Kathleen McNutt
Organization: Globe Manufacturing Co
Submittal Date: Tue Nov 20 10:13:23 EST 2012

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Public Comment No. 27-NFPA 1975-2012 [ Section No. 8.3.4.1 ]

8.3.4.1

Statement of Problem and Substantiation for Public Comment

Replaces the ISO standard with the ASTM standard to be consistent with Section 8.2.4.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:40:46 EST 2012

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8.3.4.1


Statement of Problem and Substantiation for Public Comment

The proposed change in the test method reference harmonizes the standard used for specifying the test oven with the heat and thermal shrinkage test requirement.

Submitter Information Verification

Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 19:48:24 EST 2012

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8.3.5 Procedure.
Specimens shall be tested according to ASTM D 751, Standard Test Methods for Coated Fabrics, using the Procedures for Blocking Resistance at Elevated Temperatures, specified in Sections 84 through 88, with the following modifications:

1. The glass plates specified in 8.3.4.2 shall be used.
2. A test temperature of 265°C, +3/- 0°C (510°F, +5/-0°F) shall be used.
3. The specimens shall cool a minimum of 1 hour after removal of the glass plates from the oven.
4. In removing specimens from the glass plates, the rating of resistance to blocking shall be determined and observations shall be made whether each specimen sticks to the glass plates or shows evidence of melting or ignition. A determination of a specimen sticking to the glass plates shall be made by placing the glass plate and specimen surface on a flat level surface and raising the top glass plate slowly with the plate parallel to the surface and observing if the material falls away from the plate. If the material stays attached to the surface after being raised for 30 seconds, then the specimen shall be considered as having stuck the glass plate.
5. Where the specimen size is such that a 102 mm × 102 mm (4 in. × 4 in.) square cannot be achieved, three specimens shall be tested folded face to face, and three specimens shall be tested folded back to back.

Statement of Problem and Substantiation for Public Comment
No specific procedures are provided for making a determination of whether the specimens sticks to the glass plate. The provided instruction is intended to clarify how this determination is made.

Submitter Information Verification
Submitter Full Name: Jeffrey Stull
Organization: International Personnel Protection, Inc.
Submittal Date: Wed Nov 14 19:36:56 EST 2012

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Public Comment No. 35-NFPA 1975-2012 [Section No. 8.4.4.2]

8.4.4.2
All knit seam assemblies shall be tested in accordance with ASTM D 3940-3787 Standard Test Method for Bursting Strength (Load) and Elongation of Sewn Seams of Knit and Woven Stretch Textile Fabrics Bursting Strength of Textiles - Constant -Rate - of - Traverse (CRT) Ball Burst Test.

Statement of Problem and Substantiation for Public Comment

ASTM D 3940 was withdrawn from ASTM in 1995. The last version of this standard is from 1983. If this test method is to be used the test method should be inserted into NFPA 1975 in its entirety. However ASTM D 3787 is a current standard and appears to be virtually identical to ASTM D 3940 except that the sample size needs to be changed from the 5" by 5" dimension specified in ASTM 3787 to 3" by 4" dimension used in ASTM D3940. The provision also have to be made to pad the clamps to prevent fabric slippage due to the thickness of the seam.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 14:21:06 EST 2012

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8.4.4.3 —
Evaluation for sewn seam strength in accordance with Section 11.1 of ASTM D 1683 —
Standard Test Method for Failure in Sewn Seams of Woven Fabrics, shall be used to determine pass/fail performance.

Statement of Problem and Substantiation for Public Comment

Performing the test in accordance with ASTM D1683 would include the calculation of the seam strength. Therefore, this statement is redundant.

Submitter Information Verification

Submitter Full Name: Steven Corrado
Organization: UL LLC
Submittal Date: Wed Nov 14 13:58:32 EST 2012

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8.4.5.3 The type of seams tested shall be reported as to whether the specimens were cut from the finished garment or prepared from fabric samples.

Statement of Problem and Substantiation for Public Comment

This reporting language is specified in other NFPA clothing standards related to seam strength testing; text is being added here for consistency.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen  
Organization: Lion Apparel, Inc.  
Submittal Date: Fri Nov 16 08:25:12 EST 2012

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8.8 Liquid Wicking Rate Test

8.8.1 Application
This test method shall apply to the primary textiles used in the construction of the station/work uniform.

8.8.2 Samples

8.8.2.1 Samples for preconditioning shall be a 1 m (1 yd) square of textile.

8.8.2.2 Where the manufacturer designates that the garments are to be washed, separate samples shall be preconditioned according to 8.1.3.

8.8.2.3 Where the manufacturer designates that the garments are to be dry cleaned, separate samples shall be preconditioned according to 8.1.4.

8.8.3 Specimens
A minimum of three specimens shall be tested.

8.8.4 Apparatus
The test set-up shall be as specified in ISO 9073-6, Textiles—Test Methods for Nonwoven—Part 6: Absorption.

8.8.5 Procedure
Testing shall be conducted in accordance with the liquid wicking rate procedures of ISO 9073-6, Textiles—Test Methods for Nonwoven—Part 6: Absorption.

8.8.6 Report
The time for water to rise 25 mm (1 in.) for each individual specimen and the overall average for all specimens shall be recorded and reported.

8.8.7 Interpretation
Pass/fail determination shall be based on the average reported time for water rise for all specimens tested.

Statement of Problem and Substantiation for Public Comment
See PC #40

Submitter Information Verification
Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 22:09:27 EST 2012
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8.8.6 Report.
The time for water to rise 25–20 mm (1–0.8 in.) for each individual specimen and the overall average for all specimens shall be recorded and reported.

Statement of Problem and Substantiation for Public Comment
More appropriate wicking distance for optional moisture management fabrics.

Submitter Information Verification
Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Fri Nov 16 15:01:16 EST 2012

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8.9 Odor Resistance Effectiveness - Antimicrobial Test.

8.9.1 Application.
This test method shall apply to textiles.

8.9.2 Samples.

8.9.2.1 Samples for preconditioning shall be a 1 m (1 yd) square of textile.

8.9.2.2 Where the manufacturer designates that the garments are to be washed, separate samples shall be preconditioned according to 8.1.3.

8.9.2.3 Where the manufacturer designates that the garments are to be dry cleaned, separate samples shall be preconditioned according to 8.1.4.

8.9.3 Specimens.
A minimum of three specimens shall be tested.

8.9.4 Apparatus.
The test set-up shall be as specified in AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of.

8.9.5 Procedure.
Testing shall be conducted in accordance with AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of, using both Staphylococcus aureus and Klebsiella pneumonia.

8.9.6 Report.
The percent reduction of bacteria for each specimen shall be recorded and reported.

8.9.7 Interpretation.
Pass/fail determination shall be based on the average percent reduction for all specimens tested for each type of bacteria tested. Failing performance for one type of bacteria shall constitute failure of the textile.

Statement of Problem and Substantiation for Public Comment

Name change more accurately describes test and is linked to the test method described in the section.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: Tencate Protective Fabrics
Submittal Date: Fri Nov 16 15:07:02 EST 2012
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8.9 Odor Resistance Effectiveness Test.

