# FLEXOBORD®

# The sidewall conveyor belting

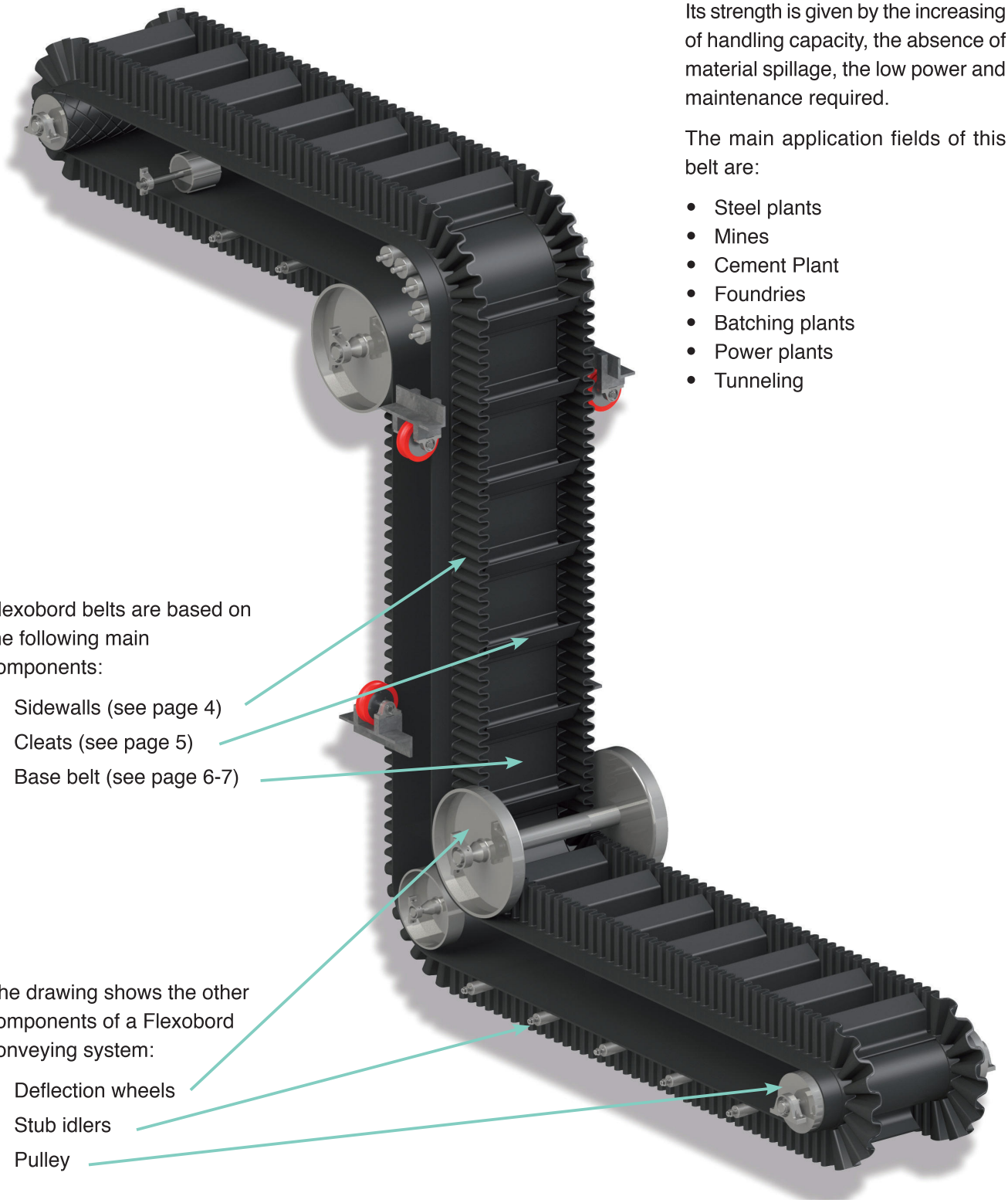
# PRODUCT PRESENTATION

Flexobord is a conveyor belt used for conveying material, particularly useful when the inclination angle of the elevation system is very steep.

