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What's The Difference Between Polyurethanes and Polyaspartics?

One of our suppliers explains the differences and when to use.

Polyaspartics and polyurethanes may seem very similar, but despite their shared performance properties there are some subtle differences that may impact your material choices for a given project. Both chemistries offer excellent chemical and abrasion resistance and good UV stability, however, there are variations of performance that are important to understand.



In this article, we compare the capabilities of polyurethanes and polyaspartics, but before we do, it's important to note that the material class of polyurethanes is extremely large and has several variations. To simplify, we are only going to discuss the two types that are most used in the flooring industry: **aliphatic polyester** and **acrylic urethanes**. We'll compare these to each other and to polyaspartics so we have a better understanding of which materials to choose in relation to the performance needs of our projects. Let's see how the three coatings compare.

Acrylic Urethanes: Acrylic urethanes have been the industry standard for exterior industrial coatings for over 30 years. This is due to their superior resistance to loss of gloss and color stability. Also, when it comes to exterior durability, acrylic urethanes come out on top. However, if your project requires the highest chemical resistance to solvents and abrasion resistance, you might want to choose a polyester urethane or polyaspartic because they perform better in this area.

Polyester Urethanes: This class of coating has been the gold standard for finish coats for many years. They provide best in class abrasion and chemical resistance and they also offer good UV stability. While not as good as an acrylic urethane, a properly formulated polyester urethane offers exterior gloss and color retention equal to a polyaspartic coating. Additionally polyester urethanes will generally have slightly better chemical resistance when compared to polyaspartic coatings.

Polyaspartics: While not a new chemistry anymore, this class of coating has become a popular choice for finished coats in the flooring industry. They offer good UV stability depending on the formulation and great chemical and abrasion resistance. When compared to polyurethanes they offer some distinct advantages such as film build and cure speed.

In addition to these performance properties, we've included a quick list for each of these chemistries that shows the pros and cons at a glance.





When you're considering materials for your project, be sure to take into account the requirements for the floor, what it will be exposed to, and which products can easily manage those requirements. Use this quick list to get an idea of where to start.

ACRYLIC URETHANES

PROS

-  Best in class UV stability
-  Good chemical resistance
-  Moderate to fast cure speed
-  Easy to install

CONS





-  Lower solids (40%-75%)
-  High odor for solvent based variants
-  Lower dry film builds per coat (2-4 mils)
-  Most are flammable

POLYESTER URETHANES

PROS

-  Excellent UV stability
-  Best in class chemical and abrasion resistance
-  Easy to install
-  Moderate cost

CONS





-  Lower solids (55%-70%)
-  High odor for solvent based variants
-  Lower dry film builds per coat (2-4 mils)
-  Most are flammable or combustible

POLYASPARTICS

PROS

-  Good UV stability
-  Excellent chemical and abrasion resistance
-  Possible low odor
-  High solid (75%-100%)
-  High dry film build (6-16 mils)

CONS

-  Higher cost
-  More difficult to install depending on formulation
-  Some formulations can be flammable
-  Humidity can act as an accelerator