8.9.1 Application.
This test method shall apply to textiles.

8.9.2 Samples.

8.9.2.1 Samples for preconditioning shall be a 1 m (1 yd) square of textile.

8.9.2.2 Where the manufacturer designates that the garments are to be washed, separate samples shall be preconditioned according to 8.1.3.

8.9.2.3 Where the manufacturer designates that the garments are to be dry cleaned, separate samples shall be preconditioned according to 8.1.4.

8.9.3 Specimens.
A minimum of three specimens shall be tested.

8.9.4 Apparatus.
The test set-up shall be as specified in AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of.

8.9.5 Procedure.
Testing shall be conducted in accordance with AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of, using both *Staphylococcus aureus* and *Klebsiella pneumoniae*.

8.9.6 Report.
The percent reduction of bacteria for each specimen shall be recorded and reported.

8.9.7 Interpretation.
Pass/fail determination shall be based on the average percent reduction for all specimens tested for each type of bacteria tested. Failing performance for one type of bacteria shall constitute failure of the textile.

**Statement of Problem and Substantiation for Public Comment**

The Odor Resistance Test and the Antimicrobial Finish Test are identical except that the latter test method also references ASTM E 2149. The Antimicrobial Finish Test in 8.11 appears to be more complete.

**Submitter Information Verification**

Submitter Full Name: Jeffrey Stull  
Organization: International Personnel Protection, Inc.  
Submittal Date: Wed Nov 14 21:56:48 EST 2012
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Public Comment No. 75-NFPA 1975-2012 [Sections 8.9, 8.10]

Sections 8.9, 8.10
8.9 Odor Resistance Effectiveness Test.
8.9.1 Application.
This test method shall apply to textiles.
8.9.2 Samples.
8.9.2.1 Samples for preconditioning shall be a 1 m (1 yd) square of textile.
8.9.2.2 Where the manufacturer designates that the garments are to be washed, separate samples shall be preconditioned according to 8.1.3.
8.9.2.3 Where the manufacturer designates that the garments are to be dry cleaned, separate samples shall be preconditioned according to 8.1.4.
8.9.3 Specimens.
A minimum of three specimens shall be tested.
8.9.4 Apparatus.
The test set-up shall be as specified in AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of.
8.9.5 Procedure.
Testing shall be conducted in accordance with AATCC 100, Antibacterial Finishes on Textile Materials, Assessment of, using both Staphylococcus aureus and Klebsiella pneumonia.
8.9.6 Report.
The percent reduction of bacteria for each specimen shall be recorded and reported.
8.9.7 Interpretation.
Pass/fail determination shall be based on the average percent reduction for all specimens tested for each type of bacteria tested. Failing performance for one type of bacteria shall constitute failure of the textile.
8.10 Liquid Moisture Management Properties.
8.10.1 Application.
This test method shall apply to textiles identified as moisture management fabrics
8.10.2 Samples.
8.10.2.1 Samples for conditioning shall be 1 m (1 yd) square of each textile material.
8.10.2.2 Samples shall be preconditioned according to 8.1.3 (25 Wash/Dry).
8.10.3 Apparatus.
The apparatus shall be as specified in AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.
8.10.4 Procedure.
Testing shall be performed in accordance with AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.
8.10.5 Report.
8.10.5.1
The Overall Moisture Management Capability (OMMC) shall be reported for each specimen.

8.10.5.2
The average OMMC shall be reported for all specimens.

8.10.6 Interpretation.
The average OMMC shall be used to determine pass/fail.

Additional Proposed Changes

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Statement of Problem and Substantiation for Public Comment

Clarification of percent reduction in test substance and test method clarification

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 22:11:48 EST 2012

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8.10 Liquid Moisture Management Properties...

8.10.1 Application...
This test method shall apply to textiles identified as moisture management fabrics.

8.10.2 Samples...

8.10.2.1 Samples for conditioning shall be 1 m (1 yd) square of each textile material.

8.10.2.2 Samples shall be preconditioned according to 8.1.3 (25 Wash/Dry).

8.10.3 Apparatus...
The apparatus shall be as specified in AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.

8.10.4 Procedure...
Testing shall be performed in accordance with AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.

8.10.5 Report...

8.10.5.1 The Overall Moisture Management Capability (OMMC) shall be reported for each specimen.

8.10.5.2 The average OMMC shall be reported for all specimens.

8.10.6 Interpretation...
The average OMMC shall be used to determine pass/fail.

Statement of Problem and Substantiation for Public Comment

The representative for the manufacturer of the equipment used in AATCC 195 stated that it was a developmental tool and did not recommend incorporating the results of its testing into a performance standard.

Related Public Comments for This Document

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<td>Public Comment No. 36-NFPA 1975-2012 [Section No. 7.9.1]</td>
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Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 15:02:44 EST 2012
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8.10 Liquid Moisture Management Properties—
8.10.1 Application—
This test method shall apply to textiles identified as moisture management fabrics.
8.10.2 Samples—

8.10.2.1 Samples for conditioning shall be 1 m (1 yd) square of each textile material.

8.10.2.2 Samples shall be preconditioned according to 8.1.3 (25 Wash/Dry).

8.10.3 Apparatus—
The apparatus shall be as specified in AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.

8.10.4 Procedure—
Testing shall be performed in accordance with AATCC 195, Liquid Moisture Management Properties of Textile Fabrics.

8.10.5 Report—

8.10.5.1 The Overall Moisture Management Capability (OMMC) shall be reported for each specimen.

8.10.5.2 The average OMMC shall be reported for all specimens.

8.10.6 Interpretation—
The average OMMC shall be used to determine pass/fail.

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:08:28 EST 2012
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This test method shall apply to optional moisture management garment textiles.

Statement of Problem and Substantiation for Public Comment

See PC #40

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Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:09:25 EST 2012

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8.13.1.1
This test method shall apply to optional moisture management garment textiles.

Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:10:05 EST 2012

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8.14.2.2
If the manufacturer designates that the garments are to be washed, separate samples shall be preconditioned according to 8.1.3.21.

Statement of Problem and Substantiation for Public Comment

Current water repellant finishes will not achieve the required level of water absorption after 100 launderings. I believe that the committee wanted to evaluate water absorption after 25 launderings which is consistent with the preconditioning of other optional requirements such as Odor Control.

Submitter Information Verification

Submitter Full Name: Charles Dunn
Organization: TenCate/Southern Mills
Affiliation: TenCate Protective Fabrics
Submittal Date: Wed Nov 14 13:50:41 EST 2012

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8.15 Optional Insect Repellency Test. Reserved.

Additional Proposed Changes

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<td>test method for insect repellency</td>
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Statement of Problem and Substantiation for Public Comment

Adding the insect repellency test procedures.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 20:07:41 EST 2012

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A.1.1.2
Station/work uniform garments are made from thermally stable materials. Garments such as fitness clothing and underclothing might not be made from thermally stable materials and should not be worn while on duty. Such non-thermally stable garments are made from fibers with relatively low melting points and can contribute to burn injury. These types of performance fitness clothing should also not be worn as undergarments beneath the station/work uniform.

