



# DUNLOP

# Starflex

## All-Synthetic Conveyor Belting

**A clear winner in design and performance ... by over 40,000,000 metres!**

Dunlop STARFLEX was introduced over 25 years ago India's first all-synthetic conveyor belting. Today, with over two decades of experience in design, manufacture and application engineering with constant upgradation to match changing needs, STARFLEX is still the most preferred choice of the customer. Backed by an unbeatable combination of technical and development skills, Dunlop STARFLEX outperforms all competitive brands on every critical criterion.

### Minimal Elongation :

Dunlop's own fabric designers have developed unique fabric designs to ensure low and controlled stretch of all-synthetic STARFLEX belting even in long-haul applications.

### Superior-Belt Consolidation

High pressure vulcanisation coupled with specialised fabric treatment results in excellent physical and chemical bond ensuring adhesion levels way above industry standards, eliminating cover stripping and ply separation.

### Outstanding Impact Resistance :

Specially compounded extra-resilient interply rubber and the inherent transverse flexibility of Dunlop STARFLEX belting make it the first choice in high-impact, heavy-duty applications.

### Perfect Edge Construction :

State-of-the-art edge preparation system provides a uniform, hard wearing, self-sealed edge. Lacs of kilometers of cut-edge STARFLEX belts used over the years have consistently established their clear 'edge' over moulded edge belts.

### Dunlop Product Consistency

A well preserved tradition of excellence-Dunlop STARFLEX belts have consistently passed through the most stringent quality assurance systems - commencing from selection of choicest rubber from the plantations and extensive evaluation of fabric on to rigorous checks on every batch of rubber compound. In-process controls coupled with exhaustive finished product evaluation to Dunlop's own standards ensure that every metre of STARFLEX belting is not just consistent in quality-it's the best value of money.

### Product Specifications

Dunlop STARFLEX conveyor belting is available in both all Nylon (NN) and Polyester-Nylon (EP) carcass and can be manufactured in different grades, as stated herein:

- ❖ **Grade M-24** : Compounded from premium quality natural rubber to provide excellent resistance to cutting gouging, wear and tear and conforms to the maximum abrasion loss value & minimum tensile strength specified for Grade M-24 in IS 1891 (Latest).
- ❖ **Grade N-17** : Compounded rubber with improved flex life for moderately abrasive material conforming to the maximum abrasion loss value & minimum tensile strength specified for Grade N-17 in IS 1891(Latest).
- ❖ **Grade HR / Betaplus** : Specially compounded rubber capable of withstanding thermal degradation for prolonged periods and recommended for handling materials like alumina, ash, clinker, foundry sand, etc, at temperatures above 65°C and upto 120°C for fines and 140°C for coarse materials.
- ❖ **Grade SHR** : Thoroughly proven in the field, this grade has been specially formulated, using selected synthetic and natural rubber, to provide superior heat and abrasion resistance and is recommended for handling material like foundry sand, clinker, coke wharf, coke breeze and sinter having temperatures over 65°C, upto 180°C for coarse and 160°C for fines.
- ❖ **Grade FR** : The growing demand for fire resistant rubber conveyor belting was first catered to by Dunlop with this grade of cover rubber. Our Bureau on Indian Standard Specification No. IS:1891 Part (V) 1993 and The Canadian Standards Association Specification (CSA) No. CAN/CSA-M422-M87 of 1987-Type C.
- ❖ **Grade OR** : This cover grade with specially blended synthetic compounds is designed to give the best possible resistance to mineral, vegetable and animal oils as per The Bureau of Indian Standard Specification No.IS-1891 Part(III) 1988.
- ❖ **Grade UHR** : Specially formulated, using selected synthetic rubber to provide superior heat & abrasion resistance and is recommended for handling material like hot cement, clinker, phosphate hot sintered ore having temperatures over 165°C for coarse and over 180°C for fines.
- ❖ **Grade SAR** : Specially formulated from premium quality natural & synthetic rubber to provide excellent resistance to highly abrasive material against tear and wear and to the maximum abrasion loss value of 90 mm<sup>3</sup>.
- ❖ **Grade CMR** : This cover grade with specially blended synthetic compounds provides best possible resistance to different chemicals.
- ❖ **Belt Designation** : Dunlop Starflex belts are available in different duty types viz. General, Extra & Heavy. For details, please see overleaf.

