What is FlexWrap™?

As discussed in Building Knowledge University: Level 1 Course 3, Lesson 8

FlexWrap is a unique conformable laminate with a butyl-rubber adhesive substrate designed for flashing wall penetrations. Available in 7- and 9-inch widths, it's not limited to flashing windows and doors, but can be used to seal around any wall penetration. It's conformable by virtue of an elastic top sheet. The product can be shaped and will stretch to fit around curves and irregular objects without bulging or needing to be cut.

StraightFlash is a complementary product to FlexWrap that was introduced in 2002. It's a 4-inch-wide self-adhesive product, which does not conform like FlexWrap. It was designed for flashing straight areas, such as the jambs and the head of windows and doors.

You don't have to use FlexWrap and StraightFlash together, but we test them together and make sure that they work together.

Laminate Structure
The laminate structure of FlexWrap is actually pretty complex. The top sheet is Tyvek® and that gives it the durability, namely superior UV protection. FlexWrap is rated for 120-days exposure, making it the highest UV rating of any flashing material on the market. Under the Tyvek top sheet, is a layer of elastic fiber, which gives the material its elasticity, and there's also a polyethylene film layer, which further resists water penetration, making it the true barrier it needs to be. The entire complex of layers is held together with adhesives, followed by a thick layer of butyl rubber.

The Benefits of Butyl
DuPont chose butyl rubber as the adhesive substrate for a variety of reasons. Butyl is considered a superior system but it's also more expensive. To avoid the expense, most manufacturers of flashing tape began using an asphalt-based (bituminous) based adhesive system. But butyl is far better, and worth the cost.

To begin with, butyl does not cure. It's is a rubbery substance that doesn't have solvents in it. And because it doesn't have solvents, it doesn't dry out. Butyl stays flexible; it essentially flows. When you put it on a wall, it slowly, ever so slowly, flows into the cracks and crevices on that wall. As an adhesive, there is a chemical bond, too. It's tacky. But with time, this bond becomes more and more aggressive by virtue of the fact that the adhesive can flow into the cracks and crevices of the surface. This is what really gives FlexWrap and StraightFlash their superior bond.

Easily repositioned. Because butyl doesn't cure, FlexWrap and StraightFlash can be removed and repositioned when they are first installed. With a dual-release paper, it's also easy to handle. An installer can remove one part of the release paper to position the flashing, then remove the second paper to firmly stick it in place.

The degree to which FlexWrap and StraightFlash can be removed once they are applied to a surface is a function of temperature. The higher the temperature, the more the adhesive in FlexWrap and StraightFlash will flow. And the more it flows, the faster the bond will form. By
contrast, bituminous products stick right away, regardless of the temperature, making them nearly impossible to reposition once they have touched a surface.

**Peel strength.** The actual peel strength – the strength of the bond is both a function of temperature (governing the rate of flow) and the surface you're sticking it to. The adhesive of FlexWrap and StraightFlash will take longer to flow into the crevices of a porous surface, such as OSB, than a very smooth surface, such as hardboard. But once it does flow into those crevices, the bond will be very aggressive.

**Broad temperature range.** The butyl used in FlexWrap and StraightFlash has a much broader temperature range than bitumen. Butyl-based flashings stay flexible at low temperatures and won't ooze or drip at high wall temperatures. By comparison, an asphalt based material gets very soft and droopy in hot weather.

When handling the materials, FlexWrap and StraightFlash stay consistent over a broad temperature range, so it can be handled by one person. By comparison, an asphalt based material is so droopy in warm weather it takes at least two people to hold it while trying to apply it.

**Withstands thermal cycling.** Both the adhesive and top sheet of FlexWrap and StraightFlash resist degradation due to changes in temperature over time. By comparison, asphalt based materials that dry out get brittle and can crack. When this happens, the top sheet tends to curl and crack as well, leaving the joint vulnerable to water infiltration.

**Resists moisture.** The FlexWrap and StraightFlash bond will not fail on a soaked substrate.

**Doesn't stain.** Butyl doesn't stain and doesn't leach into other surrounding materials, including vinyl wood or housewrap.

**Compatible with the range of other products.** In particular, you can use FlexWrap and StraightFlash with foam sheathings without causing the foam to melt, like the solvents in an asphalt-based flashing tape will.

**Self healing.** Drive a nail through FlexWrap and StraightFlash and it seals around the nail to resist water infiltration.

**No halogens or solvents,** making FlexWrap and StraightFlash suitable for green building projects. It stays flexible, and there are no solvents in the product.

**UV resistant.** FlexWrap and StraightFlash can be left exposed for a maximum 120-day UV exposure.