Statement of Problem and Substantiation for Public Comment
Clarifies the existing text and utilizes some of the text that was deleted from A.6.1.2 in FR25.

Related Items from the Public Input Stage for This Document

Related Item
First Revision No. 3-NFPA 1975-2012 [Section No. A.6.1.2]

Submitter Information Verification
Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:28:37 EST 2012

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Moisture Management garments

Users are encouraged to conduct a wear trial and develop user findings and recommendations when dealing with work clothing elements that make claims to provide moisture management. Moisture management clothing may also be described as wicking, active transport, or similar descriptive terms that imply the comfort to the wearer and moving sweat away from the body. The authority having jurisdiction should be aware that it may be difficult to objectively quantify findings or such claims. User perception of comfort should be considered over such claims of moisture management.

Statement of Problem and Substantiation for Public Comment

Since moisture management is recommended to be deleted from the document, this will serve to provide a user evaluation statement to evaluate claims of moisture management properties at the organization or user level.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:39:58 EST 2012

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A.3.3.9 Flame Resistance (Protective Apparel).

Flame resistance can be an inherent property of the textile material, or it can be imparted by specific treatment.

Statement of Problem and Substantiation for Public Comment

The text in parenthesis does not appear in the term in the body of the standard thus should not appear in the Annex, this was incorrectly captured in the first revision and fixes the editorial error.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:33:16 EST 2012

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A.5.2.7(3)

To avoid possible damage to the garment and possible reduction and loss of inherent or treated flame resistance characteristics of the garment, the manufacturer should be contacted prior to disinfecting or cleaning the garment by a method not prescribed on the product. Station/work uniforms should not be cleaned in home washing machines. See 5.1.7 and 5 and 5.2.67 for information regarding how to identify the manufacturer and the garment.

For information on the prevention and transmission of communicable diseases and carcinogens caused by contaminated garments, see NFPA 1581, Standard on Fire Department Infection Control Program, and OSHA regulation 29 CFR 1910.1030, or consult the Centers for Disease Control, the local board of public health, the American Medical Association, the U.S. Fire Administration, the Environmental Protection Agency, or the International Association of Fire Fighters.

Statement of Problem and Substantiation for Public Comment

Reference correction.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:35:53 EST 2012

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A7.12 Insect repellency

It is important that users understand that insect repellency is a finish that is applied to the finished garment and that performance or bite protection is likely to decline over time and after repeat launderings.

Statement of Problem and Substantiation for Public Comment

Add explanatory information about the decrease of bite protection after repeat laundering and use.

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:52:50 EST 2012

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A.7.5
Two separate test requirements are provided for manufacturers who wish to claim use of flame resistant textile fabrics in their manufacture of station/work uniforms. When the requirements found in 7.2.2, 7.5.1, through 7.5.2 are met, additional label language is used to indicate that the garments are flame resistant.

Statement of Problem and Substantiation for Public Comment
Reference correction.
If comment 99 to reorganize chapter 7 is accepted the following revisions need to be made to this comment:
7.2.2 changes to 7.1.2
7.5.1 through 7.5.4 changes to 7.2.5.1 through 7.2.5.4

Related Public Comments for This Document

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Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:37:13 EST 2012

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B.2.1 Test Method Cited.
The test method appears in Section 8.3, Method 1. A modified form of ASTM D 751, Standard Test Methods for Coated Fabrics, is used. Conditioning is by laundering per AATCC 135, Dimensional Changes of Fabrics After Automatic Home Laundering, (Machine Cycle 1, Wash Temperature V, Drying Procedure Ai) or dry-cleaning per Sections 9.2 and 9.3 of AATCC 158, Dimensional Changes on Dry-Cleaning in Perchloroethylene: Machine Method.

Statement of Problem and Substantiation for Public Comment

Editorial corrections of revisions made in first revision draft.

Related Items from the Public Input Stage for This Document

Related Item
First Revision No. 61-NFPA 1975-2012 [Section No. B.6]

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:39:17 EST 2012

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Public Comment No. 95-NFPA 1975-2012 [New Section after B.3.1]

B.3.3 Application of Test Method
The purpose of the test is to require a minimum seam strength of 133N (33 lbs) for seams used in stress areas of the garment.

Statement of Problem and Substantiation for Public Comment

No application of this test method has been provided which is inconsistent with the other test methods described in Annex B.

Submitter Information Verification

Submitter Full Name: Karen Lehtonen
Organization: Lion Apparel, Inc.
Submittal Date: Fri Nov 16 08:44:44 EST 2012

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Public Comment No. 52-NFPA 1975-2012 [Section No. B.7]

B.7 - Optional Moisture Management

B.7.1 - The test method appears in Section 8.10; AATCC Test Method 195, Liquid Moisture Management Properties of Textile Fabrics, is used. Conditioning is by laundering per AATCC 135, Dimensional Changes of Fabrics After Automatic Home Laundering, (Machine Cycle 1, Wash Temperature V, Drying Procedure Ai) or dry-cleaning per Sections 9.2 and 9.3 of AATCC 158, Dimensional Changes on Dry-Cleaning in Perchloroethylene: Machine Method.

B.7.2 - Description of Test Method

The liquid moisture management properties of a textile are evaluated by placing a fabric specimen between two horizontal (upper and lower) electrical sensors each with seven concentric pins. A predetermined amount of test solution that aids the measurement of electrical conductivity changes are dropped onto the center of the upward-facing test specimen surface. The test solution is free to move in three directions: radial spreading on the top surface, movement through the specimen from top surface to the bottom surface, and radial spreading on the bottom surface of the specimen. During the test, changes in electrical resistance of specimen are measured and recorded. The electrical resistance readings are used to calculate fabric liquid moisture content changes that quantify dynamic liquid moisture transport behaviors in multiple directions of the specimen. The summary of the measured results are used to grade the liquid moisture management properties of a fabric by using predetermined indices.

B.7.3 - Application of Test Method

The purpose of this test is for the measurement, evaluation, and classification of liquid moisture management properties of textile fabrics. The test method produces objective measurements of liquid moisture management properties of knitted, woven, and nonwoven textile fabrics. The results obtained with this test method are based on water resistance, water repellency, and water absorption characteristics of the fabric structure, including the fabric's geometric and internal structure and the wicking characteristics of its fibers and yarns. The overall (liquid) moisture management capability (OMMC) is an index of the overall capability of a fabric to transport liquid moisture as calculated by combining three measured attributes of performance: the liquid moisture absorption rate on the bottom surface (ARB), the one-way liquid transport capability (R), and the maximum liquid moisture spreading speed on the bottom surface (SSB).

