APPENDIX B
GLOSSARY

GLOSSARY

This is a list of belt conveyor-related terms, as they are used in this edition of *FOUNDATIONS*™. It does not pretend to be a complete compendium of all terms used in describing belting, conveyors, and/or systems for handling bulk materials. If a phrase is not shown, first break it down into its component words. Also consider consulting with other references, such as *CEMA Publication #102, Conveyor Terms and Definitions*, as well as the publications and terminologies used by suppliers of specific components.

A

abrasion[1] | Wearing away by friction, as by rubbing or scraping.

access door | Point of entry into an enclosed area, typically with a method of closure.

active dust collection | *See dust-collection system.*

adhesion[1] | The bonding strength between two materials.

aeration device | Device mounted inside a vessel that adds low pressure/ high-volume air to materials that have become compacted and hard to allow them to flow efficiently again, sometimes called aeration diffusers, pads, or nozzles.

agglomeration | Process or act of gathering into a mass; creating larger, heavier groupings of particles.

aging[1] | The exposure to an environment for a period of time.

air cannon[2] | A device that uses periodic blasts of compressed air to clear away material buildup inside pipes or transfer chutes.

air knife | Belt-cleaning system that directs a stream of air to shear off carryback.

air-supported conveyor[2] | A conveyor that uses a conventional belt, pulleys, and drive but is supported on its carrying side by a thin film of air instead of idlers.

air-to-media ratio | Used to describe dust-collection filters, the air-to-media ratio is the flow of air in cubic meters per second (ft^3/min) divided by the area of filtration media in square meters (ft^2).

amplitude | Half the extent of a vibration, oscillation, or wave; the measurement above or below the base or centerline.

anemometer | Device used to measure air velocity.

angle of attack | The angle at which a cleaning blade is placed against the belt.

angle of repose[2] | The angle or slope that a conveyed material will assume when discharged onto an open pile.

ANSI[2] | Acronym for American National Standards Institute.

apron feeder[2] | A series of overlapping metal plates mounted on a rotating chain that are used to transport heavy, lumpy or abrasive materials.

AR plate[2] | Abrasion-resistant steel plate commonly used for wear liner at transfer points.

aramid fibers | A class of strong, heat-resistant synthetic fibers used in aerospace and military applications, as well as in the carcass of conveyor belting.

arc of contact[1] | The circumferential portion of a pulley engaged by a belt.

ASME[2] | Acronym for American Society of Mechanical Engineers.

aspect ratio | A ratio comparing the thickness of the top and bottom covers of a belt.

ASTM[2] | Acronym for American Society for Testing and Materials.

B

backstop | A mechanical or electric braking device used to prevent a loaded, inclined conveyor belt from rolling backwards if the motor stops. Also referred to as a "holdback clutch" or "clutch brake."

back welding | A method of welding in which at each weld, the bead is drawn back toward the welded end.

backstep welding | A weld applied to the back side of the joint; commonly called back welding.

baghouse[2] | A closed structure that contains a set of filter bags to capture airborne dust.

beater bar | A device (usually a roller device with an external bar) which strikes another object with the object of removing material accumulation.

bed | Some variety of low-friction bars or other flat surface to support the belt profile instead of using an idler's rolling "cans."

belt clamp[1] | Beams or metal plates secured transversely across both belt ends to hold them in a desired position.

belt cleaner[2] | A device that uses one or more tensioned blades mounted on a supporting structure to remove material that clings to the carrying surface of a conveyor belt beyond the normal discharge point.

belt-cleaner effect | Where the pressure of a sealing system against the belt removes residual material from the belt surface, as when the tail seal removes material from the belt where it enters the loading zone.

belt-cleaning system | A belt cleaner, or a group of belt cleaners and associated equipment (such as mounts and tensioners), as located on one conveyor.

belt conveyor[2] | A flexible rubber endless belt, looped over a framework of rollers and pulleys, that is used to transport material from a load zone to a discharge point.

belt fastener[1] | A mechanical device for holding two ends of a conveyor belt together.

belt feeder[2] | A short, flat, variable-speed conveyor belt used to transfer, or "feed," material from one component to another in a material transport system. The material feed rate can be adjusted by speeding up or slowing down the belt.

belt flap[2] | An up and down oscillation of a belt between idlers.

belt grade | A classification of belt cover based on its properties, designed to provide a reference for end users as to what belts to use in different applications.

belt modulus[1] | The force per unit width of belt required to produce a stated percentage of elongation.

belt profile | The shape of the belt, particularly its upper (carrying) surface.

belt runout[2] | A condition where a conveyor belt moves too far to either side of its properly-centered path; also referred to as belt "mistracking" or "wander."

belt sag[1] | The vertical deflection of a conveyor belt from a straight line between idlers, usually expressed as a percentage of the center spacing of the idlers.

belt slip[1] | The speed differential between the belt and the pulley surface.

belt slip switch[2] | A switch that shuts down a conveyor drive motor when it senses the belt moving at a slower speed than the drive pulley.

belt stretch | The increase in belt length that takes place when tension is imposed. Elastic stretch is a temporary change in length that varies directly with the pull. Permanent stretch is the residual change in length after tension has been removed; it generally accumulates over a period of time.

belt-support cradles | A method of belt support without rolling components, using slider or impact beds.

belt-support system | The components below the carrying side of the belt that support the weight of belting and cargo.

belt tracking | The actions a person takes to get the belt to track consistently.

belt training | The actions a person takes to get the belt to track consistently.

belt-cleaner blade | The element of a belt cleaner that comes into contact with the belt.

bend pulley[2] | A pulley used to change the direction of (or "bend") a conveyor belt.

bias cut[1] | A cut of the belt ends made diagonally, that is at an angle less than 90 degrees (usually 22°) to the longitudinal axis.

blockout | A safety procedure involving the prevention of a system from moving by physically holding it in position.

boilover | A problem where material overflows the chute, caused by chute blockages.

booster drive[1] | Used in some long conveyors to reduce the power/tension at the drive pulley.

bottom cover[1] | The non-carrying belt side towards the pulleys.

boundary friction | *See interface friction.*

bow | A concave curve of the belt.

breaker, breaker fabric | An extra ply incorporated in the belt carcass for shock-absorption.

brush cleaner[2] | A belt-cleaning device that uses a rotating brush to clean carryback material from the return run of a conveyor belt.

