

Principles of using conveyor belts produced by Conbelts S.A.

I. INTRODUCTION

1. **Subject of the document. Term of implementation.** The subject of this document is formulation of the principle of operation, storage and transport all kinds of conveyor belts produced by Conbelts S.A.
2. **Scope of the document.** This document concerns the use and operation of conveyor belts at the producer's or seller's as well as the recipient's / user's place.
3. **Purpose of the document.** The aim of this document is to eliminate any reduction of the life or limitation of the functional properties of belts resulting from their improper operation, storage or transport.
4. **Division of the document.** This document is divided into the following parts:
 - I. Belt operation conditions.
 - II. Belt storage conditions.
 - III. Belt transport conditions.
 - IV. Types of belt damage not covered by guarantee.

II. PRINCIPLES OF BELT USE

1. Belt operation conditions

- 1.1. Belts should only be used in line with their intended purpose, i.e. for the transport of general cargo in bulk or materials in pieces the dimensions and weight of which is suited to the type and width of the belt.
 - 1.1.1. The procedure of belt installation on a belt conveyor is specified in the Operation and Maintenance manual for the conveyor and the rules for operation and maintenance of belts are set out in operation manuals for conveyor belts. Any negligence to these rules is inadmissible due to safety reasons.
 - 1.1.2. The foregoing rule refers also to matching of the belt thickness and type to diameters of the conveyor drums, slope of the conveyor path and specification of side runners as well as the type of belt splicing. Only users shall be solely responsible for any damage to conveyor belt resulting from improper selection of the foregoing parameters. Any disputes shall be resolved on grounds of DIN 22101 standard, sections 7, 8 and 11 as the decisive criterion for design of conveyors and DIN 22102-3 with regard to belt splicing.
 - 1.1.3. The operation temperature for belts is specified in applicable technical conditions of acceptance relevant to specific belt types. The belts of PVC, PWG, FIRECon®belts C, SAFECon®belts types shall be operated within the temperature range from +5 to +60°C and the HDCon®belts type – from -40 to +70°C. Other fabric and rubber belts manufactured by Conbelts shall be operated at temperatures from -25 to +60°C. This requirement is not applicable to frost-resistant belts.
- 1.2. Belts should be used in line with the current state of the art.
 - 1.2.1. The use of handling methods which expose the belts to damage shall in each case be regarded as the user's fault.
 - 1.2.2. Any damage to belts caused by improper use of them shall lead to making the warranty null and void.
- 1.3. Belts for specific working conditions should be selected by the staff of the conveyor belt's producer or a person/organisation having necessary qualifications.
 - 1.3.1. Departure from so made selection upon the initiative of the user shall be his sole responsibility and serves as the reason to make the warranty null and void..
 - 1.3.2. Any amendments to the conveyor design without submission of relevant documents to the belt manufacturer shall make the warranty null and void.
- 1.4. Belts should be spliced in accordance with guidelines contained in the belt's maintenance and operation documentation or e.g. in the information leaflets provided by manufacturers of materials used for splicing.
 - 1.4.1. In particular, belts must be spliced carefully and axially and solely by means of one technique.
 - 1.4.1.1. Any damage to conveyor belts caused by improper splicing shall not be covered by warranty obligations.
 - 1.4.2. Conbelts S.A. recommends vulcanized splicing by means of the hot vulcanization method with use of original materials supplied by the belt manufacturer and identical with materials used for production of belts.
 - 1.4.3. Mechanical joints can be made with use of materials available in the market and in accordance with guidelines issued by manufacturers of cleats or fasteners to be used for joints.
 - 1.4.4. Users shall be solely responsible for proper selection of types and methods for belt splicing as well as for making reliable joints.
 - 1.4.5. Any claims by virtue of belt failures due to making improper mechanical joints shall be explicitly rejected.
 - 1.4.6. If a belt is to be used for transporting people, it cannot be spliced mechanically, and the strength of the joint (glue or vulcanised) must be higher than 60% of the belt's nominal strength.
- 1.5. During the warranty period Conbelts S.A. shall be entitled to periodically inspect operation sites of conveyors belts at the premises of users
 - 1.5.1. Users shall be obliged to submit documentation covering inspections and maintenance of both the belts and the conveyors themselves to be carried out by maintenance personnel of the plant.