Statement of Problem and Substantiation for Public Comment

See PC #40
Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:12:38 EST 2012

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B.9 - Optional Air Permeability

B.9.1 - Test Method Cited
The test method appears in Section 8.13, ASTM D 737, Standard Test Method for Air Permeability of Textile Fabrics, is used. Conditioning is by laundering per AATCC 135, Dimensional Changes of Fabrics After Automatic Home Laundering, (Machine Cycle 1, Wash Temperature V, Drying Procedure Ai) or dry-cleaning per Sections 9.2 and 9.3 of AATCC 158, Dimensional Changes on Dry-Cleaning in Perchloroethylene: Machine Method.

B.9.2 - Description of Test Method
Material specimens are evaluated after 25 wash/dry cycles or dry-cleaning cycles, whichever practice is specified for the material. The material is placed in the test device, and the rate of airflow passing perpendicularly through a known area of fabric is measured. From the rate of airflow, air permeability is determined.

B.9.3 - Application of Test Method
This test is used to quantify the air permeability properties of the fabric.

Statement of Problem and Substantiation for Public Comment
See PC #40

Submitter Information Verification
Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 20:14:30 EST 2012

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Public Comment No. 53-NFPA 1975-2012 [Section No. C.1.2.1]

C.1.2.1 AATCC Publications.
American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

Statement of Problem and Substantiation for Public Comment
See PC #40

Submitter Information Verification
Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 19:13:22 EST 2012

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Public Comment No. 65-NFPA 1975-2012 [Section No. C.1.2.2]

C.1.2.2 ASTM Publications.

ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.


ASTM D 3940, Standard Test Method for Bursting Strength (Load) and Elongation of Sewn Seams of Knit or Woven Stretch Textile Fabrics, 1983 (withdrawn 1995).


Statement of Problem and Substantiation for Public Comment

See PC #40

Submitter Information Verification

Submitter Full Name: Jeremy Metz
Organization: West Metro Fire Rescue
Submittal Date: Wed Nov 14 20:15:18 EST 2012

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2.3.6 UL Publications.
Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

Statement of Problem and Substantiation for Public Input

Update referenced standards to most recent edition as indicated.

Submitter Information Verification

Submitter Full Name: John Bender
Organization: UL LLC
Submittal Date: Fri Dec 28 09:30:35 EST 2012

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Public Input No. 3-NFPA 1952-2013 [ New Section after 6.2.11 ]

Protection against chemical hazards

6A. Where dry suit claims protection against chemical hazards they shall have an environmental and pressure-proof closure by which the user is isolated from the surrounding contaminated environment with the exception of head and hands.

Statement of Problem and Substantiation for Public Input

Manufacturers are claiming protection against chemical hazards with no proof, these additions will limit that.

Submitter Information Verification

Submitter Full Name: James Murray
Organization: Fire Department City of New Yo
Submittal Date: Wed Jan 02 10:23:57 EST 2013

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Public Input No. 4-NFPA 1952-2013 [New Section after 7.2.19]

TITLE OF NEW CONTENT
7A Dry suits that claim protection against chemical hazards shall have dry suit materials and seams, dry suit bootie material and seams, and dry suit zippers tested for liquid permeation resistance after flexing and abrading as specified in section 8.A, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

(1) JP-8 (ASTM Oil #1)
(2) Sulfuric Acid (50%)
(3) Diesel/heating oil (ISO Liquid F)
(4) High Octane (ISO Liquid C)

Statement of Problem and Substantiation for Public Input
Manufacturers are claiming protection against chemical hazards with no proof, these additions will limit that.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: James Murray
Organization: Fire Department City of New Yo
Submittal Date: Wed Jan 02 10:34:46 EST 2013

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8.A.1. This test method shall apply to dry suit materials and seams, dry suit zippers and dry suit bootie materials and seams.
8.A.2 The following liquid chemicals shall be tested:
   (1) JP-8 (ASTM Oil #1)
   (2) Sulfuric Acid (50%)
   (3) Diesel/heating oil (ISO Liquid F)
   (4) High Octane (ISO Liquid C)
   Need to add testing procedures............

Statement of Problem and Substantiation for Public Input
Manufacturers are claiming protection against chemical hazards with no proof, these additions will limit that.

Related Public Inputs for This Document

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Submitter Information Verification
Submitter Full Name: James Murray
Organization: Fire Department City of New Yo
Submittal Date: Wed Jan 02 10:41:57 EST 2013

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Public Input No. 2-NFPA 1952-2012 [ Section No. D.1.2.5 ]

D.1.2.5 UL Publications.
Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

Statement of Problem and Substantiation for Public Input

Update referenced standards to most recent edition as indicated.

Submitter Information Verification

Submitter Full Name: John Bender
Organization: UL LLC
Submittal Date: Fri Dec 28 09:31:33 EST 2012

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4.1.1
The process of certification for surface contaminated water dive operations protective clothing and equipment as being compliant with NFPA 1952, 1953 shall meet the requirements of Section 4.1, General; Section 4.2, Certification Program; Section 4.3, Inspection and Testing; Section 4.4, Annual Verification of Product Compliance; Section 4.5, Manufacturer's Quality Assurance Program; Section 4.6, Hazards Involving Compliant Product; Section 4.7, Manufacturers' Investigation of Complaints and Returns; and Section 4.8, Manufacturers' Safety Alert and Product Recall Systems.
4.1.1 The process of certification for surface contaminated water operations, dive operations, protective clothing and equipment as being compliant with NFPA 1952, NFPA 1953 shall meet the requirements of Section 4.1, General; Section 4.2, Certification Program; Section 4.3, Inspection and Testing; Section 4.4, Annual Verification of Product Compliance; Section 4.5, Manufacturer's Quality Assurance Program; Section 4.6, Hazards Involving Compliant Product; Section 4.7, Manufacturers' Investigation of Complaints and Returns; and Section 4.8, Manufacturers' Safety Alert and Product Recall Systems.

Statement of Problem and Substantiation for Public Input

Correction- replaces surface water operations with contaminated water dive operations

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 13:34:57 EST 2012

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All compliant **surface** contaminated water **dive** operations protective clothing and equipment that is labeled as being compliant with this standard shall meet or exceed all applicable requirements specified in this standard and shall be certified.

**Statement of Problem and Substantiation for Public Input**
Correction- replaces surface water operations with contaminated water dive operations

**Submitter Information Verification**

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 13:37:24 EST 2012

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Public Input No. 11-NFPA 1953-2012 [ Section No. 4.3.9.4 ]

4.3.9.4
Where there are any accessories, enhancements, or both that are built into, or attachable to, or detachable from the surface contaminated water dive operations protective clothing and equipment, the certification organization shall inspect and evaluate the protective clothing and equipment as specified in Chapter 6 and shall test the protective clothing and equipment as specified in Chapter 8, and the protective clothing and equipment shall meet the performance requirements specified in Chapter 7 with those accessories and enhancements installed or attached.