C

CAD | Acronym for Computer-Aided Design.

camber | A convex curve of the belt *(see bow)*.

cantilever | A projecting beam or structure supported at one end.

capacity[1] | The maximum material load on the belt, cargo, or throughput.

capture velocity | The amount of air speed required to gather an airborne dust particle into a dust-collection system.

carcass[1] | The fabric, cord and/or metal reinforcing section of a belt, as distinguished from the rubber cover.

CARP[2] | Acronym for "Constant Angle Radial Pressure," a belt-cleaning blade design concept to maintain cleaning angle as the blade wears.

carryback[2] | Conveyed material that clings to the surface of a belt past the nominal discharge point. If not removed by a belt-cleaning system, these particles become dislodged along the return run and pile up beneath the belt.

carrying idler[2] | Any type of idler that supports the load-carrying run of a conveyor belt.

carrying run[2] | The upper run of a conveyor belt used to transport material from a load zone to a discharge point.

carrying side | The side of the conveyor or belting that would contact the material cargo.

catenary idler[1] | A flexible idler set where the rollers are suspended on a flexible link, rope, or chain structure and the ends are supported in pivoted stands. The tube or rollers sag to form the trough. Also called a Garland idler.

CEMA | Acronym for Conveyor Equipment Manufacturers Association.

center-to-center[1] | The distance between the center of two pulleys or idlers. Sometimes also called centers or center distance.

ceramic-faced wear liner | A lining using ceramic blocks or tiles for improved resistance to abrasion.

CFM or cfm | Abbreviation for "cubic feet-per-minute" in airflow calculations.

chamfer | To cut at an angle, as a bevel.

chatter, blade chatter[2] | The rapid vibration of a belt cleaner that is not aligned properly with a conveyor belt.

chevron, chevron belt | A V-shaped ridge on the carrying side of a belt to keep material from rolling down an incline.

chute[2]**, chutework** | An enclosure that is used to contain material as it is transferred from one piece of equipment to another.

chute wall | The walls of the loading chute and sometimes the transfer-point skirtboard.

chutewall | *See skirtboard.*

classifier[2] | A piece of equipment used to sort and separate material by size.

cleaner[1] | A device for removing adherent material from the belt.

cleat[1]**, cleated belt** | Objects on or raised sections of a conveyor belt, used to stabilize material carried up an incline.

CMMS | Acronym for computerized maintenance-management system, a system that tracks maintenance work and its costs.

coefficient of friction | The ratio of the force required to slide two surfaces to the force pressing them together; equal to the tangent of the interface friction angle.

cohesion | A material's internal strength.

cold splice[2] | A type of belt splice in which the layers of a conveyor belt are overlapped and bonded together with an adhesive compound.

concave | Curved inward; bow is a concave curve in the belt.

confined space | A potentially hazardous enclosed area; access is usually controlled by safety regulations.

consolidated bulk density (ρ_2) | The density of a body of a bulk material after it has been subjected to a compressive force (F) or vibratory energy, sometimes called vibrated bulk density.

convex | Curved outward; camber is a convex curve of the belt.

conveyor[2] | A piece of equipment designed to carry material from one point to another along a predetermined path.

conveyor belt[2] | A length of flexible rubber belt that is stretched over a framework of rollers and pulleys and then made into a single piece by splicing its two ends together.

counterweight[2] | The weight applied to a conveyor belt gravity take-up assembly to maintain proper belt tension.

cover[1] | The outer layer of belting. Also, the lid or roofing structure to protect conveyor and materials from exposure to elements and limit release of material.

creep[1] | The action of a belt alternately losing speed on the driving pulley and gaining speed on the driven pulley.

creeper drive[2] | An auxiliary motor and gearbox that is designed to operate a piece of equipment at a very slow speed. Also referred to as a "pony drive."

crown[2] | The difference between the diameter of a pulley at its center and at its rims.

crowned pulley[1] | A pulley with a greater diameter at the center, or other points, than at the edges.

crusher[2] | A piece of equipment used to crush or shatter larger pieces of material into smaller ones.

crust breaker | A cleaning edge installed on the head pulley just below the material trajectory so it is close to, but does not touch, the belt; serves as a doctor blade to limit the amount of material that gets through to the conventional pre-cleaner installed just below.

cupping[2] | The action of the edges of a belt curving upward on the carrying run and downward on the return run. Also referred to as belt "curl."

cut edge[1] | The uncovered edge of a belt, created by slitting the desired width from wider belting.

cyclone[2] | A high-velocity "whirlwind"-type device that uses centrifugal force to separate dust particles from the air.

D

dBA | Acronym for decibel A scale, a measurement of sound intensity.

deck, decking[2]**, deck plate** | A barrier plate located between the conveyor's stringers to prevent material from spilling off the carrying run onto the return run. Also referred to as "belt pans."

deflector wear liner | A liner installed inside the skirtboard that incorporates a bend toward the center of the belt, which channels material away from the belt edge and sealing system.

deflector[2] | A metal plate installed in a transfer point to change the trajectory of material flow.

delamination[1] | The separation of layers of material.

DEM | Acronym for Discrete Element Modeling, a computer-based technique to analyze and demonstrate the movement of individual particles in or through a structure.

density[1] | The ratio of the mass of a body to its volume or the mass per unit volume of the substance. For practical purposes, density and specific gravity may be regarded as equivalent.

diagonal plow[2] | A device placed at an angle across the surface of a conveyor belt to deflect material off to one side.