### Standards Applicable

Dunlop all-synthetic STARFLEX Conveyor Belting conforms to the following standards, as and wherever applicable : IS : 1891 (Parts I, II,III,IV and V), CAN/CSA-M422-M87 IPSS-2-03-066-88.

*Dunlop is Dunlop Forever*



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**Technical Data :** Dunlop STARFLEX Conveyor Belts are designated to denote the minimum guaranteed full thickness tensile strength and the number of reinforcing plies of synthetic textile e.g. 500/3 denotes a belt having a minimum guaranteed full thickness tensile strength of 500kN/m, incorporating 3 plies of textile reinforcement.

Belt Designation	Maximum Recommended working Tension (Vulcanised Splice)	Carcass Thickness (mm)	Carcass Weight for M2/N-17 Grade Belting (Nominal) (kg/m <sup>2</sup> )	Maximum Belt Width (mm) for Adequate Load Support (Material Density in T/M <sup>3</sup> )			Maximum Belt Width (mm) for Adequate Troughing of Empty Belt			
				Upto 1.0	Upto 1.5	Upto 2.5	20° idlers	30° idlers	45° idlers	
<b>General Duty</b>	<b>250/2</b>	<b>25</b>	<b>1.8</b>	<b>2.1</b>	<b>650</b>	<b>600</b>	<b>450</b>	<b>400</b>	<b>400</b>	<b>450</b>
	<b>315/3</b>	<b>31</b>	<b>3.0</b>	<b>3.2</b>	<b>1000</b>	<b>800</b>	<b>650</b>	<b>400</b>	<b>450</b>	<b>500</b>
	<b>400/3</b>	<b>40</b>	<b>3.0</b>	<b>3.4</b>	<b>1050</b>	<b>900</b>	<b>650</b>	<b>500</b>	<b>500</b>	<b>500</b>
	<b>500/3</b>	<b>50</b>	<b>3.3</b>	<b>3.7</b>	<b>1200</b>	<b>1000</b>	<b>800</b>	<b>500</b>	<b>500</b>	<b>500</b>
	<b>630/3</b>	<b>63</b>	<b>3.8</b>	<b>4.2</b>	<b>1200</b>	<b>1000</b>	<b>800</b>	<b>500</b>	<b>500</b>	<b>500</b>
<b>Extra Duty</b>	<b>630/4</b>	<b>70</b>	<b>4.4</b>	<b>5.1</b>	<b>1400</b>	<b>1200</b>	<b>1000</b>	<b>500</b>	<b>500</b>	<b>650</b>
