TECHNICAL BULLETIN: 2002.02

Hydrolysis of OMNOVA Solutions Polyurethane Fabrics

Subject:

Hydrolysis of OMNOVA Polyurethane Coated Fabrics

Designs this bulletin pertains to:

- **Boltaflex**® *Antigua*
- **Boltaflex** *Avalon*
- **Boltaflex** *Cabo*
- **Boltaflex** *Serengeti*
- **Boltaflex** *SuperSoft*™

Summary:

OMNOVA Solutions manufactures a variety of polyurethane-coated fabrics used in a range of indoor environments including healthcare and hospitality applications. These performance fabrics need to be durable and withstand exposure to body heat and moisture, resisting damage to the upholstery finish or delamination. OMNOVA's polyurethane fabric designs have been specifically engineered to not delaminate due to hydrolysis related failures in indoor environments.

Hydrolysis:

Hydrolysis is a chemical change resulting from a reaction with water or one of its components. In coated fabric upholstery applications, hydrolysis can cause a faux leather surface to lose surface integrity or delaminate from its textile backing. This can be caused by a person's body heat and moisture after sitting on the upholstered surface for an extended period of time.

OMNOVA Solutions has tested the above designs against the industry standard and the requirements set forth in ASTM D3690 02 (2009) – Standard Performance Specification for Vinyl-Coated and Urethane-Coated Upholstery Fabrics-Indoor. This specification sets performance requirements for vinyl-coated and polyurethane-coated upholstery fabrics produced with woven, knit or nonwoven substrates which are used in the manufacture of new indoor furniture. This performance specification is not applicable to fabrics used in porch, deck or lawn furniture.

The referenced OMNOVA fabric designs meet Grade A performance requirements set in ASTM D3690 02 (2009), which specifies performance requirement grade levels including breaking strength, tack tear, coating adhesion, colorfastness to cracking and blocking as well as requirements for hydrolytic stability - adhesion, surface abrasion and resistance to flexing. The Grade A requirements are excerpted from ASTM D3690 02 (2009) and summarized in the table on the reverse side:

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Performance Requirements ASTM D3690 02 (2009)

Property (MD x CD)	Grade A
Breaking strength (ft-lb)	55 x 55
Tongue tear strength (ft-lb)	6 x 5
Tack tear strength (ft-lb)	30 x 30
Adhesion (ft-lb / in)	3.0
Taber abrasion	No appreciable color change @ 200 cycles
Resistance to flexing	No cracking or delamination @ 15,000 cycles
Blocking @ elevated temperature	Rating 2, no blocking; coating adheres slightly
Crack resistance @ low temperature	No cracking @ -10 ± 1 °F (-23 ± 0.5 °C)
Colorfastness to crocking DRY and WET	Grade 4.0 min
Colorfastness to xenon light	Step 4 min
Loss of plasticizer	10% max
Hydrolytic stability*	
Adhesion	Must maintain 75% of original strength
Surface abrasion (oscillatory cylinder (wyzenbeek - cotton sateen)	No cracking or delamination @ 25,000 cycles
Resistance to flexing	No breaks in coating @ 15,000 cycles

*Hydrolytic stability details:

- Exposure in laboratory chamber to temperature of 158 ± 2 °F (70 ± 1 °C) and relative humidity of 95 ± 5% for 15 days.

Testing is performed after 15 days of exposure:

- Adhesion (% loss)
- Surface abrasion (visual) - Wyzenbeek - cotton sateen - 25,000 cycles.
- Resistance to flexing (visual) - 15,000 cycles.

The referenced coated fabrics meet or exceed ASTM D3690 02 (2009) Grade A performance requirements in OMNOVA's internal analytical testing. Additionally, third party testing has verified the hydrolytic stability. Test results are available upon request.

OMNOVA SOLUTIONS

World Headquarters
25435 Harvard Road
Beachwood, OH 44122
United States
PHONE +1 216 682-7000
FAX +1 216 453-0104