DIN | Acronym for Deutsches Institut für Normung, the German Institute for Standardization, which develops norms and standards for industry. DIN standards are used internationally, but still most commonly in Europe.

discharge[2] | The point where material exits from a conveyor or other component in a material handling system.

disk idler[2] | An idler that uses a series of cushioned disks to support a conveyor belt.

displaced air | The air that is pushed out of the chute when the chute is loaded, equal to the volume of materials placed into the chute.

diversion plow[2] | A retractable plow that can be lowered to the carrying surface of a belt to divert material off of a conveyor ahead of the normal discharge point.

downstream | In the direction of the places that the belt has not yet reached, or toward the discharge of the conveyor or system.

drag conveyor | Material-handling system using bars or plates on a chain to pull the cargo to the discharge point.

dribble chute[2] | An angled chute positioned under the head end of a conveyor belt to catch any material that may fall off the return side and drop it into the discharge stream.

drive[2] | An arrangement of electrical and mechanical components that provide motive power to a conveyor or other piece of equipment.

drive pulley[2] | The pulley connected to the drive mechanism of a conveyor belt.

drum pulley[2] | A pulley that is of uniform diameter from side to side.

durometer | A device that measures the hardness of a flexible material (such as an elastomer), accomplished by measuring the resistance to the penetration of an indenter point.

dust bags[2] | Specially designed air-permeable filter bags that trap and collect airborne dust from a material handling system.

dust-collection system(s) | A mechanical system used to remove dust from the air in a material transport system.

dust curtains[2] | Segmented rubber or plastic curtains (baffles) suspended inside an enclosed duct that are used to slow down airflow and allow airborne dust to settle back into the material stream on a conveyor belt before it exits its load zone.

dust-suppression system(s) | A dust-control system using water or enhanced water to reduce the escape of airborne particulates.

dynamometer[1] | An apparatus capable of inducing various loads for evaluation of dynamic belting properties.

E

edge damage[2] | Tears and rips along the edge of a conveyor belt.

edge distance | Dimension between the outside of the skirtboard and the edge of the belt.

edge sealing | *See seal.*

edge-sealing strip(s) | *See sealing strips.*

effective belt width | The measurement of the horizontal width of a troughed conveyor belt that is measured across the dimension parallel to the bottom roller.

effluent | The outflow of water (with material solids) exiting a belt-washing system.

elastomer | A polymer having elastic properties resembling natural rubber; typically rubbers or urethanes.

electrical conductivity[1] | A measure of how well a material accommodates the transport of electric charge, measured in Ohm (Ω).

elongation | An increase in length, usually expressed as a percentage of initial length.

end stop[2] | A clamp equipped with a set screw that is used to secure blades in position on a belt-cleaner mainframe.

entrapment damage[2] | A groove worn into the surface of a belt by material trapped between the moving belt and the skirtboard and/or sealing system.

entrapment point(s) | A point where the two surfaces will allow a material lump to become wedged.

entry, entry point[2] | The point beyond the tail pulley where a conveyor belt passes into the load zone.

EPA | Acronym for Environmental Protection Agency, a branch of the United States government.

exit, exit point[2] | The area of a load zone where the skirtboards come to an end and the main carrying run of the conveyor begins.

F

fatigue[1] | The weaking of a material occuring when repeated application of stress causes permanent strain.

FEA | Acronym for Finite Element Analysis, a computerized numerical analysis technique used for solving differential equations to primarily solve mechanical engineering problems relating to stress analysis, used in bulk-material handling in the design of conveyors and transfers.

feed rate[2] | The amount of material flow that is being transferred on a conveyor at any given time, usually expressed in "tons per hour" (t/h or st/h).

feeder[2] | A device that regulates the flow of material from a bin or storage hopper to a conveyor or other piece of equipment.

feeder belt[1] | A belt that discharges material onto another conveyor belt.

field-trimmed | Cut to the proper size at the point of application (as opposed to being cut at the factory).

fines | Small particles of material.

finger splice | A joint of the belt where the two ends are cut into a number of narrow triangular "fingers" which are interlaced.

flanged pulley[2] | A pulley with a raised rim at the edges for the purpose of keeping the belt contained.

flat belt | A conveyor belt that carries its cargo without being troughed.

flat idler[2] | An idler where the supported belt is flat.

flat roller | *See flat idler.*

flex cracking | A cracking of the surface resulting from repeated flexing or bending.

flight conveyor[2] | A type of conveyor that uses spaced cleats or scrapers (flights) to move material from one point to another through a channeled chute.

flop gate[2] | A pivoted metal plate that can be moved or "flopped" to feed material to either of two different discharge points.

flow aid | Device or method to promote the flow of materials through chutes, including both linear and rotary vibrators, air cannons, aeration systems, chute linings, and soft chute designs.

flush, flush-through[2] | An uncontrolled surge of material through a material handling system component.

footprint | Projected or actual area occupied on the ground.

free-belt edge distance | The non-load carrying portion of the belt's width, toward the belt edges, typically where the skirtboard-sealing system is applied.

friction[1] | The resistance to motion due to the contact of surfaces.

fugitive material[2] | Any stray material that escapes from a material handling system at a place other than its normal discharge point, might originate as carryback, spillage, or airborne dust or from other causes.

full-trough pulley | A tail pulley installed so its top is inline with the top of the center rolls on the first fully-troughed idlers.

G

gauge[1] | The thickness of a belt or of its individual elements.

generated air | Airflow produced by rotating devices that feed the conveyor load zone.

gouging[1] | The effect of sharp heavy material falling onto a conveyor belt cover to damage the surface or tear out pieces of the cover.

grade of belting | A classification of belt cover based on its properties; designed to provide a reference for end users as to what belts to use in different applications.

gravity take-up[2] | A device that adjusts for stretch or shrinkage by using a weighted pulley to maintain tension on the belt.

grizzly[2] | A series of metal bars or grids that are spaced apart to allow small lumps and fines to fall directly through while passing larger lumps on to crushing or breaking equipment.

grooving[2] | *See entrapment damage.*

guards, guarding | Barriers to prevent the entry of personnel into potentially-hazardous areas or equipment.

guide roller[2] | A small outrigger roll on a self-aligning idler. When a conveyor belt mistracks into the guide roll, it causes the pivoted steering rolls to turn inward and force the belt back onto centerline.

gusset | A triangular insert for enlarging or supporting.