	<b>800/4</b>	<b>90</b>	<b>5.3</b>	<b>5.7</b>	<b>1600</b>	<b>1400</b>	<b>1050</b>	<b>500</b>	<b>500</b>	<b>650</b>
	<b>1000/4</b>	<b>110</b>	<b>5.8</b>	<b>6.5</b>	<b>1800</b>	<b>1400</b>	<b>1200</b>	<b>500</b>	<b>650</b>	<b>800</b>
	<b>1250/4</b>	<b>140</b>	<b>6.8</b>	<b>6.9</b>	<b>1800</b>	<b>1600</b>	<b>1400</b>	<b>650</b>	<b>650</b>	<b>800</b>
	<b>1250/5</b>	<b>140</b>	<b>7.3</b>	<b>8.2</b>	<b>1800</b>	<b>1800</b>	<b>1600</b>	<b>650</b>	<b>800</b>	<b>900</b>
	<b>1400/5</b>	<b>155</b>	<b>8.2</b>	<b>8.8</b>	<b>2000</b>	<b>1800</b>	<b>1800</b>	<b>650</b>	<b>800</b>	<b>900</b>
	<b>1600/5</b>	<b>180</b>	<b>8.7</b>	<b>9.7</b>	<b>2000</b>	<b>2000</b>	<b>1800</b>	<b>800</b>	<b>800</b>	<b>1000</b>
	<b>1800/6</b>	<b>190</b>	<b>10.6</b>	<b>11.8</b>	<b>2000</b>	<b>2000</b>	<b>2000</b>	<b>800</b>	<b>800</b>	<b>1000</b>
<b>Heavy Duty</b>	<b>250/2</b>	<b>25</b>	<b>2.8</b>	<b>3.4</b>	<b>900</b>	<b>650</b>	<b>500</b>	<b>450</b>	<b>450</b>	<b>500</b>
	<b>315/3</b>	<b>31</b>	<b>3.5</b>	<b>4.5</b>	<b>1200</b>	<b>1000</b>	<b>800</b>	<b>500</b>	<b>500</b>	<b>500</b>
	<b>400/3</b>	<b>40</b>	<b>3.8</b>	<b>4.7</b>	<b>1200</b>	<b>1000</b>	<b>800</b>	<b>500</b>	<b>500</b>	<b>600</b>
	<b>500/3</b>	<b>50</b>	<b>4.3</b>	<b>5.0</b>	<b>1400</b>	<b>1200</b>	<b>900</b>	<b>500</b>	<b>500</b>	<b>600</b>
	<b>630/3</b>	<b>63</b>	<b>4.8</b>	<b>3.5</b>	<b>1400</b>	<b>1200</b>	<b>1000</b>	<b>500</b>	<b>500</b>	<b>650</b>
	<b>630/4</b>	<b>70</b>	<b>6.1</b>	<b>7.0</b>	<b>1800</b>	<b>1400</b>	<b>1200</b>	<b>500</b>	<b>650</b>	<b>800</b>
	<b>800/4</b>	<b>90</b>	<b>6.7</b>	<b>7.7</b>	<b>1800</b>	<b>1600</b>	<b>1400</b>	<b>600</b>	<b>800</b>	<b>900</b>

