



TECH SERVICES DOCUMENT

Shelf Life on Frontline® Chemical Garments

Rev. (01-22)

Shelf life is typically quoted for products or materials which contain components that are expected to degrade and/or lose their performance effectiveness after a period of time. Kappler is not aware of an accepted industry standard for determining shelf life of chemical barrier fabrics.

Under proper storage conditions, stored away from direct sunlight, preferably in a cool, dry location that is not subjected to extreme hot or cold conditions, there is no evidence to indicate the Zytron® film composite fabrics lose their protective characteristics or physical properties over time. This conclusion is based on the naturally aged Zytron® fabric over the last twenty years. Twenty year old Zytron® 500 has been tested against the ASTM F1001 list of twenty one chemicals with no breakthrough in >480 minutes. Aged fabric has also been tested for physical properties and still meets manufacturing specifications.

Kappler performs shelf life determinations on garment fabrics, seams and other components to support market claims. The samples selected for testing are typically a combination of those subjected to natural aging and accelerated aging. Samples are tested for chemical and physical properties specified in the applicable NFPA standard. A limited number of chemicals are evaluated. The following guidance is used for reference.

ASTM F1980 - 16

Standard Guide for Accelerated Aging of Sterile Barrier Systems for Medical Devices

DLAR (JP) 4155.37

DoD Shelf Life Material Quality Control Storage Standards

Based on this information, Kappler considers the shelf life of Frontline® products to be undetermined. However, for 1991 certification purposes a shelf life of twenty years is claimed based on the testing results.

Chemical suits contain components made from various polymer or rubber materials for which there is no specific shelf life data currently available. The garments may therefore be used as long as they are deemed safe after a visual inspection, and, in the case of vapor protective (Level A) garments, after passing the ASTM F1052 pressure test. It is recommended that downgrading suits to



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"Training Use Only" be considered when they no longer pass the visual inspection and/or pressure test.

It is the responsibility of the wearer to ensure that all components, including fabric, valves, visors, gloves, zippers, seams, and suit-to component interfaces are in good working condition, and provide adequate protection for the operation and chemicals to be encountered. Any suit which does not pass the visual and/or pressure test, should be immediately removed from service.

Frontline garments are designed for escape only in the event of a chemical flash fire.

Warning: This information is based on technical data that Kappler believes to be reliable. It is subject to revision as additional knowledge and experience are gained. The website will contain Kappler's most up to date product information, and customers who receive pamphlets, brochures or other literature should be aware that such "hard copy" information may not be as current as the information on Kappler's website. Customers should also recognize that there are uses, environments and chemicals for which Kappler products, garments and/or fabrics are unsuitable. It is the responsibility of the user to review available data and verify that the product, garment and/or fabric is appropriate for the intended use and meets all specified government and/or industry standards. Also, the customer should review all available information on the website to understand the uses- and limitations- on ALL products, garments and fabrics which Kappler makes available.

CAUTION: Do not use for fire protection. Avoid open flame or intense heat.

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