H

half-trough pulley[2] | A tail pulley installed so its top surface is inline with the midpoint of the wing rolls on the first fully-troughed idlers, typically used to shorten the conveyor's required transition distance.

hammermill[2] | A type of crusher using multiple rotating hammers mounted on a central shaft to break hard, lumpy materials such as coal or limestone into smaller sizes.

hardness[1] | Degree of resistance to indentation.

head[2] | The discharge end of a conveyor belt.

head load | Pressure from a load on top of an object, such as the weight of the material in a vessel above a belt.

head pulley[2] | The terminal pulley located at the discharge point of a conveyor belt. On many conveyors, the head pulley is coupled to the drive motor to power the conveyor.

heeling[2] | Entrapment point caused by mounting a pre-cleaner mainframe too close to the head pulley.

hold-down roller[2] | An idler used to keep a conveyor belt from raising up, as when traveling unloaded, or used to apply downward pressure on the return run of a conveyor belt to maintain cleaning efficiency by preventing cleaning pressure from changing the belt's line of travel. Also referred to as a "pressure roller."

holdback[2] | *See backstop.*

holdup roller[2] | An idler that is used to increase the effectiveness of a tail protection plow by applying pressure upward to hold the belt flat.

hood | A curved deflector installed at the discharge of a conveyor to direct and confine the moving material stream so it flows smoothly and with minimal induced air.

hydrophobic | Having a high surface tension and averse to combining with water.

hygroscopic | Able to absorb moisture from the air.

I

idler[2] | A non-powered rolling component used to support a conveyor belt on either the carrying run or the return run.

idler-junction failure | See junction-joint damage.

impact[1] | The striking of one body against another; collision. The force or impetus transmitted by a collision.

impact bed, impact cradle[2] | A series of cushioned bars used to absorb loading forces under a conveyor belt load zone.

impact grid[2] | A series of metal bars mounted in a conveyor discharge chute at the point where the material impacts the wall, to reduce wear on the chute liner.

impact idler[2] | A specially constructed idler designed to cushion forces of material impact in the load zone of a conveyor belt.

impact resistance[1] | The relative ability of a conveyor belt assembly to absorb impact loading without damage to the belt.

induced air | air pulled into the voids created as the material stream expands as it leaves the head pulley.

insertable, insertable dust collector, insertable dust filter | A dust-collection system composed of filters designed to be incorporated inside the enclosure of a transfer point or other dust source.

interface friction (Θ) | The friction between the bulk material and the surface(s) that will be in contact with it (e.g. chutewall and belt); can be determined with a shear cell and a sample of the actual interface material; sometimes referred to as wall friction or boundary friction.

intermediate idlers[2] | Idlers placed between impact beds or slider beds to support a conveyor belt when material is not being loaded.

internal friction angle | The angle at which the particles within a bulk material slide over one another within a pile, or failure due to shearing.

ISO | A universal short form of the name of the International Organization for Standardization adopted from the Greek word "isos," meaning equal.

J

jog switch[2] | A manual start switch located near the discharge end of a conveyor used to "jog" or "bump" the belt for short distances for testing purposes or to gradually empty the belt of overloaded material.

joint[1] | The connection of two belt ends.

junction joint[2] | The area between the wing roll and center roll on a set of troughing idlers.

junction-joint damage[2]**; junction-joint failure** | A longitudinal splitting or cracking in a belt caused by insufficient transition distance between the tail pulley and the load zone for the type of belt being used and/or an idler-junction gap of more than 10 mm (0.4 in.) or twice the belt thickness.

K

kicker plate | Deflector to steer the flow of material after it leaves the first point of contact with the transfer chute.

knocking[2] | The process of manually adjusting the cross-structure angle of conveyor belt idlers to train a belt to centerline, accomplished by moving one end of the idler slightly forward or back.

KPIs | Acronym for key performance indicators, performance measurements used as metrics to measure organizational success.

L

lagging[2] | A rubber, fabric, or ceramic covering applied to a pulley shell to improve belt traction against the pulley.

lateral misalignment[2] | The offset of pulleys, idlers, or structure from a designated longitudinal reference line.

leakage | Material that has escaped from the material handling system, spilling from the sides or falling or expelled from openings.

lift | The vertical distance bulk material is moved on a conveyor; the change in height from one end of the conveyor to the other end.

limit switch[2] | An electrical switch used to shut off the drive or actuator of a system component such as a flop gate once it reaches a predetermined set point.

linear tensioner[2] | A type of tensioner that applies direct upward pressure to a belt cleaner.

liner | Material placed on the inside surfaces of an enclosure or vessel, usually to preserve the enclosure by reducing wear.

load out[2] | Area at the discharge of a conveyor where material can be temporarily stored or loaded directly onto a device for transport to another destination.

load zone[2]**, loading zone** | The receiving point where material is dropped or fed onto a conveyor.

loading chute | The enclosure that places the cargo onto the belt.

lockout | A safety precaution of placing a padlock or other control on stored energy sources, the power supply, or control circuit of a machine to prevent its premature resumption of operation or unexpected released energy.

longitudinal[2] | In reference to a conveyor belt, a lengthwise direction that runs parallel with the centerline.

loose bulk density | The weight per unit of volume of a bulk solid, measured when a sample is in a loose or non-compacted condition, (ρ_1).

LRR[1] | Acronym for Low Rolling Resistance, a proprietary rubber formulation.

M

magnetic pulley[2] | A pulley equipped with a permanent or electromagnet, used to remove tramp iron from the material cargo carried on or discharged from the conveyor.

magnetic separator[2] | A device that uses magnetic attraction to pull metal scraps, known as "tramp iron," out of the material stream on a conveyor.

mainframe[2] | The main structural support of a belt cleaner upon which the blades are mounted.

mandrel[2] | A central shaft used for mounting and lateral adjustment of a belt-cleaner mainframe.

manometer | A device used for measuring the pressure of gases or liquids; on conveyors, used for measuring air flow.

maximum tension[1] | The highest tension occurring in any portion of the belt under operating conditions.

mechanical dust collection | Active dust-collection system, typically using fans pulling air through ductwork to a filtration system.

mechanical fastener[1] | A system used to join the ends of belting, typically involving screws or rivets to attach plates connecting the two ends.

mechanical splice[2] | A type of splice in which mechanical fasteners are used to connect the two ends of a belt.

minimum pulley diameter | The minimum pulley size (usually to prevent damage) for a particular belt as specified by the belting's manufacturer.

misalignment switch[2] | A limit switch mounted along the edge of a conveyor belt that will shut the drive motor down if the belt tracks too far to either side of its normal centered path.

mistracking | The off-center travel of a conveyor belt.

molded edge[1] | A solid rubber belt edge formed in a mold, where the belt has been manufacturer to a specific width, rather than slit from a wider piece.

mooning[2] | Uneven wear on a pre-cleaner blade that results from positioning the cleaner mainframe too far out from the head pulley.

