

TECHNICAL INFORMATION BULLETIN

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 falls, the rubber continues to lose flexibility and its ability to resist abrasion, impact and cutting. Eventually the belt is unable to trough and pass around pulleys and the belt covers and the rubber in the carcass begins to crack. Ultimately, the belt will break because frozen rubber becomes as brittle as glass. Where there is a risk of extremely low temperatures operators of conveyors should always ask the belt supplier for confirmation of the minimum operating temperature. Abrasion resistant belts can typically withstand -30 to -40°C . Other cover qualities (such as oil or fire) are usually only able to withstand a minimum temperature of -20°C . For temperatures lower than this, conveyors should be fitted with belts especially designed to withstand extreme cold.

DUNLOP COLDSTAR has been specifically engineered to operate in extremely cold conditions as well as providing outstanding resistance to other demands.

COLDSTAR RAS: cold and wear resistant

COLDSTAR ROS: resistant to mineral, animal, vegetable oils

COLDSTAR ROM: resistant to vegetable and animal oils

COLDSTAR BV K: fire retardant according to EN 2882 Cl. 2A

COLDSTAR BV S: fire retardant according to EN 12882 Cl. 2B

COLDSTAR VT: fire retardant according to EN 12882 Cl. 5A

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

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



TESTING FOR COLD RESISTANCE

There are no current international test methods for specifically determining a conveyor belt's ability to function in extremely cold conditions. At Dunlop, our laboratory technicians use a liquid nitrogen freezing cabinet to test samples at extreme low temperatures. The elastic modulus of samples of rubber belts are first measured at an ambient temperature of 20°C. The samples are then placed inside the cabinet. The temperature in the cabinet is then gradually reduced by stages of 5°C. The elastic modulus of the samples are measured at each stage to determine when the decrease in flexibility of the rubber becomes too great, thereby identifying its lowest permissible ambient temperature.



Rubber samples are frozen using liquid nitrogen

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 Dunlop splicing materials

All Dunlop conveyor belts are fully ozone resistant (EN ISO 1431), REACH compliant (EC 1907/2006).



SEEK ADVICE

As often as not, the quality of a belt (including its ability to function properly in extreme cold) is reflected in its price. It is always worth the effort to check the original manufacturer's specifications very carefully and ask for documented evidence of tested performance before placing your order.

WE ARE HERE TO HELP

For more information on this subject please contact your local Dunlop sales representative or Dunlop's Application Engineering team on +31 (0) 512 585 555