

Xorel® and the Environment

ENVIRONMENT

“The complex of physical, chemical and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival,” Webster.

Today’s environment relates to the surroundings in which we live and work. Tomorrow’s environment will be impacted by the manufacturing processes used to produce today’s products, the longevity of these products, and the ease with which they can be disposed of or recycled.

Interior designers and architects approach their work today with a deep sense of responsibility not only toward their client’s functional and aesthetic needs but also to the present and future environment. The environmental characteristics of specific textiles play an important role in the designer’s selection process.

To judge the impact of a textile upon the environment, designers must consider the following:

1. The effects on the environment of the **manufacturing** process by which the textile is made.
2. The **safety** and **comfort** of the people living or working in the interior in which the textile is a major component.
3. The **longevity** of the textile.
4. The ease of **disposal** or **recycling** of the textile.

How do Xorel fabrics relate to each of these issues?

MANUFACTURING

- Compared to other fabrics, the manufacturing of Xorel yarn results in substantially less carbon monoxide, nitrogenoxide, hydrocarbons, sulfur dioxide and dust.
- Raw material requirements, energy and water consumption during manufacturing are smaller for Xorel than for most other fabrics.
- Xorel fabrics are totally chlorine free and contain no plasticizers or stabilizers, which are used in the production of vinyl products (PVC-Polyvinyl Chloride).
- During the production of Xorel yarn, no odors or waste waters are developed.
- The composition of Xorel dyes is carefully monitored to eliminate any harmful chemicals.
- Since IFR Xorel fabrics are inherently flame-retardant and stain-resistant, no topical chemical treatments are necessary, such as *Teflon*® or flame retarding, which are used in many other fabrics. This eliminates the need to use and dispose of the additive chemicals needed for these processes.

Safety is concerned with three issues: flame retardancy, toxicity, and bacterial growth.

Flame Retardancy

All Xorel fabrics, both IFR and non-IFR, qualify for use in Class A and Class 1 areas under the ASTM E-84 Tunnel Test. They also pass NFPA 265 Room Corner Test. IFR Xorel fabrics are inherently flame retardant and pass the most stringent vertical tests in the United States, Canada and Europe, including NFPA 701, original and 1999 revision, City of New York 294-40 S.R., State of California Title 19, Federal Aviation Authority 25.853(a+b).

Xorel fabrics are also certified for use aboard ships under the standards of the International Maritime Organization (IMO) MSC 61(67).

Toxicity

Toxicity has two components, the level of noxious gasses produced by the textile during a fire and the level of gasses it emits during normal, everyday use. This latter phenomenon, called "off-gassing", can be critical not only to the comfort of an office's occupants but to their health as well.

A. Fire

Under the International Maritime Organization's Smoke and Toxicity Test Procedure (part 2 of Annex 1 to IMO Resolution MSC. 61(67), IFR Xorel was found to have dramatically low readings of seven noxious gasses identified by the IMO. Following are the maximum levels accepted by the IMO and the readings established for IFR Xorel.

	IMO Limit	Xorel Results
Carbon Monoxide (CO)	1450 ppm	326 ppm
Hydrogen Bromide (HBr)	600 ppm	30 ppm
Hydrogen Chloride (HCl)	600 ppm	20 ppm
Hydrogen Cyanide (HCN)	140 ppm	2 ppm
Hydrogen Fluoride (HF)	600 ppm	10 ppm
Nitrogen Oxide (NOx)	350 ppm	30 ppm
Sulfur Dioxide (SO2)	120 ppm	2 ppm

Xorel fabrics have also passed the Pittsburgh Protocol Test Method and have been approved by the New York City Department of Buildings, MEA 474-89-M.

B. Off-Gassing

A report by Berkeley Analytical Associates states "The measured emission rates of VOCs from Xorel are very low. Emissions from tested samples raise no significant indoor air quality concern." In additional testing for VOCs under ASTM D5116-97, Xorel fabrics passed the requirements of section 01350 of the California State Building Guideline for Indoor Environmental and Air Quality. They have also been tested and approved by the California Health Services Department.

GREENPEACE recognizes Xorel fabrics as a viable environmental alternative to PVC vinyl.

**VOC = Volatile Organic Compound*

Bacterial Growth

In the special area of hospitals and health care facilities, Xorel's anti-bacterial qualities create a safe environment for both workers and patients. This is also a significant consideration for interiors of dense occupancy, such as cruise ships, theaters, and restaurants. In a series of tests conducted by the United States Testing Company to determine the suitability of Xorel fabrics for hospital use, it was established that Xorel does not support the growth of bacteria, fungi, or staphylococcus aureus. When paper backed Xorel will not permit the passage of bacteria and is resistant to water permeability.

COMFORT

Comfort is enhanced by several factors: ergonomic seating upholstered in breathable fabrics, low sound levels, proper lighting, and cleanliness of surroundings.

Upholstery

Xorel fabrics are breathable and for special health care requirements a manufacturer can add a barrier to prevent the passage of liquids.

Acoustics

Xorel fabrics are acoustically neutral permitting sound to pass through to the absorbent core of acoustical systems and panels.

Lighting

Xorel fabrics are woven with yarns of varying reflective qualities. Certain Xorel fabrics with a high degree of reflection will increase light levels without increasing electricity use.

Cleanliness

Xorel fabrics' remarkable stain resistance and ease of maintenance make their use for furniture, walls and systems the ideal solution for a clean environment.

LONGEVITY

One of the principal reasons that developed economies have a problem with waste disposal is the short life span of so many of the products these economies generate.

Xorel fabrics on the other hand have an exceptionally long life cycle and do not require periodic replacement as do most textiles exposed in high-traffic commercial areas. Not only are their durability and strength unmatched but their inherent, natural stain-resistance makes them the most easily maintained fabrics available. Xorel fabrics are colorfast and will show no sign of fading after many years of use.

The less frequently a fabric must be replaced the less labor consumed, the less waste to be disposed of, and the lower the long-term cost. Some Xorel installations have been in place for 20 years.

DISPOSAL

When Xorel products are ready for disposal, they can be incinerated without emitting toxic gasses (see Toxicity above) and are therefore an ideal energy source in waste burning plants, with a higher BTU (British Thermal Unit) rating than coal.

Xorel fabrics can be safely landfilled without harming groundwater. Unbacked Xorel fabrics can be recycled.

The Carnegie group of textile companies is proud to have developed Xorel, a product so aesthetically pleasing yet so practical and so compatible with our environment that it is recognized as one of the leading textile advances of the last two decades.

Carnegie

(800) 727-6770 carnegiefabrics.com