MSHA | Mine Safety and Health Administration, a unit of the US Department of Labor.

N

negative rake | Cleaning blades inclined at an angle in the direction of belt travel; also known as the scraping orientation.

O

offset idlers[2] | A troughing idler set where the wing rollers are in a vertical plane different from, but parallel to, the center roller. This permits the wing rollers to overlap the central roller, improving belt support; may also reduce the height of the idler set.

oil resistant | Able to withstand any deterioration of physical properties arising from interaction with petroleum.

operating tension | The tension of a belt while running with a material load.

OSHA | Occupational Safety & Health Administration, in the United States an agency of the United States Department of Labor; the main federal agency charged with the enforcement of safety and health legislation.

outrigger | A projection extending laterally beyond the main structure of a vessel, aircraft, or machine, usually for added stability.

ozone cracking[1] | Cracks in the belt surface caused by exposure to an atmosphere containing ozone.

P

particulates | Fine solid or liquid (other than water) particles found in the air, including dust, smoke, and pollen.

passive dust collection[2] | A dust-collection system that minimizes dust by utilizing efficient transfer-point design and airflow control rather than mechanical devices.

peeling angle | When a cleaner blade is tilted in opposition to the direction of belt travel; also known as positive-rake angle.

pelletizer | A device to form pellets (small lumps) from fines or dust.

permanent stretch | A change in length of a belt seen after tension has been removed; this additional length generally accumulates over a period of time.

picking idlers[2] | A type of troughing idler set with narrow wing rolls and a wide center roll. Idlers of this type are generally used for material that must be picked or sorted as it is conveyed.

pickup velocity | The speed at which air moving over a bed of a given material can pick up dust off the surface and carry it away, typically in the range of 1,0 to 1,25 meters per second (200 to 250 ft/min).

pillow block[2] | A journal bearing enclosed in a bolt-on housing that is used to mount pulleys to a conveyor stringer.

pinch point | A point where a machine element moving inline meets a rotating element in such a manner it is possible to nip, or entrap, a person or object between the members.

pitot tubes | A pressure measurement instrument used to measure the velocity of fluid flow.

PIW | Abbreviation for Pounds per Inch Width, a measurement of a belt's rated capacity for tension.

PLC | *See programmable logic controller.*

plenum | An enclosure in which pressurized air is distributed.

plow | A device stationed across the path of a conveyor to discharge or deflect material.

plug welding | A type of joint made by welding one part to another through a circular hole in the top part.

pluggage | The blocking of the discharge of a chute or hopper.

ply[1]**, plies** | A layer of fabric used in the carcass of a belt.

pocket belt | A belt where pockets, formed by the addition of raised cleats and flexible sidewalls, are used to carry the cargo; commonly seen in high-angle applications.

positive pressure | The outward flow of air from the transfer point or other structure.

positive rake | In belt cleaning, a blade tilted in opposition to the direction of belt travel; also known as peeling angle.

pooling[2] | Material that piles up on a belt at the load zone until it reaches belt speed and can be carried away.

PPEs | Personal protective equipment, equipment and attire such as a hard hat, safety glasses, hearing protection, respirators, and steel-toe shoes.

pre-cleaner[2] | A belt cleaner installed on the face of a head pulley to shear off the bulk of any carryback clinging to the belt; primary cleaner.

press | A machine that applies pressure consistently across its surfaces, used for belt splices.

pressure roller | A roller installed to keep the belt in proper position, as above a belt cleaner.

primary, primary cleaner | A pre-cleaner; that is, a belt cleaner installed on the face of a head pulley below the material trajectory to shear off the bulk of any carryback material clinging to the belt. The primary cleaning position is on the face of the head pulley below the trajectory.

primary position | The area around the discharge pulley where primary belt cleaners are usually installed.

profile rip | A form of belt damage to the belt, with a rip running from the edge toward the center.

programmable logic controller (PLC)[2] | A centralized computer system that controls a system's operation and monitoring by communicating with remote input/output circuit boards for each individual system component.

pug mill | Industrial processing machine in which material is simultaneously ground and mixed with a liquid.

pull-cord stop switch | A cable running along the length of a conveyor, connected to one or more switches. In an emergency, a manual pull of the cable at any point will shut down the conveyor system.

pulley[2] | A rotating cylinder mounted on a central shaft that is used to drive, change direction of, or maintain tension on a conveyor belt.

pulley-protection plow | A plow installed so the belt passes under it immediately before the belt enters a pulley (usually, the tail pulley). The plow removes material from the belt to prevent damage to the pulley and belt by entrapment of material between the two.

pulley wrap[2] | The total area of contact where a belt wraps in an arc around the surface of a pulley.

pulverizer[2] | A mechanical device used to grind material down to a fine powder consistency. A ball mill uses heavy steel balls that roll between counter rotating faces to crush the material.

PVC | Acronym for polyvinyl chloride, a material used in the construction of some conveyor belting.

Q

R

radial tensioner[2] | A tensioner that transmits torque through a pivoted extension or torsion spring to a belt cleaner.

rated tension | The minimum breaking strength of a belt in newtons per millimeter (lb_f/in.) of belt width, as specified by the belting manufacturer. In the USA sometimes used as a term for the working tension.

reclaim system[2] | A material handling system use to recover and transport material from a stockpile area to a point where it will be processed or consumed.

regenerative conveyor[1] | A conveyor that discharges at a substantially lower altitude than the tail (so it conveys material downhill), producing electricity rather than consuming it.

relief | A mechanism that allows an item (a cleaner blade, for example) to move away from an obstruction (a mechanical splice, for example). These could include springs in the cleaning-system tensioner.

relieving angle | An incline or opening of surfaces that will allow material to be pulled free by the action of the belt, rather than become more tightly wedged.

residual surfactant | A dust-suppression additive that will continue its agglomeration effect even after the moisture evaporates; also called a binder suppressant.

return idler[2] | An idler used to support the empty, return side of a conveyor belt.

return run[2]**, return side** | The side of a conveyor belt that does not carry cargo, after the discharge, as the belt returns to the loading zone.

reverse-jet | A method of cleaning filters in a baghouse; bags are cleaned by discharging a burst of compressed air into the bags at the top; the compressed-air burst flexes the bag wall and breaks the dust cake off so it falls into the collection hopper.

reversing conveyor[2] | A type of conveyor that can carry material longitudinally in either direction.

ribs | *See cleats.*

rip detector[2] | A system in which an electrical conductor is built into the plies of a conveyor belt that will shut the drive motor down if the belt becomes torn.

