



## The need for belt cleaners

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Many in the aggregates industry have heard and probably experienced what can go wrong with a dirty conveyor belt. Efficient belt cleaning is the key to optimizing the performance of your conveyor system. Clean belts will last about 150 percent longer and require 50 percent less maintenance, helping to reduce costs and downtime for repairs or maintenance for the entire system. Thorough cleaning also increases system productivity, safety and employee satisfaction.

Without effective cleaners, conveyors experience unchecked carryback. Fugitive material is released all along the conveyor, so cleanup must be done along the entire length of the system. This increases man hours, downtime and risks. In fact, according to the Mine Safety and Health Administration (MSHA), 39 percent of conveyor-related accidents occurred while cleaning or shoveling around the conveyors. Carryback also causes the belt, splices and idlers to experience excessive and premature wear.

### Design choices

Belt cleaner design varies greatly – from simple homemade devices to sophisticated models designed for specific needs or industries. There are also different types of cleaners that serve different purposes in cleaning your belts, precleaners and secondary cleaners.

Precleaners are designed to work where the belt passes over the head pulley and remove a majority of carryback. They are mounted on the head pulley, below the material flow, and typically clean up to 80 percent of the initial carryback. The blade is always narrower than the belt width.

Secondary cleaners, located slightly farther down the line, provide additional cleaning. They are typically mounted just past where the belt leaves the head pulley and anywhere down the beltline. They remove sticky fines – the final cleaning job – with cleaning efficiencies up to 90 percent or more, and the blade width is always the belt width or wider.

When choosing a cleaner blade, consider cleaning efficiency, blade life and versatility. The types of cleaner blades available to the market are tungsten carbide and urethane.

Tungsten carbide tipped blades provide superior cleaning efficiency. They also feature a lower lifetime cost due to their durability compared to many other blade types. Traditionally, tungsten carbide blades have been compatible only with vulcanized belts. Today, technical advancements with certain blade options make these blades more compatible with mechanically spliced belts as well.

Polyurethane – or urethane – is a combination of two chemical compounds. It was first developed as a replacement for rubber at the beginning of World War II. By changing the component ingredients in the urethane formula and varying the durometer – or hardness – of the product, urethane has been a material of choice for conveyor belt cleaner blades. The primary reason is urethane's compatibility with mechanical splices used on the belts. When encountering a mechanical splice during operation, urethane blades are forgiving. The splice is not damaged and the blade provides acceptable cleaning performance.

### **Avoid pitfalls**

Having an ineffective belt cleaner can leave a conveyor system vulnerable to carryback, resulting in product loss, additional labor hours, downtime, wear on the belt and other system components, and increased safety risks. Many factors can affect how a belt cleaner works. Some of these factors include belt condition, the material being conveyed, belt speed, conveyor condition, cleaner location/setup and how often the cleaner is serviced.

A thoroughly cleaned and maintained conveyor system can operate at 90 percent or higher. When belt conveyors are properly cleaned and maintained, unplanned outages due to mechanical or electrical failures can be kept to less than 2 percent. Also, according to an extensive study conducted at coal-handling facilities in India, facilities that use cleaners required only 50 percent of the maintenance necessary than at facilities without cleaners. Facilities that use cleaners also experienced an average of 150 percent longer belt life.

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