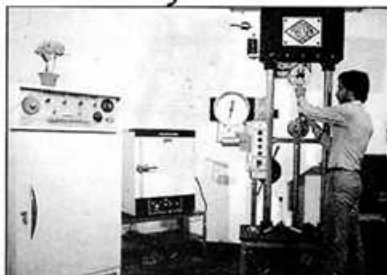


Looking toward tomorrow with fresh visions

With inventive new approaches and advanced new technologies, we are steadily creating a new generation of "Universal" products. Sincerely with a motto of "High-Quality, high performance "Universal", product development involves the repetition of carefully conducted tests in its most advanced laboratory.

Anil Gupta
Anil Gupta
Vice President



Conveyor Belts are lucratively employed for carrying and lifting materials by a number of industries such as thermal power, coal, mining, cement, fertilizer, sugar, tea estates etc. and Universal offers ideally designed belts, for optimum resistant to the most common forms of damage from abuse.

Conveyor Belting Specifications Range

BELT WIDTHS

From 150 to 1600mm as per IS: 1891 & ISO 4195 in open or endless length as per customer's requirements sub. to length tol. 5%, -1%

REINFORCEMENT MATERIAL

In various strength ratings of fabrics in cotton/cotton (CC), nylon/nylon (NN) and polyester/nylon (EP). In cotton carcass, fabric types available are 28oz., 32oz., 36oz., for conveyor belt application and 34oz hard duck for elevator belting.

In nylon carcass, belt types available are 250/2, 315/2, 315/3, 400/3, 400/4, 500/3, 500/4, 630/3, 630/4, 800/4, 800/5, 1000/4, 1000/5, 1250/4, 1250/5, 1400/5, 1600/5 & 1800/6 in 3 duty types namely, General Duty, Heavy Duty and Extra Heavy. While, for instance, all nylon 500/3 represents a belt having full thickness tensile strength of 500 KN/m width, incorporating 3 plies of nylon fabric. And the difference in interply thicknesses indicates the Duty types being designed for adequate load support & impact cushioning during material handling.

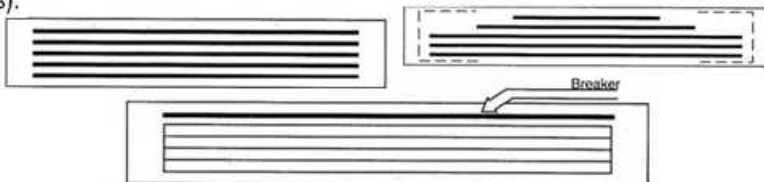


PLY CONSTRUCTION

Universal Conveyor Belts are manufactured in monopoly and in multiples ranging upto 12 plies in different constructions, viz, straight ply (widely used & popular), reverse stepped ply construction (indispensable for submerged ash handling installations in boiler plants) and breaker ply construction (for protection against longitudinal impact breaks). Plies may be skim coated where service conditions are severe.

EDGE CONSTRUCTION

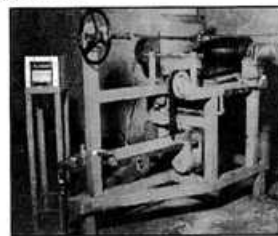
Universal All cotton conveyor belting is supplied in moulded edges to protect against edge wearing and prevent ingress of moisture, while NN or EP conveyor belting can be supplied both in cut edges as well as in moulded edges. However, Universal recommends a cut-edge construction for NN/EP beltings due to complete rot resistance.