Its strength is given by the increasing of handling capacity, the absence of material spillage, the low power and maintenance required.

The main application fields of this belt are:

- Steel plants
- Mines
- Cement Plant
- Foundries
- Batching plants
- Power plants
- Tunneling



Flexobord belts are based on the following main components:

- Sidewalls (see page 4)
- Cleats (see page 5)
- Base belt (see page 6-7)

The drawing shows the other components of a Flexobord conveying system:

- Deflection wheels
- Stub idlers
- Pulley

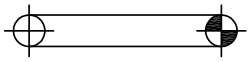
# PRODUCT PRESENTATION

The correct choice of each component in relation to the final use is one of the most important contribution to the overall plant performances.

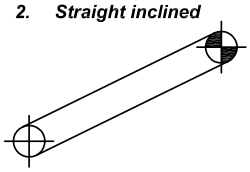
The complete range of SIG belts is produced according to the international standards; therefore the cross reinforcement of the carcass ensures the necessary transversal stiffness and prevents from hitting the full width return idlers.

Sketches on the right show typical but not exhaustive Flexobord layouts; the belt designer must take into consideration these alternatives to guarantee correct plant performances.

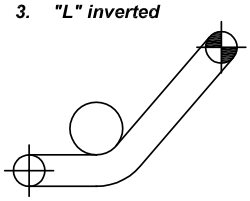
1. *Horizontal*



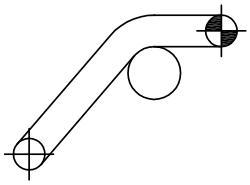
2. *Straight inclined*



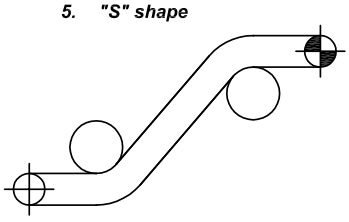
3. *"L" inverted*



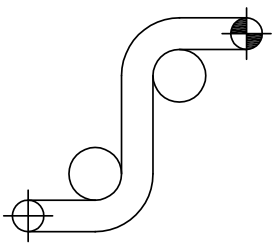
4. *Inclined + horizontal*



5. *"S" shape*

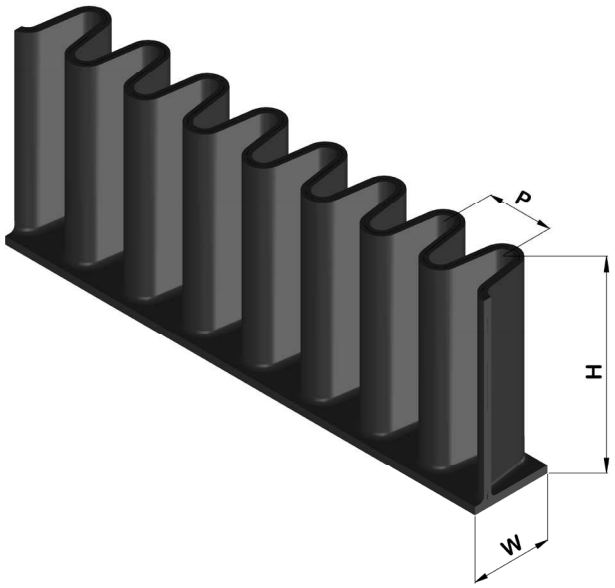


6. *"S" vertical shape*

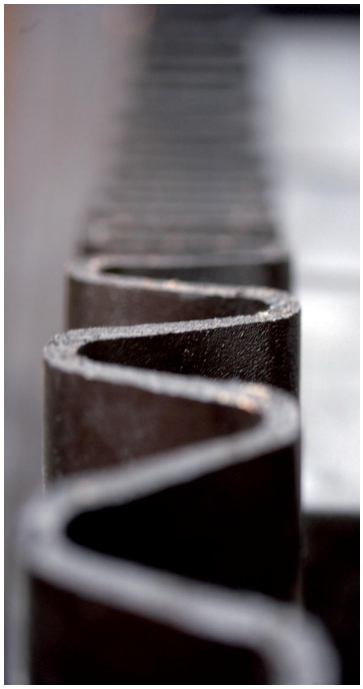