2. Belt storage conditions.

- 2.1. Belts should be stored for a period not longer than 12 months, in conditions ensuring maximum protection against atmospheric conditions.
 - 2.1.1. Slow burning belts, due to the most probable site of their operation, i.e. underground mines, demonstrate only limited immunity to the effect of weather conditions.

- 2.1.1.1. Maximum protection is ensured by a closed brick storage facility with a limited access of sunlight, which is achieved e.g. through the lack of windows or by mounting permanently tinted windows.
- 2.1.1.2. Storage and use of belts in outdoor areas, unless preliminary agreed with the belt manufacturer, is inadmissible and results in making the warranty null and void.
- 2.1.2. Belts can also be stored under a canopy or another covering, e.g. tarpaulin. A storage period is considered safe if it is not longer than 6 months.
- 2.1.3. If a belt is not resistant to a particular external factor (e.g. oil or elevated temperature), it is absolutely necessary to prevent the belt's contact with this factor.
- 2.1.4. Belt failures (e.g. deformation) or deterioration of its physical or mechanical parameters entailed by exposure to detrimental factors or agents or storage under conditions different from the recommended ones shall lead to making the warranty null and void.
- 2.2. Belt storage temperature.
 - 2.2.1. Storage of PVC, PWG, FIRECon®belts C and SAFECon®belts at temperatures below +5°C is not allowed.
 - 2.2.1.1. Deformation of belts stored under inadmissible conditions (even at the attempt to have them displaced) may lead to their damage and shall make the warranty null and void).
 - 2.2.1.2. Should the belt is stored at the temperature below +5°C it must be kept intact within its entire body and heated up to the temperature above +5°C prior to installation and use.
 - 2.2.1.2.1. Should the belt is stored at low temperatures so that temperature of its inner coils is also cooled down to the low temperature, it must be places under warm ambient conditions prior to have it uncoiled to make sure that the belt temperature is above +5°C for the entire body of the belt.
 - 2.2.1.2.2. The time necessary to achieve the temperature of +5°C is calculated as one day (24h) per each 2 centigrades of temperature difference between the storage temperature and the minimum temperature of +5°C.
 - 2.2.2. Other fabric and rubber belts manufactured by Conbelts shall be stored within the temperature range from -25°C to +30°C.
 - 2.2.3. Any damage to belts (e.g. deformations) or deterioration of its physical or chemical parameters resulting from storage of belts different from the permissible range of storage temperatures shall make the warranty null and void.
- 2.3. Coiled belts are prepared for transportation, not for use.
 - 2.3.1. To eliminate risk of permanent deformations to belts due to long-term storage of coiled belts they should be periodically recoiled to another shaft (not less than once per three months).
 - 2.3.2. No records on recoiling shall be considered as no recoiling.
 - 2.3.3. Users shall be obliged to submit reports for recoiling of belts during periodical inspections carried out by representative of Conbelts S.A. for belts covered by warranty. Reports shall indicate the date of recoiling, marking code of the belt, number of section and storage location.
 - 2.3.4. Belt damage resulting from the failure to have them recoiled are not covered by the warranty and make the warranty null and void.
- 2.4. Maintenance operations must be carried out with use of tools and equipment that shall never allow for a possibility to have them damaged.
- 2.5. Typically Conbelts S.A. sells its belts coiled onto bobbins.
 - 2.5.1. Upon request, Conbelts S.A. can also offer delivery of belts in untypical packages and coils.
 - 2.5.2. Untypical packaging forms must be agreed upon and approved by the both Parties.
 - 2.5.3. Details on untypical packaging forms are provided in the document "Packaging methods for conveyor belts from Conbelts S.A." available from the Logistic Department of Conbelts.
- 3. **Belt transport conditions.**
 - 3.1. Belts can be transported by any covered means of transportation which guarantee the effectiveness of the transport and its compliance with relevant regulations.
 - 3.2. Belts to be transported must be formed into freight units e.g. pallets, boxes or containers, or can be transported in bulk in the form of coils.
 - 3.3. Belts in bulk on the means of transport or in containers should be fixed in a way preventing their dislocation.
 - 3.3.1. The manner of fixing must be specified by the carrier, who is responsible for correct performance of his instructions.
 - 3.3.2. Conbelts shipment teams have a duty to carry out the loading in accordance with the carrier's instructions.
 - 3.4. Inside warehouses belts shall be handled and displaced with use of tools and equipment that exclude the possibility to have the belts damaged.