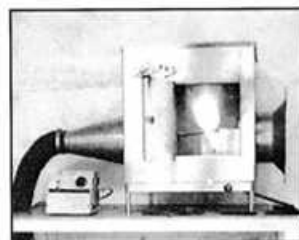
COVER GRADES

The rubber cover should be selected wisely by taking into account the type of materials to be handled and the operating condition of the belt. The thicknesses manufactured are 1 to 16 mm, and in steps of 0.5 mm available in the following grades:

Grade	Conforming To Standards	Applications			Physical Properties		
		Characteristics	Material Reference	Material Temp. Range	Tensile Strength (Min.), Kg/cm	Elongation (Min.) %	Abrasion, (Max.) mm
General Purpose							
M - 24 (M, 'A')	IS. 1891 (Part I) BS. 490 (Part I)	High tensile strength and superior in abrasion, cut and gauge resistance. Recommended for transporting highly abrasive materials.	Metallic ore, Coke Stone, Copper ore, Limestone, Broken glass, etc.	(-) 45° C to +60° C	245	450	150
Heat Resistant							
Universal "BLAZE" (HR)	IS. 1891 (Part I) T ₁	Super in heat and abrasion resistant.	Cement, Chemicals, Soda ash, etc.	+ 65° C to +120° C	130	350	250
Universal "BETAPLUS" (Super HR)	IS. 1891 (Part II) T ₂	Heat and abrasion resistant.	Cement clinker, Foundry sand, Sintered ore, etc.	+ 65° C to +150° C	130	350	250
Fire Resistant							
FR	ISO 284	Fire resistance and anti-static.	Coal, Coke, Sulphur, etc.	(-) 45° C to +60° C	110	400	200



Drum Friction Test for FR Belts



Flame Test for FR Belts

(Remarks) * Testing method of abrasion as per DIN 22102.

Please consult us for special grades or for your other requirements.

sub. to (-20% tol.)

COVER THICKNESS SELECTION

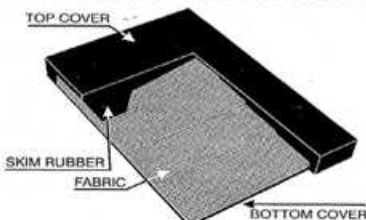
$$\text{Frequency Factor} = \frac{\text{Belt Length}}{\text{Belt Speed in ft./min.}} = \text{Minutes (min.)}$$

(no. of minutes the belt takes to complete one revolution)

Once frequency factor is determined as per stated formula, requirement of correct rubber cover thickness can also be calculated by going through the table:

CONVEYOR BELT RUBBER COVER THICKNESS IN MM (TOP/FACE)

Recommendation For Bulk Materials with Normal Loading Conditions									
Frequency Factor (Minutes)	Very Abrasive (M-24 Grade)				Very Hot Abrasive (HR T ₁ Grade)				Lump Size (in inches)
	Materials like metallic ore, salt, lime-stone, coke, stone, broken glass, phosphate, rock, slag, sand, sinter, fertilizers, fine-dust, etc.				Materials like foundry refuse, quartz, sand, copper ore, iron borings etc.				
	Dust to 1/4	1/2 to 1	2 to 5	6 and above	Dust to 1/4	1/2 to 1	2 to 5	6 and above	
0.2	5.5	10	10	10	9	10	10.5	11	
0.4	4	7	9.5	9.5	6	9	10	10	
0.6	3	6	8	9.5	4.5	6	9.5	10	
0.8	3	5	6	9	4	5	9	9.5	
1.0	3	4	5	8	3	4.5	8	9.5	
1.5	3	3	5	7	3	4	7	8	



BELT ENDLESSING (SPLICING)

Conveyor Belting can be rendered endless by joining the two ends of a length of belt either by vulcanised splicing or using mechanical fasteners.

The former is recommended for better results.

Splicing: V-shaped (often called diamond) type of joints are strongly recommended.

The extra length required to make the belt endless to requisite size shall be calculated by the following formula:

Splice Length = W + 150 (N-2) + 25mm where, W is width of belt (in mm), N is the number of plies.

The av. approx. weight of rubber cover be taken as 0.034 Kg/25mm width/per mm thick cover per meter length (±8%)

All Nylon (NN) NOMENCLATURE

Universal All Nylon Conveyor Belts are designed to indicate the minimum full thickness tensile strength and the number of fabric plies in the belt, for eg., All Nylon 500/3 represents a belt having full thickness tensile strength of min. 500KN/m width (= 1275 kg/cm²), incorporating 3 plies of nylon fabric.