- 2 ply synthetic belting is not recommended except for bunker sealing applications due to splicing difficulties and poor splice efficiency.
- Should you fail to find a belt suitable for your application from this list of standard constructions, please refer to us for other types of belting available from our comprehensive range but not listed here.
- Load support adequacy is based upon belts between idlers being limited to a maximum of 2% of idler span.
- The above carcass weights pertain to all nylon (NN) fabric belts. For polyester nylon (EP) belts, the weight is higher by 5%.

### Manish Agencies

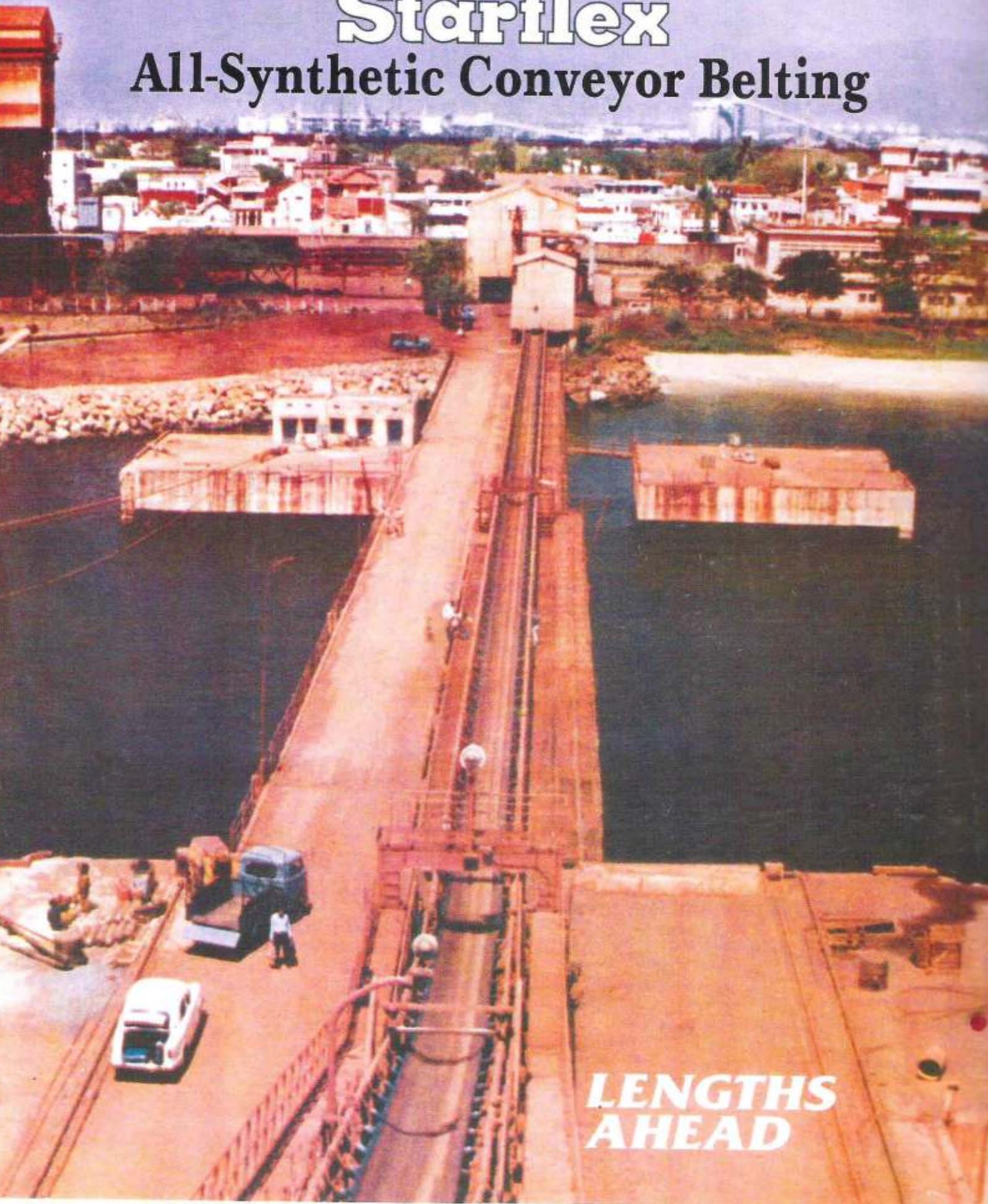
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# Starflex

## All-Synthetic Conveyor Belting



**LENGTHS  
AHEAD**

# A clear winner in design and performance...by over 2,000,000 metres!

Dunlop STARFLEX was introduced over 25 years ago-india's first all-synthetic conveyor belting. Today, with over a decade of experience in design, manufacture and application engineering with constant upgradation to match changing needs, STARFLEX is still the market leader. Backed by an unbeatable combination of technical and development skills, Dunlop STARFLEX outperforms all competitive brands on every critical criterion.

## Minimal Elongation

Dunlop's own fabric designers have developed unique fabric designs to ensure low and controlled stretch of all-synthetic STARFLEX belting even in long-haul applications.

## Superior Belt Consolidation

High pressure vulcanisation on an ultra-modern press line coupled with specialised fabric treatment results in excellent physical and chemical bond ensuring adhesion levels way above industry standards, eliminating cover stripping and ply separation.