# SIDEWALLS

| TYPE | Height H [mm] | Width W [mm] | Pitch P [mm] |
|---|---|---|---|
| **40/30** | 40 | 30 | 25 |
| **40/50** | 40 | 50 | 50 |
| **60/50** | 60 | 50 | 50 |
| **80/50** | 80 | 50 | 50 |
| **100/50** | 100 | 50 | 50 |
| **120/50** | 120 | 50 | 50 |
| **160/70** | 160 | 70 | 55 |
| **200/80** | 200 | 80 | 65 |
| **200/75** | 200 | 75 | 60 |
| **240/80** | 240 | 80 | 65 |
| **240/75** | 240 | 75 | 60 |
| **250/75** | 250 | 75 | 60 |
| **280/75** | 280 | 75 | 60 |
| **300/100** | 300 | 100 | 85 |
| **300/75** | 300 | 75 | 60 |
| **400/100** | 400 | 100 | 83 |
| **500/100** | 500 | 100 | 83 |
| **600/100** | 600 | 100 | 83 |
| **630/100** | 630 | 100 | 83 |



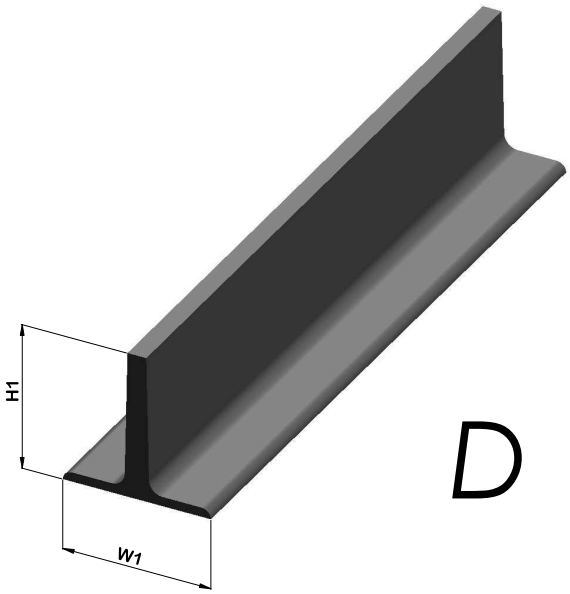

*Dimensions are only approximate.*
*For different typologies, please ask our commercial dept.*



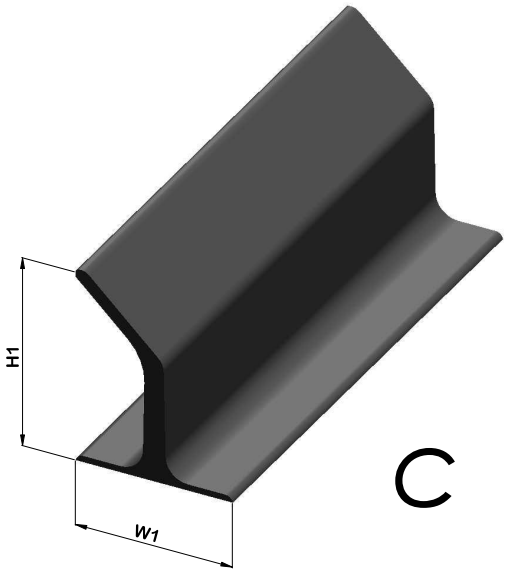
# CLEATS

| TYPE | Height $H_1$ [mm] | Width $W_1$ [mm] |
|---|---|---|
| **D55** | 55 | 80 |
| **D75** | 75 | 100 |
| **D90** | 90 | 110 |
| **D110** | 110 | 110 |
| **D140** | 140 | 150 |
| **D180** | 180 | 150 |
| **C70** | 70 | 70 |
| **C90** | 90 | 110 |
| **C110** | 110 | 110 |
| **C140** | 140 | 140 |
| **C180** | 180 | 170 |
| **C220** | 220 | 175 |
| **C230** | 230 | 175 |
| **C240** | 240 | 175 |
| **C280** | 280 | 190 |
| **N55** | 55 | 90 |
| **N75** | 75 | 90 |
| **N110** | 110 | 110 |
| **U180** | 180 | 228 |
| **U220** | 220 | 228 |
| **U280** | 280 | 228 |
| **U360** | 360 | 228 |
| **U380** | 380 | 228 |
| **U480** | 480 | 228 |
| **U580** | 580 | 228 |
| **U600** | 600 | 228 |