RMA | Acronym for Rubber Manufacturers Association, Inc.

rock box[2] | A ledge or shelf inside a transfer chute where material is to accumulate. This allows subsequent material to impact on the accumulated material rather than against the chute, extending the life of the walls.

rock ladder[2] | A series of rock boxes that slow down the velocity of material by cascading it back and forth between ledges.

Rockwell hardness (or scale) | A scale for evaluating the hardness scale of materials, as determined by measuring the depth of penetration of an indenter. Different scales are denoted by a single letter; "B" and "C" are the most common.

ROI | Return on investment or payback.

roll crusher[2] | A mechanical device that uses a heavy, rotating metal drum equipped with teeth or cogs inside a screened enclosure to crush hard materials.

rollback[2] | Stray pieces of material that roll and bounce backward down an inclined belt after material flow has been shut off. Or, the downhill motion of an inclined conveyor, running backward when the power is shutoff while the belt is loaded.

rolling component(s) | The idlers and pulleys (and other rotating components) of a conveyor system.

ROM | Run-of-mine, the raw mined material that comes directly from the extraction operation prior to crushing, screening, or other treatment.

run | The distance or route covered by a conveyor belt.

S

sacrificial surface | A wear surface that is installed to protect a more valuable structure by absorbing, cushioning, or isolating the abrasion, impact, or other forces.

saddle[2] | An additional short length of belting added to an existing conveyor belt.

safety cable | A restraint used as a safety measure to prevent the fall of an overhead device in the event of the failure of its mounting system.

safety factor[1] | The fraction of a structure's capability over that which is truly required, or a multiplier applied to the maximum expected load (force, torque, bending moment, or a combination) to which a component or assembly will be subjected.

sampler[2] | A mechanical device used to collect small amounts of material at preset intervals from the main material stream for testing or quality-control purposes.

scab plate[2] | A piece of metal plate used to patch over a hole in the wall of an enclosure such as a transfer chute.

scavenger conveyor[2] | A small conveyor or vibrating chute positioned beneath the head of a larger conveyor to capture carryback or material drop-off from a belt-cleaning system and return the discharge to the main material stream.

scraping angle[2]**, scraping position** | A belt cleaner installed so its blade(s) are tilted in the direction of belt travel; also known as negative-rake angle.

screw conveyor[2] | A type of conveyor that uses a rotating auger inside an enclosed tube to convey material from one point to another.

screw take-up[1] | A mechanical take-up to apply tension to a conveyor belt in which movement of a pulley-bearing block is accomplished by means of a screw.

seal | Method to prevent spillage by containing the fines and dust at the edge of the skirtboard.

sealing strip(s) | The elastomer material installed between the skirtboard and the belt to prevent spillage.

sealing system | Elastomer seal and clamping mechanism at the edge of the skirtboard to contain dust and fines and prevent spillage.

secondary belt cleaner, secondary cleaner | A belt cleaner mounted beneath the return side of a conveyor belt to remove any remaining carryback fines that were not removed by the pre-cleaner blade.

secondary position | Position for a belt cleaner, between the point where the belt leaves the head pulley and where it contacts the first snub or bend pulley or return idler.

segregation |The accidental or undesired separation of a material by size.

self-aligning idlers[2] | Idlers that can swivel to the left or right under the influence of the forces of the moving belt to keep the belt traveling on the centerline.

settling zone | An enlarged portion of the covered skirtboard area past the loading zone's impact area; the extra volume designed to slow the airflow and allow airborne dust to return to the main material cargo and cleaner air to escape; also called a stilling zone.

shear cell test | Test to derive flow properties of a bulk material by measuring the force to shear the bulk material.

side-loading forces | Pressure resulting from the energy and weight of material pushing outward from the center.

side-support cradles | Belt support system using slider bars under the skirtboard, to provide a consistent and sealable surface for the sides of the belt.

skim coat | A thin layer of rubber material laid on a fabric but not forced into the weave.

skirtboard[1] | The vertical or inclined plates extending out from a conveyor's loading point and installed closely above the belt to confine the conveyed material.

skirtboard seal, skirting seal | The mechanism (often a strip of elastomer) installed along the bottom of the transfer point's skirtboard to control spillage and keep material on the belt.

skirted area | The area of the transfer point that is enclosed within the skirtboard; the area of the transfer point from the loading point through the exit.

skive[2] | To remove some (or all) of a belt's top cover to recess a mechanical splice; the process of countersinking the fasteners in a mechanical splice closer to the belt carcass to keep the top of the fasteners parallel with the surface of the belt.

slack-side tension[2] | The area of least tension on a conveyor belt; the low-tension areas will vary on the location of the snub and take-up pulleys; they are completely dependent on the individual conveyor and must be identified for each application.

slider bar | A low-friction bar, typically used in the construction of a slider bed belt-support cradle.

slider bed[2] | A series of longitudinal bars assembled in a cradle and placed beneath a conveyor load zone to provide a continuous surface for a loaded belt to ride on.

slider bed conveyor | A conveyor using some variety of low-friction bars or other flat surface, rather than idlers, to support the belt.

slip, slippage | The speed differential between the belt and the pulley surface.

snub, snub pulley[2] | A small pulley used to increase the wrap area of a conveyor belt around a head or tail pulley for improved traction.

spillage | Lost material that has fallen from the side(s) of the conveyor belt; typically in the load zone, but can occur at any point along the conveyor; a general term for all fugitive material.

spiral-wrapped pulley[2] | A wing pulley that is wrapped with a steel band in a spiral pattern to reduce belt vibration while still maintaining the self-cleaning function of the pulley.

