



WORLD CLASS WATER SEALING SOLUTIONS

## Polyurethane Grouts; terms and definitions

**Single component versus Dual Component Urethanes** - SealGuard offers two grout products, Hyperflex, a single component and SealGuard II a dual component urethane. **Single** components react with water by pulling an OH molecule off of the H<sub>2</sub>O water molecule during reaction. This can take a long time so pretty much all of our competitors offer a separate catalyst to make the reaction happen faster, so they really aren't single component after all since the separate catalyst must be mixed before use. Our Hyperflex already has the catalyst pre mixed meaning it is a true single component product, and it reacts in 30 seconds, faster than nearly all competing products using an accelerator (see below for an explanation of why this is an advantage to us). **Dual** component urethane is a binary system, with the chemical (A side) and reactant (B side). They do not react with water but with each other allowing for much faster reaction times and much greater certainty about the composition of the reacted product than with a single component system which is slower and the reacted product chemically variable depending on the amount of water present when it reacts.

**Hydrophobic versus hydrophilic polyurethanes** - **Hydrophobic** products **do not** like water and will repel it during reaction. Once the reaction occurs the urethane will not absorb water and has no water in it. As a result it will not shrink over time. All SealGuard products are **Hydrophobic**. **Hydrophilic** urethanes on the other hand use water in their reaction and water is a part of the reacted product. As long as the reacted product remains in contact with water, it will remain in place and will not shrink. However, if the water dries up (as in an extended dry spell) the grout will dry out and shrink. The problem with **hydrophilics** is that once water is reintroduced, the grout will re-expand; only not quite to the extent that it was before, therefore it will leak. Our competitors like **hydrophilics** because they are less viscous and will simply react with water and thus needs no accelerator or catalyst added to them. Our Hyperflex single component pre-catalyzed grout product is better than **any hydrophilic** because 1) it is **hydrophobic** and 2) requires no catalyst. Viscosity can be adjusted by simply heating or cooling the tubes or buckets. Hyperflex is better than other single component **hydrophobic** because all of them require a separate catalyst be mixed in to make them react. Incomplete mixing (very common) causes inconsistencies through their products leading to hot spots (too much catalyst in an area) and cold spots (not enough) this causes excessive foaming or an incomplete reaction, both of which can lead to leaks.

**Toluene Diisocyanate (TDI) versus Methyl Diisocyanate (MDI)** - These are the two different main components of **polyurethane grouts**. ALL SealGuard products are MDI based, but many of our competitors still use TDI based products. TDI's are NASTY stuff. It is a known carcinogen, gives off hazardous vapors (full breathing apparatus must be worn to apply them) and is generally very hazardous to work with. MDI's are not carcinogenic, don't give off hazardous vapors, and, while I wouldn't want to drink it, is generally a lot safer to work with than TDI's. In general, it is easier and safer to work with MDI polyurethanes. There is no appreciable difference in the applications of a TDI vs. MDI grout, so I don't understand why anyone would still use them.

**Reaction Time** - This is pretty self-explanatory but basically means how long it takes the urethane to rise (foam) after it is applied. Reaction time is variable based on temperature and pressure but in general the reaction time is slower when it is colder and faster when it is warmer. Most of the reaction times quoted by most of the players in the business are based on 70 degrees F (including ours). For the record, Hyperflex reacts in about 30 seconds and SealGuard II reacts in 1 to 3 seconds.

**Pre-catalyzed versus non-pre-catalyzed materials** - I have touched on this earlier, but the basic difference is that pre-catalyzed materials such as Hyperflex can be used right out of the tube or bucket and be pumped right away. All of the competing single component products have separate catalysts that must be mixed in prior to use leading to hot spots and cold spots, which I discussed above. As a practical matter, it is nearly impossible to hand mix a catalyst to get adequate distribution through a solution in the field, so the advantage of having a pre-catalyzed single component grout cannot be under estimated.

**Percentage of Solids** - This is a measure of how much react able material is present and how much is filler such as calcium carbonate and others. SealGuard products are 100% solids. When a product is not 100%, the fillers can act as an abrasive and damage the pumps used to deliver the material.

#### **Our Products:**

**SealGuard II** - Dual component, MDI, Hydrophobic, 1 to 3 second reaction time, 8 lb. density, has patented check valve for operator safety in the mixer

**Hyperflex** - Single component, pre catalyzed, MDI, hydrophobic, 30 second reaction time, no catalyst needed

**X-Seal** - Single component, pre catalyzed, MDI, hydrophobic, 30 second reaction time, no catalyst needed. This product is used for joint sealing and adhesion



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