

LONGEVITY AND LONG TERM FLAME PERFORMANCE OF RUBB MEMBRANE CLADDING

INTRODUCTION

High quality PVC coated polyester fabric materials are viable construction materials which offer excellent long term durability. Rubb Building Systems, a 15 year U.S. manufacturer of PVC clad structures, uses fabric suppliers from two primary suppliers, Protan A/S in Norway and Seaman Corporation of Wooster, Ohio.

Protan materials have been used on Rubb projects for approximately 30 years with the oldest structures manufactured by Rubb's sister companies in Norway and the United Kingdom. Rubb structures in England are still in service with original cladding dating back 22 years.

A 1990 AMTAC testing labs report involves 15 year old PVC which was tested for both physical tear and tensile strength and for flame resistance. As shown in the report, this 15 year old material passed all flame tests. In addition, tensile strength results were directly comparable for the 15 year material and brand new material. For the tear strength readings, the older materials exhibited somewhat lower results. It should also be noted that the structure these samples were taken from was erected in 1975 and continues in use today now some 23 years later. In addition, newer fabrics typically incorporate newer and improved raw materials. Therefore, these materials should out perform their predecessors.

Rubb's U.S. manufacturer, Seaman Corporation, has also performed long term testing on architectural fabrics. A test of quality 8028 fabric revealed that the material retained approximately 95% of the strength of new fabric after a period of 18 years of use. Seaman has substantial experience in architectural fabrics and also manufactures single ply roofing under the trade name Fiber-Tite®. Seaman offers a ten year pro rata warranty on the 8028 and expects it to last much longer than this in most environments. Seaman material has been tested for long term flame resistance in the same manner as Protan. 8 year old Seaman quality 8028 has been tested and met NFPA 701 flame resistance requirements. In addition, Rubb has tested four year old Seaman material at the request of United Airlines. In this test, the fabrics flame resistance also was shown to retain required flame characteristics.

LONGEVITY AND LONG TERM FLAME PERFORMANCE

Long term resistance to weathering is typically measured by accelerated weathering resistance tests such as ASTM G26. A test report for Seaman 8028 show that the material held up well to over 8,000 hours of weathering in a Xenon Arc Weather-O-Meter. It should also be noted that the UBC 55-1 flame resistance tests require accelerated weathering to be conducted prior to flame testing. The Seaman and Protan materials pass these tests.

This excellent long term flame resistance is to be expected given the physical characteristics of the PVC fabric and the mineral based flame retardant compounds present in the PVC coating. The flame retardant compounds such as antimony trioxide and alumina trihydrate are incorporated into the PVC coating and are not extractable from it. Since the plasticizers in PVC will gradually migrate out of the fabric over the fabrics useful life, the actual percentage of flame resistant compounds to PVC actually increases slightly over time. Therefore the flame resistance of the PVC coated polyester fabric theoretically improves as it ages.

The primary enemy of PVC coated polyester fabrics is UV light. High quality materials manufacturers such as Protan and Seaman have demonstrated experience in properly compounding fabrics to allow for twenty year plus life expectancy. The same is not true for some other coated products and many laminated products which are many times lower cost and which are engineered for shorter life spans.

Real life data provides very good evidence that Rubb supplied PVC membranes offer lifetimes which are comparable to other roofing system types. In addition, Rubb can demonstrate that membrane replacement costs are very competitive and economical when compared to alternatives. Most importantly, PVC coated polyester fabrics retain their flame resistant characteristics throughout their useful lifetimes. This flame resistant capability is not degraded or reduced by the effects of weathering, washing or exposure to UV light.

LONGEVITY AND LONG TERM FLAME PERFORMANCE OF RUBB MEMBRANE CLADDING

For additional information, industry references or for a copy of a Rubb video report that details the full scale Factory Mutual fire testing of a Rubb building.

*Rubb Buildings
P.O. Box 711
Sanford, Maine 04073
Tel: 207-324-2877
Fax: 207-324-2347*

Referenced Reports and Letters:

- v UBC 55-1 Test - Seaman Fabric
- v Seaman letter of June 26, 1996 on long term flame performance
- v Seaman 8028 accelerated weathering test
- v Seaman brochure showing long term physical strength testing
- v Rubb letter and test report to United Airlines on long term performance of Seaman fabric in use on a Rubb hangar in Boston
- v Seaman article on fire performance
- v California State Fire Marshall's certificate on Seaman material supplied to Rubb
- v 1997 Letter to Rubb Inc. (U.S.) from Rubb Building Systems (U.K.) with information on twenty plus year old structures in use with original PVC cladding in Great Britain
- v AMTAC test report on 15 year old fabric showing that the material retains flame resistance and good physical strength characteristics after 15 years of exposure

Rubb Inc.
April 1998