Statement of Problem and Substantiation for Public Input

Correction- replaces surface water operations with contaminated water dive operations

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 13:39:30 EST 2012

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All products that are labeled as being compliant with this standard shall undergo recertification on an annual basis. This recertification shall include the following:

(1) Inspection and evaluation to all design requirements as required by the standard on all manufacturer models and components

(2) Testing to all performance requirements as specified in Table 4.4.1 on all manufacturer models and components within the following protocol:

(a) Where a test method incorporates testing both before and after the laundering preconditioning specified in 8.1.3 and the test generates quantitative results, recertification testing shall be limited to the conditioning that yielded the worst-case test result during the initial certification for the model or component.

(b) Where a test method incorporates testing both before and after laundering preconditioning specified in 8.1.3 and the test generates nonquantitative results, recertifications shall be limited to a single conditioning procedure in any given year. Subsequent annual recertification shall cycle through the remaining conditioning procedure to ensure that all required conditionings are included over time.

(c) Where a test method requires the testing of three specimens, a minimum of one specimen shall be tested for annual certification.

(d) Where a test method requires the testing of five or more specimens, a minimum of two specimens shall be tested for annual certification.

Table 4.4.1 Recertification Schedule

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<th>Product</th>
<th>Test</th>
<th>Frequency</th>
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<td>Labels</td>
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<td>Corrosion Resistance</td>
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<td>T B D</td>
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<tr>
<td>Dry Suit Material</td>
<td>Puncture Propagation Tear Resistance Test</td>
<td>Initial certification only</td>
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<td>Cut Resistance Test</td>
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Additional Proposed Changes

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Statement of Problem and Substantiation for Public Input

The design requirements specify a watertight connection between the hood and breathing system and the suit and glove. It then follows that the connection should be tested. As this is a potential weak point in the system, it should get the same type of testing as all the other suit components.
Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 13:42:21 EST 2012

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2. Testing to all performance requirements as specified in Table 4.4.1 on all manufacturer models and components within the following protocol:
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   b. Where a test method incorporates testing both before and after laundering preconditioning specified in 8.1.3 and the test generates nonquantitative results, recertifications shall be limited to a single conditioning procedure in any given year. Subsequent annual recertification shall cycle through the remaining conditioning procedure to ensure that all required conditionings are included over time.
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Table 4.4.1 Recertification Schedule

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<th>Test</th>
<th>Frequency</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<td>B</td>
<td>D</td>
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**Statement of Problem and Substantiation for Public Input**

**Typo**

**Submitter Information Verification**

Submitter Full Name: Garrick Herbert  
Organization: New Braunfels Fire Department  
Submittal Date: Thu Jan 03 17:11:21 EST 2013

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If applicable, following statement shall be printed legibly on the product label.
“THIS CONTAMINATED WATER DIVING OPERATIONS PROTECTIVE ENSEMBLE ALSO MEETS THE OPTIONAL CBRN PROTECTION REQUIREMENTS OF NFPA 1953.”

Statement of Problem and Substantiation for Public Input

For some applications and some scenarios of use there may be a need for contaminated water diving ensembles to provide some degree of protection against e.g. biological or chemical warfare agents or similar. This is one of a series of proposals intended to add (a placeholder for) a CBRN protection option to this document.

Submitter Information Verification

Submitter Full Name: Ulf Nystrom
Organization: Ansell Protective Solutions AB
Submittal Date: Fri Jan 04 09:27:41 EST 2013

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Public Input No. 14-NFPA 1953-2012 [Sections 5.2.4, 5.2.5]

Sections 5.2.4, 5.2.5

5.2.4*
The item manufacturer shall provide instructions and information regarding at least the following with each item:

(1) Pre-use information, including the following:
   (a) Safety considerations
   (b) Limitations of use
   (c) Marking recommendations and restrictions
   (d) A statement that most performance properties of the item cannot be tested by the user in the field
   (e) Closure lubricants, if applicable
   (f) Warranty information

(2) Preparation for use, including the following:
   (a) Sizing/adjustment
   (b) Recommended storage practices

(3) Inspection, including inspection frequency and details

(4) Don/doff, including the following:
   (a) Donning and doffing procedures
   (b) Sizing and adjustment procedures
   (c) Interface issues

(5) Use, including proper use consistent with national/federal, state/provincial, and local jurisdiction laws/ordinances.

(6) For contaminated water dive operations, use consistent with NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents.

(7) For fire departments, use consistent with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

(8) Maintenance and cleaning, including the following:
   (a) Cleaning instructions and precautions with a statement advising users not to use suits that are not thoroughly cleaned and dried
   (b) Inspection details
   (c) Maintenance criteria and methods of repair where applicable
   (d) Decontamination procedures for both chemical and biological contamination

(9) Retirement and disposal, including criteria and considerations

(10) Technical data
   (a) All data required to show compliance with this standard
   (b) Any chemical test data voluntarily made available by the manufacturer in addition to the requirements of this standard

5.2.5
The manufacturer shall provide the results from the Exhaust Valve Chemical Permeation Resistance Test. The results shall be reported in a prominent position.

Statement of Problem and Substantiation for Public Input
Why is there a separate mention of the exhaust valve from the other tests? Is there some reason to highlight it?

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 14:01:20 EST 2012

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6.1.5
Hood for use with a full-face mask may be an integral part of the suit body or attached by a separate mechanical means. Where hoods are provided, the hood shall provide protection to at least the head and neck. The hood must provide a means for sealing the mask to the hood in the area of the diver's head.

Statement of Problem and Substantiation for Public Input

I would imagine all design requirements need to be testable or at least verifiable. How is a traditional hood/mask interface testable? Only a mechanical attachment is testable.

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 14:04:37 EST 2012

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6.1.6a
When the system is certified to Level One Chemical Permeation, the breathing system must be attached to
the suit by a mechanical attachment that is also tested for Chemical Permeation and Viral Penetration.

Statement of Problem and Substantiation for Public Input

I would imagine all design requirements need to be testable or at least verifiable. How is a traditional hood/mask
interface testable? We need a mechanical attachment if it is to be tested. As most dive teams now use a full face
mask in the typical contamination levels they see, I do not think a mechanical connection is needed for that.
However, at the higher levels we would need something more reliable and testable. Leakage around the breathing
system in extreme contamination would have serious consequences.

Submitter Information Verification

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Organization: DIVING UNLIMITED INTL
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6.1.9
Protective dry suits shall be designed to accommodate gloves, which shall be permitted to be a permanently attached item or a detachable item of the dry suits. The attachment method will also be subject to chemical permeation and viral penetration testing.

Statement of Problem and Substantiation for Public Input

I would imagine all design requirements need to be testable or at least verifiable. As the attachment can be a weak point in the system, this should be tested as well.

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 14:13:12 EST 2012

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Public Input No. 18-NFPA 1953-2012 [ Section No. 6.1.15 [Excluding any Sub-Sections] ]

Statement of Problem and Substantiation for Public Input

Some suits may not use an exhaust valve in order to eliminate a weak point for serious contamination. These suits would not be able to go very deep but may be useable.

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 14:15:30 EST 2012

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The dry suit is equipped with an exhaust valve. The exhaust valve shall be mounted on the left arm to facilitate the venting of excess air in the dry suit.