splice | The joint where two ends or two pieces of belting are joined together to provide a continuous loop.

splice allowance[1] | Additional belting required to allow a splice to be installed.

splice angle | The angle across the top of the belt at which two pieces of belt are joined.

spoon | A curved trough at the bottom of a transfer chute that directs the placement of the stream of material onto the receiving belt.

spring take-up[2] | A mechanical device that utilizes a variable force spring or springs attached between the conveyor structure and the tail pulley mounting block to maintain tension on the belt.

squeegee blade | A soft urethane blade that wipes the belt to remove water from the belt.

stacker conveyor[2] | A conveyor used to "stack" or drop material onto a stockpile or lowering well. A stacker conveyor can be "fixed," to drop material into a single location, or "rotating," to spread the material in a sweeping motion over a wider area.

stacker/reclaimer[2] | A boom mounted conveyor equipped with a rotating bucket wheel that can "stack" or drop material onto a stockpile for storage or reverse direction and reclaim the material from the stockpile to another destination.

stackout system[2] | A series of conveyors designed to carry material out onto a storage area.

steering rolls[2] | A set of rollers (or a set of troughed idlers) mounted on a pivot that can swivel left or right to steer a mistracking conveyor belt toward centerline.

Stahura Carryback Gauge | A method to measure carryback utilizing a collection pan with scraper blades held against the return side of a moving belt to capture residual material; developed by belt-cleaning pioneer Dick Stahura.

stepped splice[2] | A type of splice in multi-ply belting where the fabric plies on one end of the belt are removed so that it will butt together and overlap adjacent plies of fabric on the other end.

stilling zone | *See settling zone.*

stitch welding | A metal joining technique using a series of spaced welds, with intervals between the welds.

STP | Acronym for Standard Temperature and Pressure; 0˚C/32˚F, 1 atmosphere (101.325 kPa) (1 atmosphere of absolute pressure).

straight face pulley[2] | A pulley with a flat surface with no crown.

stringer[2] | The longitudinal supporting members of a conveyor structure, between the terminal pulleys.

surcharge angle | The angle to the horizontal which the surface of a body of material assumes while the material is at rest on a moving conveyor belt. This angle usually is 5° to 15° less than the angle of repose, though in some materials it may be as much as 20° less.

surfactant[2] | A surface-acting agent. In dust suppression, this is an additive that is combined with water in a spray or fog to assist in the capture of airborne dust.

Swinderman Scale of Fugitive Materials | A scoring system that assigns values to a system's performance in control of fugitive materials for dust, spillage, and carryback.

T

tagout | The placing of a name tag or other label or sign on a disabled power or control system, to identify that the system is "down" for maintenance and should not be restarted.

tailgate sealing box[2] | An enclosure located at the tail end of a load zone to prevent material from leaking out onto the belt behind the chutework.

tail pulley[2] | A pulley that turns the return run of a conveyor belt 180 degrees back into the carrying run.

take-up[2] | A device used to remove slack from a conveyor belt and maintain tension. Gravity take-ups use a heavy counterweight to maintain belt tension; mechanical take-ups use a hydraulic device or screw adjustment to maintain tension.

take-up travel | The distance the take-up is able to move while the belt is running.

tension | The force along the belt line required to overcome the resistance of components and transport the load.

tensioner, tensioning device | A device used to maintain a belt cleaner's cleaning pressure against the surface of the belt.

terminal pulley | The pulley at either end of the conveyor; the head and/or tail pulleys.

tertiary belt cleaners[2]**, tertiary cleaner** | Any additional cleaners added to a belt after the primary cleaner (pre-cleaner) and initial secondary cleaner; cleaner(s) installed further along the conveyor return than secondary position.

tertiary position | The area after the snub pulley for the installation of additional belt cleaners.

testout | Attempting to operate a device that has been presumably disabled by lockout / tagout / blockout procedures; used as a final safety precaution.

throughput | The amount of bulk material delivered by a material handling system; usually stated as tons per hour (st/h).

tie gum[1] | A thin sheet of unvulcanized rubber inserted between plies in the assembly of a vulcanized belt splice.

tight side tension[2] | The area of highest tension on a conveyor belt, usually located at the point where the belt approaches the drive pulley.

tilt switch[2] | An electrical switch designed to shut off material flow from a conveyor when material backup at the discharge point forces it into a tilted position.

TLV | Threshold limit value, a level of dust to which it is believed a worker can be exposed day after day for a working lifetime without adverse health effects; as expressed in parts per million parts of air (ppm) for gases and in milligrams per cubic meter (mg/m^3) for particulates such as dust, smoke, and mist.

top cover | The carrying surface of the belt.

total material control | Success in containing spillage and carryback and controlling dust, where materials are kept on the belt and within the system.

TPH, tph | Abbreviation for "tons per hour;" a measure of capacity.

tracker[2]**, tracking device** | A device used to steer a mistracking conveyor belt back to centerline.

tracking | *See belt tracking.*

training | *See belt training.*

training idler[1]**, trainer** | An idler mounted on a pivot or otherwise adjustable base that, when actuated by the mistracking belt moving against it, will automatically adjust its position to steer the belt to the correct path.

trajectory[2] | The arcing path made by conveyed material as it is discharged from the head end of a conveyor.

tramp iron[2] | Pieces of scrap metal that may contaminate the material stream on a conveyor belt.

tramp iron detector | A system to detect the presence of tramp iron in a material stream and either remove the tramp iron or shut down the material handling system.

transfer point | The place (and associated equipment) where a belt conveyor is loaded or unloaded.

transition | The forming of the conveyor belt into a trough to receive its cargo; the area where this change takes place.

transition area[2] | The area between the tail pulley of a conveyor and the start of the load zone where the belt transforms from flat to fully troughed or the area where the belt transforms from troughed onto the discharge pulley.

transition distance | The distance from the centerline of the terminal pulley to the first fully-troughed idler.

transition idlers[2] | Idler sets between the tail pulley and the load zone that gradually transform the belt into the trough for loading.

transverse[2] | The direction from side to side across a conveyor belt.

traveling plow[2] | A plowing device that can be moved back and forth longitudinally over the carrying side of a conveyor belt to deflect material to alternate discharge points along its run.

tripper conveyor[2]**, tripper** | A rail-mounted mechanism with a traveling take-up that can move the discharge end of a conveyor to multiple points along a straight line to fill individual hoppers or bins.

trough | the shape of a belt with the edges raised allowing it to carry more material.

trough angle[2] | The angle (from horizontal) at which the belt edges are troughed to help center and contain its load.

troughability[1] | The property of a belt that permits it to conform to the contour of troughing idlers; the amount a belt can be troughed.

troughing idlers[2] | A set of carrying idlers consisting of a horizontal center roll with incline wing rolls on both sides that forms the carrying side of the belt into a trough.

tube conveyor[2] | A conveyor where the belt is formed into a closed tube after it is loaded, typically used to prevent spillage and carry material vertically.

turnover[1] | A system installed in a conveyor that inverts the belt, usually to control carryback by keeping the load-carrying ("dirty") side of the belt up.

