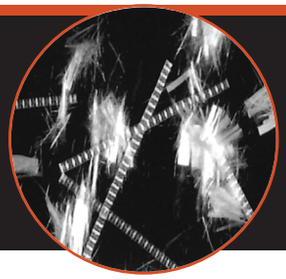
Durastran® HB

Synthetic Macro/Micro Fiber Blend



Durastran®HB Hybrid Blend is a Total Crack Management System! This occurs in stages as the concrete goes through its curing process. The HB Blend of Fibers work together from the first minutes of the freshly placed concrete, through the stresses that develop from plastic and temperature shrinkage—even through drying shrinkage of hardened concrete over time. (See Figure 1)

Features and Benefits

The Micro-Fibers help to manage the stress from millions of micro-cracks that typically form during the first 24 hours. The Micro-Fibers are uniquely designed to chemically bond with the concrete paste, and arrest those forming cracks, helping to keep them from propagating.

The Macro-Fibers are engineered to enhance the concrete's toughness, as a field-proven replacement for WWR and conventional steel bars when used as secondary reinforcement. They are designed to carry post-crack stress and load beyond the plain concrete's capability

Key Benefits of Use

- Increased Durability, Toughness and Flexural Strength in Precast Products, as well as Slab on Grade (SOG) Applications
- Reduced Overall Labor and Material Costs vs Conventional Steel Reinforcement; Shortening the Length of Time on Your Project
- Eliminates all of Your Safety Concerns; Higher Costs and Various Hassles Associated with the Use of Steel Fiber, or Steel Mesh and Bars
- Better Surface Performance: Resistant to Impact, Spalling and Surface Debonding from Corrosion

Once the concrete cracks, the Fibers don't necessarily fail. Rather, they proactively work together to bridge the tensile cracks, and begin to carry (or absorb) a percentage of the concrete's stresses.

The stages involved before FRC failure:

1. Micro-cracks form in cement matrix
2. Debonding and sliding between fiber and matrix
3. Bonded fiber bridging cracks
4. Frictional sliding and fiber pullout
5. Fiber failure under tension

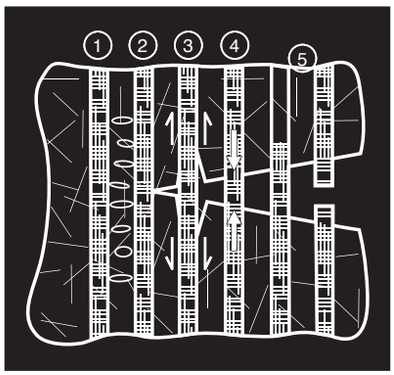


Figure 1

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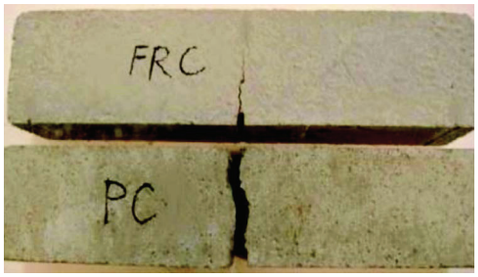
Mix Design, Mixing, Placing and Finishing Information

When concrete is loaded in tension, it develops tensile stresses causing the formation of micro-cracks that will continue to propagate; weakening the concrete.



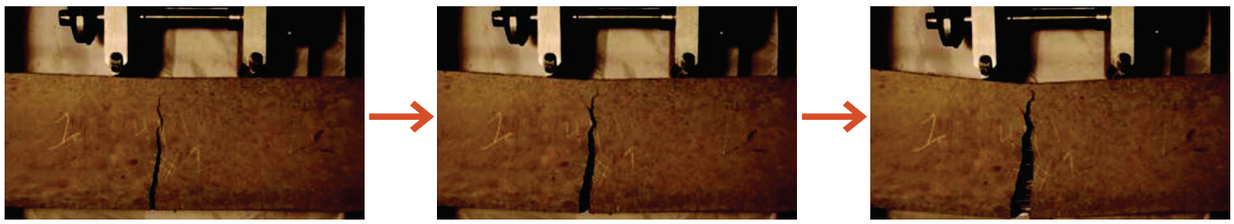
Durastran®HB, a hybrid blend of reinforcing fibers, provides unique attributes that manage not only the first tensile stress cracks, but also help control the post-crack forces—as a **Total Crack Management System!**

The HB reinforcing process retards the cracking mechanism resulting in increasing the concrete structure's overall toughness. This process is quantified by independent ARS testing.

ASTM C-1399 Beam Test

The Durastran®HB beam in flexure does not shatter suddenly at the peak load, as it can still carry a residual load after reaching the maximum load capacity of the concrete.
After the concrete completely fails at the peak load, the crack is bridged by the HB Fibers which are now being pulled from their socket. This frictional pullout dissipates energy, so external load is still required to generate the energy that is absorbed in the process.

The energy absorption, or ductility, is of high significance when the structure is undergoing seismic, impact, fatigue or explosive loading.



FiberWorx hopes the information given herein is helpful. All information is based on test data and knowledge considered to be true and accurate, and is offered for the user's consideration, investigation and verification.

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