Statement of Problem and Substantiation for Public Input

Some suits may not use an exhaust valve in order to eliminate a weak point for serious contamination. These suits would not be able to go very deep but may be useable.

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 14:17:44 EST 2012

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7.1.1 Protective dry suits including dry suit gloves and hoods shall be tested for air penetration resistance as specified in Section 8.2, Air Retention Test, and shall not show any sign of leakage.

Statement of Problem and Substantiation for Public Input

Using only one 'level' of protection instead of several drives the costs of the suits to a level that in many cases is not required; just like there are Levels A, B, C and D for OSHA why not have a specific 'level' for dive suits and to differentiate it from PPE let's call it Drysuit Type 1, 2, 3 & 4 with Type 1 being the highest level of protection and type 4 being the 'everyday' dry suit.

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 19:02:09 EST 2012

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7.1.2

Exhaust valves shall be tested for chemical permeation as specified in Section 8.3, Exhaust Valve Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of one hour or less for the following list of industrial chemicals:

**Note:**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA and others in the public safety diving field, I would recommend the following concentrations for the two levels:

**Level One**
- JP-8 (ASTM Oil #1) 100%
- Sulfuric Acid (50%) 30% *(maximum concentration of pure battery acid is 30%)*
- Diesel/heating oil (ISO Liquid F) 100%
- High Octane Fuel (ISO Liquid C) 100%
- TBT 15% *(Maximum concentration of TBT (50%))*
- NaOH (50%)
- Isopropanol (100%) *in bottom paint is 15.6%*

**Level Two**
- JP-8 (ASTM oil #1) maximum solubility in water
- Sulfuric Acid 10%
- Diesel/heating oil (ISO Liquid F) maximum solubility in water
- High Octane Fuel (ISO Liquid C) maximum solubility in water
- TBT 1.5%
- NaOH 10%
- Isopropanol 10%

**Statement of Problem and Substantiation for Public Input**

This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA and others in the public safety diving field, I would recommend the following concentrations for the two levels:

Sulfuric Acid 30% *(maximum concentration of pure battery acid is 30%)*
Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 15:57:31 EST 2012

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Public Input No. 39-NFPA 1953-2012 [ Section No. 7.1.2 ]

7.1.2
Exhaust valves shall be tested for chemical permeation as specified in Section 8.3, Exhaust Valve Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of one hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30% )
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50%)

Statement of Problem and Substantiation for Public Input

See comments in 7.1.7

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 19:06:10 EST 2012

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7.1.7

Protective dry suit materials and seams, dry suit bootie material and seams, and dry suit hood materials and seams shall be tested for liquid permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

Note:

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

<table>
<thead>
<tr>
<th>Level One</th>
<th>Level Two</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil</strong></td>
<td><strong>Oil</strong></td>
</tr>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>Sulfuric Acid (30%)</td>
<td>10%</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>TBT (15%)</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Acid</strong></td>
<td><strong>Acid</strong></td>
</tr>
<tr>
<td>Sulfuric Acid (30%, maximum concentration of pure battery acid is 30%)</td>
<td>10%</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>TBT (15%)</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>ISO</strong></td>
<td><strong>ISO</strong></td>
</tr>
<tr>
<td>ISO Liquid C (100%)</td>
<td>10%</td>
</tr>
<tr>
<td>TBT (15%)</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>NaOH</strong></td>
<td><strong>NaOH</strong></td>
</tr>
<tr>
<td>NaOH (25%, maximum concentration of sodium hydroxide in liquid form)</td>
<td>10%</td>
</tr>
<tr>
<td>Isopropanol (70%, maximum concentration of commercially common solution)</td>
<td>10%</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:
<table>
<thead>
<tr>
<th>Substance</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>100%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>30% (maximum concentration of pure battery acid is 30%)</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>100%</td>
</tr>
<tr>
<td>TBT</td>
<td>15% (Maximum concentration of TBT in bottom paint is 15.6%)</td>
</tr>
<tr>
<td>NaOH</td>
<td>25% (maximum concentration of sodium hydroxide in liquid form)</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>70% (maximum concentration of commercially common solution)</td>
</tr>
</tbody>
</table>

**Submitter Information Verification**

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 16:02:12 EST 2012

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Public Input No. 32-NFPA 1953-2012 [Section No. 7.1.7]

7.1.7
Protective dry suit materials and seams, dry suit bootie material and seams, and dry suit hood materials and seams shall be tested for liquid permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30%)
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50%)

Statement of Problem and Substantiation for Public Input

Finding 50% Sulfuric acid and diving in it would be an unlikely event in which a contaminated diver would expose himself/herself to.

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Affiliation: None
Submittal Date: Mon Dec 31 17:06:55 EST 2012

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7.1.7
Protective dry suit materials and seams, dry suit bootie material and seams, and dry suit hood materials and seams shall be tested for liquid permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30%)
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50%)

Statement of Problem and Substantiation for Public Input

Would not be diving in a 100% solution of Isopropanol; flash point is 53-55 degrees F. What is the water temperature? The other issue is that it has a flammable limit between 2% to 12.7% which would likely be what you'd find at the surface when you are exiting or entering the contaminated water from this type of incident.

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 17:17:40 EST 2012

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The mechanical interface between the hood and breathing system shall be tested for liquid permeation resistance Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

Note: All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

**Level One**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Level One</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM Oil #1)</td>
<td>100%</td>
</tr>
<tr>
<td>Sulfuric Acid (50%)</td>
<td>30%</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>100%</td>
</tr>
<tr>
<td>TBT (50%)</td>
<td>15%</td>
</tr>
<tr>
<td>NaOH (50%)</td>
<td>25%</td>
</tr>
<tr>
<td>Isopropanol (100%)</td>
<td>70%</td>
</tr>
</tbody>
</table>

**Level Two**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Level Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>10%</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>TBT</td>
<td>1.5%</td>
</tr>
<tr>
<td>NaOH</td>
<td>10%</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>10%</td>
</tr>
</tbody>
</table>

Statement of Problem and Substantiation for Public Input

See earlier comments regarding the importance of testing all components.

Submitter Information Verification

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7.1.15

Zippers shall be tested for permeation resistance as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

**Note:**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

**Level One**

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM Oil #1)</td>
<td>100%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>30% (maximum concentration of pure battery acid is 30%)</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>100%</td>
</tr>
<tr>
<td>TBT (50%)</td>
<td>15% (Maximum concentration of TBT)</td>
</tr>
</tbody>
</table>

**Level Two**

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>10%</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>maximum solubility in water</td>
</tr>
<tr>
<td>TBT</td>
<td>1.5%</td>
</tr>
<tr>
<td>NaOH</td>
<td>10%</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>10%</td>
</tr>
</tbody>
</table>

---

**Statement of Problem and Substantiation for Public Input**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:
<table>
<thead>
<tr>
<th>Level One</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
</tr>
<tr>
<td>TBT</td>
</tr>
<tr>
<td>NaOH</td>
</tr>
<tr>
<td>Isopropanol</td>
</tr>
</tbody>
</table>

**Submitter Information Verification**

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 16:04:24 EST 2012

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Public Input No. 43-NFPA 1953-2013 [New Section after 7.1.18]

Contaminated Water Diving Operations Protective Dry Suit Optional CBRN Protection Performance Requirements

[Insert wording of clauses 7.1.2.1 and 7.1.2.7 of NFPA 1994.]