III. TYPES OF BELT DAMAGE NOT COVERED BY GUARANTEE

Damage type	Probable reason
Belt damage due to improper operation of conveyors or belts	Lack of support or rigid support of the belt on a strongly loaded transfer station
	alteration of conveyor design
	improper selection of belts for specific operating conditions or changes in already established working environment – selected belts no longer match the operating conditions
	Running the belt in a metal trough
	use of improper scrapers, e.g. metal sheets or waste belt pieces
	use of active scrapers or scrapers furnished with cleaning tools with their hardness exceeding hardness of belt covers
	Failure to use or using improper limiters of troughs (cut-off walls)
	Joining slightly torn mechanical connections by means of wire
	Joining the belts with screws or using other non-articulated mechanical connections
	Replacing horizontal alignment of the conveyor with rolls or dams preventing the belt from coming off the route
	Using the conveyor with at least one removed roller or with rollers which are seized or covered in material handled
	improper splicing
	improper selection of splicing design or splicing materials
Damage characterised by regularity, e.g. cracking of the cover or its tear within an even distance from the belt axis over a long segment or the whole length of the belt.	improper installation of any component of the conveyor path, e.g. an apron at transfer station
	defective support with an idler dismounted or missing or too large spacing between neighbouring idlers of the set
Excessive wear or altered properties of the belt covers	too many guiding idlers (runners)
	excessive skew angle of guiding idlers with respect to the belt central line
	conveyor length less than 50 m
deformation of belts	improper storage
	improper handling or transportation
	exposure to chemical agents
	failure to recoil belts during storage
	careless or improper execution of handling or transportation operations
	cracked covers or carcass breaks due to failure to recoil belts according to the prescribed schedule, excessive impact of external forces onto a single fragment of the belt
	excessive load to the underside of the belt
deformation of belts	premature ageing and deterioration of physical and mechanical properties of slow-burning belts due to their exposure to UV radiation
	improper splicing technology
	excessive tension of belts manifested by lack of contact between belts and idlers for unloaded conveyor
	belts and unsuitable for specific operating conditions
belt is damaged within the splicing area	belt carcass is damaged when the splicing is made
	faulty execution of the splicing operation

Damage type	Probable reason
belt is damaged within the splicing area	improper selection of cleats for making a mechanical splicing on a belt of specific design
	improper workmanship of the splicing operation
	improper selection of the splicing technology and /or material for splicing or mechanical fasteners
	parameters of splicing mismatch diameters of drums (pulleys), operation mode or driving equipment
belt run-out from the conveyor path	accumulation of conveyed material below runners /idlers
	jamming of runners/idlers
	non-perpendicular positioning of fixed and adjustable runners /idlers
	non-perpendicular positioning of runner /idler supports with respect to the belt centre line
	failure to align the conveyer structure in horizontal plane
	misalignment of joints /splicing between belt sections
	crescent shape of belt profile due to improper storage (e.g. failure to have the belt recoiled)
	non-central positioning of cargo on the conveyor