Belt Designation	Maximum Allowable Working Tension	Nominal Carcass Thickness	Nominal Carcass Weight	Maximum Belt Width (mm) For Adequate Load Support (Material Bulk Density) (Kg./m ³)			Maximum Belt Width (mm) For Adequate Troughing (Angle of picking idlers)			
				Upto 800	Upto 1500	Upto 2500	20°	35°	45°	
HEAVY DUTY (TYPE B)	250/2	25	2.6	0.030	900	650	500	450	450	500
	315/3	31	3.7	0.039	1200	1000	800	450	500	500
	400/4	44	4.8	0.048	1300	1100	850	500	500	600
	500/4	50	5.0	0.046	1400	1200	900	500	500	650
	630/3	63	4.2	0.047	1400	1200	1000	500	500	650
	630/4	70	5.4	0.052	1800	1400	1200	500	650	800
	800/4	90	5.6	0.054	1800	1600	1400	650	800	900
	1000/5	120	7.0	0.070	1800	1600	1400	700	850	1000

RECOMMENDED PITCH OF IDLER SETS

Belt Width (mm)	Recommended pitch of idler sets, m			Return idler sets
	Carrying idler sets			
	Bulk Density of material, Kgs/m ³			
	400 to 1200	1200 to 2000	above 2001	
300	1.5	1.4	1.2	Three for any width of belt
400				
500				
650				
800				
1000	1.4	1.2	1.0	
1200				



RECOMMENDED MINIMUM PULLEY DIAMETER FOR CONVEYOR BELTS

Carcass Thickness (mm)		Recommended Minimum Pulley Diameter (mm)										
Fabric Type		Percentage of maximum allowable working tension used										
All Cotton	All Nylon	Upto 30%			Over 30 upto 60%			Over 60 upto 100%				
		Type of Pulley			Type of Pulley			Type of Pulley				
From	To	A	B	C	A	B	C	A	B	C		
6.3	7.8	5.6	7.0	400	400	315	500	400	315	630	500	400
7.9	10.0	7.1	8.8	500	500	400	630	500	400	800	630	500
10.1	12.5	8.9	11.1	630	630	500	800	630	500	1000	800	630
12.6	15.8	11.2	13.8	800	800	630	1000	800	630	1250	1000	800
15.7	17.5	13.9	15.5	1000	1000	800	1250	1000	800	1400	1250	1000
17.6	20.0	15.6	17.7	1000	1000	800	1250	1000	800	1600	1250	1000

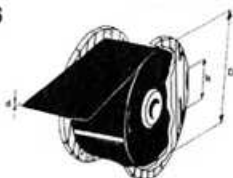
A : Driving Pulleys B : Snub Pulleys C : Bend pulleys,

Notes: The belt carcass is the distance between the highest points of the upper layer of fabric and the lowest points

CALCULATION OF BELT ROLL DIAMETERS

- Where D = Roll Diameter (m)
- d = Belt Thickness (m)
- L = Belt Length (m)
- K = Diameter of Core (m)

$$D = \frac{4d \cdot L}{\pi} + K \text{ (m)}$$



POLYESTER NYLON (EP) NOMENCLATURE

Belt Designation	Minimum Breaking Load of Belt at Full Thickness		Thickness of Carcass (approx. mm)	
	Longitudinal direction (KN/m. width)	Transverse direction (KN/m. width)		
EP200/2	2EP100	200	80	2.1
EP250/2	2EP125	250	100	2.3
EP315/2	2EP160	315	125	2.4
EP315/3	3EP100			3.2
EP400/2	2EP200	400	160	2.5
EP400/3	3EP125			3.4
EP400/4	4EP100	500	200	4.1
EP500/2	2EP250			2.8
EP500/3	3EP160	630	250	3.4
EP500/4	4EP125			4.2
EP630/3	3EP200	800	320	3.6
EP630/4	4EP160			4.5
EP800/3	3EP250	800	320	4.2
EP800/4	4EP200			4.7
EP800/5	5EP160			5.6

The value of minimum breaking load in kg/cm can be obtained by multiplying the value in KN/m. by 1.0197 (1.0 kN/m. = 1.0197 kg/cm.)