Statement of Problem and Substantiation for Public Input

For some applications and some scenarios of use there may be a need for contaminated water diving ensembles to provide some degree of protection against e.g. biological or chemical warfare agents or similar. This is one of a series of proposals intended to add (a placeholder for) a CBRN protection option to this document.

Related Public Inputs for This Document

<table>
<thead>
<tr>
<th>Related Input</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Input No. 42-NFPA 1953-2013 [New Section after 5.1.8]</td>
<td>CBRN option</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: Ulf Nystrom
Organization: Ansell Protective Solutions AB
Submittal Date: Fri Jan 04 09:55:23 EST 2013

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7.2.6

Protective dry suit glove materials and seams shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

Note:

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

Level One

JP-8 (ASTM Oil #1) 100%

Sulfuric Acid (50%) 30% (maximum concentration of pure battery acid is 30%?)

Diesel/heating oil (ISO Liquid F) 100%

High Octane Fuel (ISO Liquid C) 100%

TBT 15% (Maximum concentration of TBT in bottom paint is 15.6%)

NaOH 25% (maximum concentration of sodium hydroxide in liquid form)

Isopropanol 70% (maximum concentration of commercially common solution)

Level Two

JP-8 (ASTM oil #1) maximum solubility in water

Sulfuric Acid 10%

Diesel/heating oil (ISO Liquid F) maximum solubility in water

High Octane Fuel (ISO Liquid C) maximum solubility in water

TBT 1.5%

NaOH 10%

Isopropanol 10%

Statement of Problem and Substantiation for Public Input

All components should be tested to the two different levels of chemical concentrations (see above) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:
### Level One

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<th>Percentage</th>
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</tr>
<tr>
<td>Sulfuric Acid</td>
<td>30% (maximum concentration of pure battery acid is 30%)</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>100%</td>
</tr>
<tr>
<td>TBT</td>
<td>15% (Maximum concentration of TBT in bottom paint is 15.6%)</td>
</tr>
<tr>
<td>NaOH</td>
<td>25% (maximum concentration of sodium hydroxide in liquid form)</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>70% (maximum concentration of commercially common solution)</td>
</tr>
</tbody>
</table>

### Submitter Information Verification

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 16:05:47 EST 2012

---

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7.2.6
Protective dry suit glove materials and seams shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30% )
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50% )

Statement of Problem and Substantiation for Public Input
See comments in 7.1.7

Submitter Information Verification
Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 19:09:04 EST 2012

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**Dry Suit and Dry Glove Connection**

Protective dry suit glove and dry suit interfaces shall be tested for permeation resistance as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

**Note:**

*It only makes sense that the connection of the suit to the glove is tested as well. These connections represent potential weak points. That is particularly true at the types of concentrations in Level One.*

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

**Level One**

- JP-8 (ASTM oil #1) 100%
- Sulfuric Acid 30% *(maximum concentration of pure battery acid is 30%)*
- Diesel/heating oil (ISO Liquid F) 100%
- High Octane Fuel (ISO Liquid C) 100%
- TBT 15% *(Maximum concentration of TBT in bottom paint is 15.6%)*
- NaOH 25% *(maximum concentration of sodium hydroxide in liquid form)*
- Isopropanol 70% *(maximum concentration of commercially common solution)*

**Level Two**

- JP-8 (ASTM oil #1) maximum solubility in water
- Sulfuric Acid 10%
- Diesel/heating oil (ISO Liquid F) maximum solubility in water
- High Octane Fuel (ISO Liquid C) maximum solubility in water
- TBT 1.5%
- NaOH 10%
- Isopropanol 10%

**Statement of Problem and Substantiation for Public Input**

It only makes sense that the connection of the suit to the glove is tested as well. These connections represent potential weak points. That is particularly true at the types of concentrations in Level One.

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

**Submitter Information Verification**

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 16:11:36 EST 2012
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Contaminated Water Diving Operations Protective Dry Suit Glove Elements Optional CBRN Protection Performance Requirements

[Insert wording of clauses 7.1.3.2 and 7.1.3.7 of NFPA 1994.]

Statement of Problem and Substantiation for Public Input

For some applications and some scenarios of use there may be a need for contaminated water diving ensembles to provide some degree of protection against e.g. biological or chemical warfare agents or similar. This is one of a series of proposals intended to add (a placeholder for) a CBRN protection option to this document.

Related Public Inputs for This Document

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<td>Public Input No. 42-NFPA 1953-2013 [New Section after 5.1.8]</td>
<td>CBRN option</td>
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Submitter Information Verification

Submitter Full Name: Ulf Nystrom
Organization: Ansell Protective Solutions AB
Submittal Date: Fri Jan 04 10:10:25 EST 2013

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### 7.3.1.7

Protective attached dry suit boot materials and seams shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

**Note:**

*All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:*

- **Level One**
  - JP-8 (ASTM Oil #1) 100%
  - Sulfuric Acid 30%
  - Diesel/heating oil (ISO Liquid F) 100%
  - High Octane Fuel (ISO Liquid C) 100%
  - TBT 15%

- **Level Two**
  - JP-8 (ASTM oil #1) maximum solubility in water
  - Sulfuric Acid 10%
  - Diesel/heating oil (ISO Liquid F) maximum solubility in water
  - High Octane Fuel (ISO Liquid C) maximum solubility in water
  - TBT 1.5%
  - NaOH 10%
  - Isopropanol 10%

### Statement of Problem and Substantiation for Public Input

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:
Level One

JP-8 (ASTM oil #1) 100%
Sulfuric Acid 30% (maximum concentration of pure battery acid is 30%)
Diesel/heating oil (ISO Liquid F) 100%
High Octane Fuel (ISO Liquid C) 100%
TBT 15% (Maximum concentration of TBT in bottom paint is 15.6%)
NaOH 25% (maximum concentration of sodium hydroxide in liquid form)
Isopropanol 70% (maximum concentration of commercially common solution)

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 16:06:53 EST 2012

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Public Input No. 25-NFPA 1953-2012 [ Section No. 7.3.1.9 ]

7.3.1.9
Footwear materials shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

*Note: All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:*

**Level One**
- JP-8 (ASTM Oil #1) 100%
- Sulfuric Acid (50%) 30% (maximum concentration of pure battery acid is 30%?)
- Diesel/heating oil (ISO Liquid F) 100%
- High Octane Fuel (ISO Liquid C) 100%
- TBT 15% (Maximum concentration of TBT (50%))
- NaOH (50%) 25% (maximum concentration of sodium hydroxide in liquid form)
- Isopropanol (100%) 70% (maximum concentration of commercially common solution)