## Outstanding Impact Resistance

Specially compounded extra-resilient interply rubber and the inherent transvers flexibility of

Roller dia for precise cover rubber sheeting



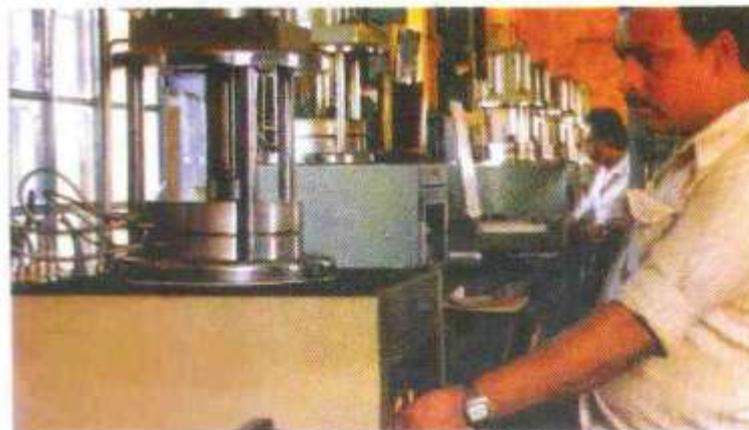
Dunlop STARFLEX belting make it the first choice in high-impact, heavy duty applications.

## Perfect Edge Construction

State-of-the-art edge preparation system provides a uniform, hard wearing, self-sealed edge. Hundreds of kilometres of cut-edge STARFLEX belts used over the years have consistently established their clear "edge" over moulded edge belts.

## Dunlop Product Consistency

Over 20 million metres of Dunlop STARFLEX belts have passed through the most stringent in-house quality assurance systems- commencing from selection of choicest rubber from the plantations and extensive evaluation of fabric on to Rheometric checks on every batch of rubber compound. In-process controls coupled with exhaustive finished product evaluation to Dunlop's own standards ensure that every metre of STARFLEX belting is not just consistent in quality - it's the best value for money.



A battery of Rheometers in the Mill Control Laboratory

# Product Specifications

Dunlop STARFLEX conveyor belting is available in both all-Nylon (NN) and Polyester-Nylon (EP) carcass and can be manufactured with the following cover rubber grades :

**\*Grade M-24 :** Compounded from premium quality natural rubber to provide excellent resistance to cutting, gouging, tear and wear, and conforms to the maximum abrasion loss value specified for Grade M in DIN 22102 of 1970 & IS : 1891(Part-I) Latest.

**\*Grade N-17 :** Compounded rubber with improved flex life for moderately abrasive material conforming to the maximum abrasion loss value specified from Grade N in DIN 22102 of 1970 & IS : 1891 (Part-I) Latest.

**\*Grade HR :** Specially compounded rubber capable of withstanding thermal degradation for prolonged periods and recommended for handling materials like alumina, ash, clinker, foundry sand, etc. at temperatures above 65°C and upto 120°C for fines and 140°C for coarse materials. & IS : 1891 (Part-I) Latest.

**Grade SHR :** Thoroughly proven in the field this grade has been specially formulated, using selected synthetic and natural rubber, to provide superior heat and abrasion resistance and is recommended for handling material like foundry sand, clinker, coke wharf,

*The Siempelkamp vulcanising press for making belting upto 2400 mm. wide.*



coke breeze and sinter having temperatures over 65°C and upto 180°C for coarse and 160°C for fines.

**\*Grade FR :** The growing demand for fire resistant rubber conveyor belting was first catered to by Dunlop with this grade of cover rubber. Our technologists have developed FR belting to meet any of the two following standards :

- The Canadian Bureau of Mines (CBM) Specification - Certification Services for Underground Mining and Equipment and Materials, EMR, Canada-ERP/MRL-80-21(TR) of September 1980, and

-The Canadian Standards Association Specification (CSA) No. CAN/CSA-M422-M87 of 1987 -Type C.

Dunlop is among the few manufacturers worldwide to have received Certification (No.836) from the Canadian Centre for Mineral and Energy Technology for conformation to Type C of the CSA Specifications including Drum Friction, Antistatic and Flame Test requirements.

