

Cold-resistant belting

A guide to cold-resistant conveyor belts

When the ambient temperature falls below 0°C, rubber begins to lose its elasticity. As the temperature continues to fall, the rubber becomes less flexible and loses its ability to resist abrasion, impact and cutting. Eventually, the belt may become unable to trough or pass around pulleys, while the belt covers and the rubber within the carcass begin to crack. Ultimately, the belt can break because frozen rubber becomes as brittle as glass. Where there is a risk of extremely low temperatures, conveyor operators should always ask the belt supplier to confirm the minimum operating temperature.

Abrasion-resistant belts can typically withstand temperatures between -30°C and -40°C. Other cover qualities, such as oil- or fire-resistant compounds, are usually only able to withstand temperatures down to -20°C. For temperatures below this level, conveyors should be fitted with belts specifically designed to withstand extreme cold.

Fenner Dunlop Coldstar has been specifically engineered to operate in extremely cold conditions while also providing outstanding resistance to other demanding conditions.

Coldstar RAS:

Cold and wear resistant

Coldstar ROS:

Resistant to mineral, animal and vegetable oils

Coldstar ROM:

Resistant to vegetable and animal oils

Coldstar BV K:

Fire retardant according to EN 2882 Class 2A

Coldstar BV S:

Fire retardant according to EN 12882 Class 2B

Coldstar VT:

Fire retardant according to EN 12882 Class 5A

Cover characteristics Coldstar		C RAS	C ROM	C ROS	C BV K/S	C VT
Tensile strength	Mpa (>)	15	15	16	14	15
Elongation at break	% (>)	400	400	400	450	350
Tear strength	Mpa (>)	8	7	5.5	5.5	5
Hardness	°Shore A	61±5	60±5	61±5	58±5	60±5
Abrasion	mm ³ average	50	150	130	160	200
Min. ambient temperature	°C	-60	-40	-30	-40	-30

The given temperatures indicate the limit until which the belt is still flexible enough to function normally.



Learn
more about
Fenner Dunlop
Conveyor Belting



Testing for cold resistance

There are currently no international test methods specifically designed to determine a conveyor belt's ability to function in extremely cold conditions.

At Fenner Dunlop, our laboratory technicians use a liquid nitrogen freezing cabinet to test samples at extremely low temperatures.

The elastic modulus of rubber belt samples is first measured at an ambient temperature of 20°C. The samples are then placed inside the cabinet, where the temperature is gradually reduced in stages of 5°C.

The elastic modulus of the samples is measured at each stage to determine when the reduction in the rubber's flexibility becomes too great. This allows us to identify the lowest permissible ambient operating temperature.



Rubber samples are frozen using liquid nitrogen

Splicing

Splicing methods used for cold resistant belting are the same as for other rubber multi-ply and steelcord belts. Splicing materials should always be supplied by the manufacturer of the belt.



Original Fenner Dunlop splicing materials.

All Fenner Dunlop conveyor belts are fully ozone resistant in accordance with EN ISO 1431 and REACH compliant in accordance with EC 1907/2006.



Seek advice

More often than not, the quality of a belt, including its ability to resist wear, is reflected in its price. It is always worth carefully checking the original manufacturer's specifications and requesting documented evidence of tested performance against the relevant international standards before placing an order.