U

UHMW[2] | Acronym for Ultra-High Molecular Weight polyethylene, a plastic material commonly used as a chute liner or low-friction belt-support surface.

unidirectional conveyor | Conveyor that carries material in one direction.

upstream | In the direction of the places the belt has already passed, or back toward the loading point.

V

valley angle | The angle between two chute walls created by the side wall joining with the back wall.

vee roller | *See V-return idler.*

vibrated bulk density | Also called consolidated bulk density (ρ_2), achieved by applying a compressive force (F) or vibratory energy to a body of material; used for determining the weight of material conveyed on the belt based on surcharge angle.

vibrating feeder[2] | A type of feeder that uses a suspended or isolated trough with an attached vibrator to move material from a bin or hopper into a transfer chute.

viscosity[1] | Resistance of a material to flow under stress.

V-plow[2] | A "V" shaped device equipped with a rubber or urethane blade that rides atop the return run of a conveyor belt to deflect any stray material away from the tail pulley.

V-return idler[2] | A return idler that incorporates two rolls in a "V" configuration to improve belt tracking on the return run.

vulcanized splice[2] | A type of splice in which the layers of a belt are overlapped and bonded together, using heat and pressure ("hot vulcanization") or a chemical bonding agent ("cold" vulcanization).

vulcanizer[1] | A device to apply heat and pressure for curing a splice; also called a press.

W

wall friction angle | *See interface friction.*

wander | Mistracking.

warp[1] | Lengthwise yarns in a woven fabric.

wash box | An enclosure containing a series of belt cleaners and water-spray nozzles for belt cleaning.

water tensioner[2] | A type of belt cleaner tensioner that uses regulated water pressure to maintain tension on the cleaner blades.

wear liner[2] | A layer of ceramic tiles, AR plate, or other abrasion-resistant material used to line the inside of a transfer chute or skirtboard to improve material flow and prevent abrasive wear and damage to the outer shell and structure.

weft[1] | The crosswise yarns in a woven fabric.

weldment[2] | A fabricated metal component held together by welded joint(s).

wing idler[2] | Either of the outer rollers in a troughed idler set, mounted at an angle to the central roll.

wing pulley[2]**, wing-type pulley** | A type of self-cleaning pulley that supports the belt on individual vanes instead of a solid surface. The vanes are mounted on a central section that tapers down from inside to outside to direct stray material out of the pulley and off to the sides.

wing rollers | Rollers on the outside of a troughed idler set. *See wing idler.*

X

Y

Z

zero speed switch | Electrical switches used to detect the stoppage of a rotating shaft, such as on a conveyor drive motor.

zero rake | Belt cleaner angle of attack where blades are installed perpendicular (90 degrees) to the belt line.

SOURCES

[1]**Conveyor Belt Guide**
www.ConveyorBeltGuide.com

[2]**Stahura Coveyor Products**
www.scp-pa.com

Metric		Imperial	
Description	**Abbreviation**	**Abbreviation**	**Description**
centimeter	cm	BTU	British Thermal Unit
cubic centimeter	cm^3	BTU/lb_m	British Thermal Unit per pound mass
cubic meters	m^3	ft	feet or foot
cubic meters per hour	m^3/h	ft/min	feet per minute
cubic meters per minute	m^3/min	ft/s	feet per second
cubic meters per second	m^3/s	ft^2	square feet
decibels - audio	dBA	ft^3	cubic feet
degrees Celsius	°C	ft^3/h	cubic feet per hour
gram	g	ft^3/min	cubic feet per minute
hectopascal	hPa	ft^3/s	cubic feet per second
hilohertz	kHz	gal	gallon
kilogram	kg	gal/h	gallons per hour
kilograms per cubic meter	kg/m^3	gal/min/in.	gallons per minute/per inch
kilograms per liter	kg/l or kg/L	gal/s	gallons per second
kilograms per second	kg/s	h	hour
kilograms per square meter	kg/m^2	hp	horsepower
kilojoule	kJ	in.	inches
kilojoule per kilogram	kJ/kg	$in.^3$	cubic inch
kilometer	km	lb/ft^2	pounds per square foot
kilometer per hour	km/h	lb_f	pounds-force
kilonewton	kN	lb_f /ft	pounds-force per foot
kilonewton per meter	kN/m	lb_f $/in.^2$	pounds-force per square inch
kilonewton per cubic meter	kN/m^3	lb_f $/ft^3$	pounds-force per cubic foot
kilopascal	kPa	lb_f /in.	pounds-force per inch
kilowatt	kW	lb_m	pounds mass
liter	l or L	lb_m/ft^3	pounds mass per cubic foot
liters per hour	l/h or L/h	lb_m/s	pounds mass per second
liters per minute per meter	l/min/m or L/min/m	mile	mile
liters per second	l/s or L/s	min	minute
megahertz	MHz	mph	mile per hour
meters	m	°F	degrees Fahrenheit
meters per minute	m/min	oz	ounce
meters per second	m/s	oz_m	ounce mass
microgram	µg	psi	pounds per square inch
micron	µ	psi	pounds-force per square inch
milligrams per cubic meter	mg/m^3	PWI	pounds per square inch width
milliliter	ml	s	second
millimeters	mm		
newton	N		
newton per millimeter	N/mm		
newtons per meter	N/m		
square meters	m^2		