**\*Grade OR :** This cover grade with specially blended synthetic compounds is designed to give the best possible resistance to mineral, vegetable and animal oils.



*State-of-the-art ZWICK Universal Testing Machine and Dynamic Test equipment (seen at left of picture).*

## Standards Applicable

Dunlop all-synthetic Starflex Conveyor Belting conforms to the following standards, as and wherever applicable : IS:1891 (Parts I,II and III)

- BS : 490 (Part I) • DIN 22102
- ERP/MRL-80-21 (TR) • CAN/CSA-N422-M87 • IPSS : 2-03-006-88

# Dunlop Starflex All-Synthetic Belting Technical Data

Dunlop Starflex Conveyor Belts are designated to denote the minimum guaranteed full thickness tensile strength and the number of reinforcing plies of synthetic textile e.g. 500/3 denotes a belt having a minimum guaranteed full thickness tensile strength of 500kN/m, incorporating 3 plies of textile reinforcement

Belt Designation		Maximum Recommended working Tension (Vulcanised Splice) (kN/m)	Carcass Thickness (mm)	Carcass Weight For M24/N17 Grade Belting (kg/m <sup>2</sup> )	Maximum Belt Width(mm) for Adequate Load Support (Material Density in T/m <sup>3</sup> )			Maximum Belt Width(mm) for Adequate Troughing of Empty Belt		
Type	Rating				Upto 1.0	Upto 1.5	Upto 2.5	20° idlers	30° idlers	45° idlers
<b>General Duty</b> 	250/2*	25	1.8	2.1	650	600	450	400	400	450
	315/3	31	2.9	3.2	1000	800	650	400	450	500
	400/3	40	2.9	3.4	1050	900	650	500	500	500
	500/3	50	3.2	3.7	1200	1000	800	500	500	500
	630/3	63	3.8	4.2	1200	1000	800	500	500	500
<b>Extra Duty</b> 	630/4	70	4.4	5.1	1400	1200	1000	500	500	650
	800/4	90	5.2	5.7	1600	1400	1050	500	500	650
	1000/4	110	5.7	6.5	1800	1400	1200	500	650	800
	1250/4	140	6.5	6.9	1800	1600	1400	650	650	800
	1250/5	140	7.3	8.2	1800	1800	1600	650	800	900
	1400/5	155	8.2	8.8	2000	1800	1800	650	800	900
	1600/5	180	8.7	9.7	2000	2000	1800	800	900	1000
	1800/6	190	10.6	11.8	2000	2000	2000	800	900	1000
<b>Heavy Duty</b> 	250/2*	25	2.8	3.4	900	650	500	450	450	500
	315/3	31	3.8	4.5	1200	1000	800	500	500	500
	400/3	40	3.8	4.7	1200	1000	800	500	500	600
	500/3	50	4.3	5.0	1400	1200	900	500	500	600
	630/3	63	4.8	5.5	1400	1200	1000	500	500	650
	630/4	70	6.1	7.0	1800	1400	1200	500	650	800
	800/4	90	6.7	7.7	1800	1600	1400	650	800	900

\* 2ply synthetic belting is not recommended except for bunker sealing applications due to splicing difficulties and poor splice efficiency.

- Should you fail to find a belt suitable for your application from this list of standard constructions, please refer to us for other types of belting available from our comprehensive range, but not listed here.
- Load support adequacy is based upon belt sag between idlers being limited to a maximum of 2% of idler span.
- Values of carcass thickness and carcass weight are nominal only and subject to change, if required for improved belt performance.
- The nominal cover weight per mm may be taken as 1.1kg/m<sup>2</sup> for cover grades M24 and N17, 1.13 kg/m<sup>2</sup> for cover grades HR and BETAPLUS and 1.4 kg/m<sup>2</sup> for cover grade FR.
- The above carcass weights pertain to all-nylon fabric belts. For polyester nylon, the weight should be increased by 5%.

## Authorised Distributors :



HOUSE OF **DUNLOP**



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