**Level Two**
- JP-8 (ASTM oil #1) maximum solubility in water
- Sulfuric Acid 10%
- Diesel/heating oil (ISO Liquid F) maximum solubility in water
- High Octane Fuel (ISO Liquid C) maximum solubility in water
- TBT 1.5%
- NaOH 10%
- Isopropanol 10%

**Statement of Problem and Substantiation for Public Input**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I
would recommend the following concentrations for the two levels:

Level One

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>100%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>30% (maximum concentration of pure battery acid is 30%)</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
<tr>
<td>High Octane Fuel (ISO Liquid C)</td>
<td>100%</td>
</tr>
<tr>
<td>TBT</td>
<td>15% (Maximum concentration of TBT in bottom paint is 15.6%)</td>
</tr>
<tr>
<td>NaOH</td>
<td>25% (maximum concentration of sodium hydroxide in liquid form)</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>70% (maximum concentration of commercially common solution)</td>
</tr>
</tbody>
</table>

Submitter Information Verification

Submitter Full Name: FAITH ORTINS

Organization: DIVING UNLIMITED INTL

Submittal Date: Thu Dec 13 16:08:35 EST 2012

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7.3.1.9
Footwear materials shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30%)
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50%)

Statement of Problem and Substantiation for Public Input
See Comment 7.1.6

Submitter Information Verification
Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 17:31:53 EST 2012

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7.3.2.9

If the bootie material is different from the suit material, it shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

**Note:**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs.

After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:

**Level One**

- **JP-8 (ASTM Oil #1)**
  
  100%

- **Sulfuric Acid (50%)**

  30% (maximum concentration of pure battery acid is 30%)

- **Diesel/heating oil (ISO Liquid F)***

  100%

- **High Octane Fuel (ISO Liquid C)**

  100%

- **TBT (50%)**

  15% (Maximum concentration of TBT)

- **NaOH (50%)**

- **Isopropanol (100%)**

  in bottom paint is 15.6%

  25% (maximum concentration of sodium hydroxide in liquid form)

  70% (maximum concentration of commercially common solution)

**Level Two**

- **JP-8 (ASTM oil #1)** maximum solubility in water

- **Sulfuric Acid**

  10%

- **Diesel/heating oil (ISO Liquid F)** maximum solubility in water

- **High Octane Fuel (ISO Liquid C)** maximum solubility in water

  1.5%

- **NaOH**

  10%

- **Isopropanol**

  10%

---

**Statement of Problem and Substantiation for Public Input**

All components should be tested to the two different levels of chemical concentrations (see below) which are designated Level One and Level Two. Ensembles may be approved for one or both of these levels. This will allow dive teams who only operate in minimal levels of contamination to have greater options in their equipment choices that may better meet their operational and budget needs. After discussing this topic with experts in the EPA, I would recommend the following concentrations for the two levels:
<table>
<thead>
<tr>
<th>Level One</th>
<th></th>
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<tbody>
<tr>
<td>JP-8 (ASTM oil #1)</td>
<td>100%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>30% (maximum concentration of pure battery acid is 30%)</td>
</tr>
<tr>
<td>Diesel/heating oil (ISO Liquid F)</td>
<td>100%</td>
</tr>
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<td>Isopropanol</td>
<td>70% (maximum concentration of commercially common solution)</td>
</tr>
</tbody>
</table>

**Submitter Information Verification**

**Submitter Full Name:** FAITH ORTINS  
**Organization:** DIVING UNLIMITED INTL  
**Submittal Date:** Thu Dec 13 16:10:05 EST 2012

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7.3.2.9
If the bootie material is different from the suit material, it shall be tested for permeation resistance after flexing and abrading as specified in section 8.8, Chemical Permeation Resistance Test, and shall not exhibit a breakthrough detection time of 1 hour or less for the following list of industrial chemicals:

1. JP-8 (ASTM Oil #1)
2. Sulfuric Acid (50% 30%)
3. Diesel/heating oil (ISO Liquid F)
4. High Octane (ISO Liquid C)
5. TBT (50%)
6. NaOH (50%)
7. Isopropanol (100% 50%)

Statement of Problem and Substantiation for Public Input

See Comment 7.1.6

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 17:30:12 EST 2012

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Public Input No. 45-NFPA 1953-2013 [New Section after 7.3.2.11]

Contaminated Water Diving Operations Protective Dry Suit Footwear Elements Optional CBRN Protection Performance Requirements

[Insert wording of clauses 7.1.4.2 and 7.1.4.7 of NFPA 1994.]

Statement of Problem and Substantiation for Public Input

For some applications and some scenarios of use there may be a need for contaminated water diving ensembles to provide some degree of protection against e.g. biological or chemical warfare agents or similar. This is one of a series of proposals intended to add (a placeholder for) a CBRN protection option to this document.

Related Public Inputs for This Document

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Submitter Information Verification

Submitter Full Name: Ulf Nystrom
Organization: Ansell Protective Solutions AB
Submittal Date: Fri Jan 04 10:15:55 EST 2013

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8.1.2.2
Samples shall be tested within 30-60 minutes after removal from conditioning.

Statement of Problem and Substantiation for Public Input

Suits are not normally donned immediately after removal from storage and it's entry effected that quickly into the contaminated water.

Submitter Information Verification

Submitter Full Name: Howard Beardsley
Organization: SRC
Submittal Date: Mon Dec 31 17:37:00 EST 2012

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Public Input No. 46-NFPA 1953-2013 [New Section after 8.8.11.1]

Specific Requirements For Testing of Chemical Warfare Agents
[Insert wording from clause 8.7 of NFPA 1994, as applicable.]

Statement of Problem and Substantiation for Public Input

For some applications and some scenarios of use there may be a need for contaminated water diving ensembles to provide some degree of protection against e.g. biological or chemical warfare agents or similar. This is one of a series of proposals intended to add (a placeholder for) a CBRN protection option to this document.

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<tr>
<td>Public Input No. 45-NFPA 1953-2013 [New Section after 7.3.2.11]</td>
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Submitter Information Verification

Submitter Full Name: Ulf Nystrom
Organization: Ansell Protective Solutions AB
Submittal Date: Fri Jan 04 10:33:28 EST 2013

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A.1.2.2

The testing requirements in Chapter 8 of this standard are not intended to establish the limitations of the working environment for surface contaminated water dive operations, but are intended to establish material performance. Users should be advised that if unusual conditions prevail, or if there are signs of abuse or mutilation of the protective clothing and equipment or components thereof, or if modifications or replacements are made or accessories are added without authorization of the protective item manufacturer, the margin of protection could be reduced. Users should be advised that the protective properties in new surface contaminated water dive operations protective clothing and equipment, as required by this standard, can diminish as the product is worn and ages.

Statement of Problem and Substantiation for Public Input

Replaces surface water with contaminated water

Submitter Information Verification

Submitter Full Name: FAITH ORTINS
Organization: DIVING UNLIMITED INTL
Submittal Date: Thu Dec 13 16:32:55 EST 2012

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