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Technical Article
Technical Article Content Pulled from the NIBA Belt Line Newsletter

Options for an Industrial Slider Bed Application

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Beltline Reprint March 2009

When considering what type of bottom cover or finish to use in a slider bed application for an industrial conveyor belt, there are a few options to go with. The main factors to think about when making this decision can include anything from the amount of protection needed for the bottom ply to the amount of friction needed or not needed. Hopefully this article will give you a better understanding of these options.

The most popular bottom finish that you'll see on an industrial belt in a slider bed application is what is referred to as a bare back or bare bottom belt. This should not be confused with a friction bottom surface. Almost always when a belt is running across a slider bed, such as stainless steel or UHMW, a belt with a lower co-efficient of friction is needed. Of all the options for a slider bed belt, the true bare back belt will give you the lowest amount of friction available. However, there are some problems that can be experienced when using a bare back in certain applications where it would typically be needed. The bare back belt offers the lowest amount of friction but also offers no protection of the bottom ply. This may lead to the main problem with a bare back that most people experience, shrinking belt. This shrinkage is usually the result of "dryness" in the application or even in the material being conveyed, such as fertilizer, Urea or even dirt. There are many theories as to why this happens but that is a discussion for another day. Today we are just trying to combat the problem.

Despite popular belief, a bare back and a friction back are not the same thing. A bare back belt has no rubber exposed, except for maybe some strikethrough, rubber pushed through the yarns during the manufacturing process. A true friction bottom will have a very thin layer of rubber essentially sealing the fabric except for the very most top of the fabric "knuckles" allowing the sealed bottom to act, in terms of friction, similar to a bare back belt. Frictioning of fabric can only be done to spun poly yarns, not the filament yarns that are used in the majority of heavy industrial conveyor belts. Filament yarns are made of single continuous fibers that are then twisted together to make the yarn itself. Spun poly yarns are made up of much shorter fibers that are about 3" in length each that are then spun like cotton or wool to make each yarn. This fabric with the rough spun yarns, not the slick filament yarns, is then taken through the calendaring process of manufacturing. While most belts are calendared through a three or four drum system with all the drums moving at the same speed, a frictioned bottom belt will be calendared while one of the drums moves at a lower speed. This slower moving drum will friction, or wipe, a thin layer of rubber onto the spun poly fabric. Essentially, friction is created when two objects are forced to move against each other at two differing speeds. Just think of the last time you had a good burn out in the street in front of your house. If you look down into the peaks and valleys of the pavement you'll see traces of rubber left down in the "valleys." Frictioning of fabric is basically the same thing.

There are definite benefits to using a friction bottom belt such as a low co-efficient of friction, but its main purpose is that it protects the bottom ply. However, one of the drawbacks of a true friction bottom belt is the

cost. Typically the spun poly fabric is more expensive than its filament poly brother. When the friction belt is made, it takes longer to produce, because of the slower moving drum, increasing the overall belt cost. So, an alternative to the true friction bottom is what is sometimes referred to as a mock friction belt. Essentially a mock friction is the same as a true friction except a thin layer of rubber, about .005", is actually calendared and then cured onto the fabric in very much the same way a top cover is made. So basically the difference is that the mock friction belt will not have the fabric knuckles exposed, at first, because of the added rubber.

When the belt is first installed and operated it will have the same co-efficient of friction as a full rubber-covered bottom with a 65 duro, but after the belt is ran for a short amount of time the rubber covering the knuckles of fabric will wear off essentially giving you the same performance as the true friction bottom without the added cost.

Another option to consider is using a full gauge bottom cover, but instead of using a typical 65 duro compound an 80 duro compound can be used. This 80 duro compound will be much harder than the 65 duro rubber thus reducing the co-efficient of friction, but not reducing it as much as a the true bare back finish. One instance where this bottom cover would be needed would be an application that requires a Straight Warp Single Ply belt that travels across a slider bed. I'm not sure if you have tried to run this fabric as a bare back but I guarantee you that it won't work. The fabric will definitely start to unravel after just a short period of time in operation. This may be the only time that the words "harder is better" should ever be uttered in the belting world.

Hopefully this gives you a better understanding of your options for bottom cover and finishes for a belt in a slider bed application as well as explaining the difference between a bare back and a friction bottom surface. Please contact your belting supplier for more information pertaining to what options and rubber compounds they offer.