

BELT CONVEYOR SAFETY

The main hazards related to belt conveyors are mechanical. Other hazards are produced by non-compliance with ergonomic principles when workers operate near the conveyor (operation station, control of the process, loading and unloading); failure or malfunction or safety-related control systems; electrical hazards; and thermal phenomena (such as heat, fire or explosion).

The main mechanical hazards are related to:

- mechanical power transmission components (e.g., drive shaft, reducing gears) that can cause damage by entrainment (by a belt or on nip points), crushing or entanglement (human body entangled around a rotating part) on contact with rotating components;
- other moving components (e.g., idlers, pulleys, belt) that can cause damage by entrainment in nip points, abrasion and burns;
- pinching zones (e.g., feeder, skirt-board, skirt-board seal) that can cause damage by shearing and crushing;
- moving loads that can cause damage by shearing and crushing between the load and a fixed component, or an impact;
- moving subassemblies (e.g., ejectors, switches, transfer mechanism) that can cause damage by shearing and crushing;

Accident frequency: Conveyor location

Location	Percentage
• Between the drive pulley, head pulley or tail pulley and the belt, inside one of these pulleys or between one of these pulleys another pulley.	48%
• Between an idler or a return idler and the belt.	13%
• Other locations (e.g., between electromagnets and other components.)	13%
• Drum motor transmission mechanism.	7%
• Between a take-up pulley and the belt.	5%
• Between a caught tool and the belt or the conveyor frame.	2%
• Not indicated or uncertain.	12%

Accident Frequency: Worker Activity

- Cleaning a pulley or applying adhesive on a pulley or cleaning another component of a conveyor (idler or return idler, frame). 24%
- Maintenance work (other than cleaning conducted on a moving conveyor.) 20%
- Normal work (e.g., sorting, packaging) performed on or near a conveyor. 11%
- Recovering an article caught in an unprotected nip point (7 of 8: between a pulley and the belt; 1 of 8; between electromagnet roller and the belt). 9%
- Cleaning under or around a conveyor. 7%
- Maintenance work (other than cleaning) near a moving conveyor. 6%
- Unjamming the conveyor or removing an accumulation of material. 5%
- Adjusting the belt tension or alignment. 4%
- Other activities (e.g., worker being transported by a conveyor). 4%
- De-icing and unjamming a frozen belt. 1%
- Not indicated. 9%

Source: Professional Safety Journal of the American Society of Safety Engineers (November 2004)