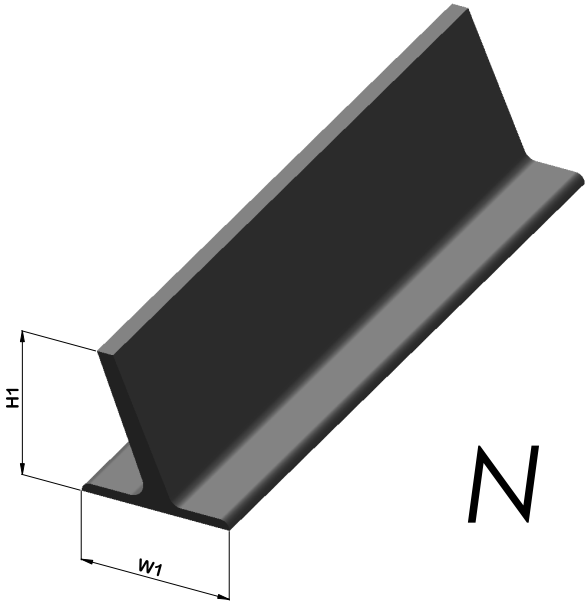
*Dimensions are only approximate.*
*For different typologies, please ask our commercial dept.*



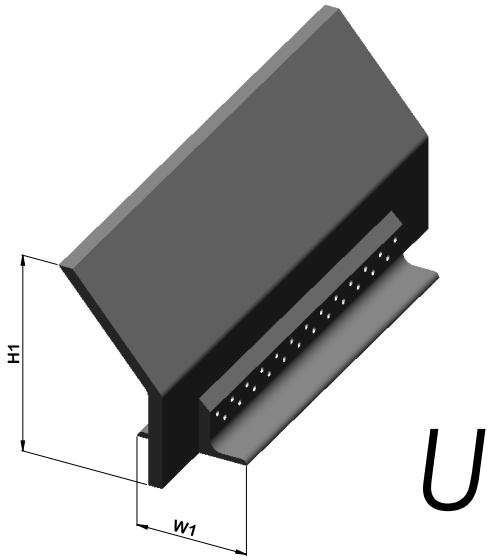

D




C




N

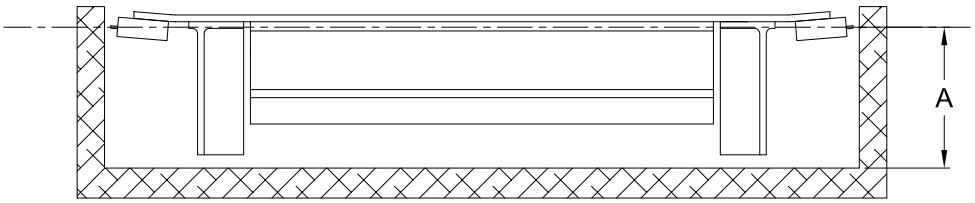



U

# BASE BELT – THE CROSS STABILIZED CONSTRUCTION

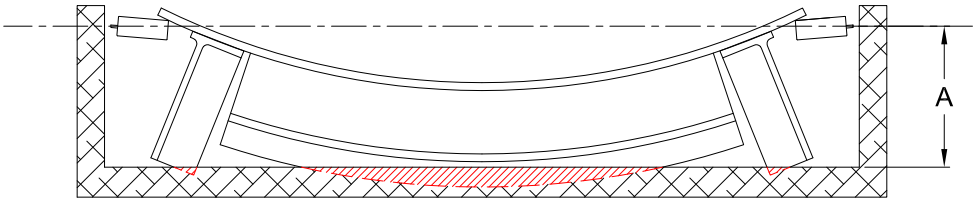
The main required characteristic of a base belt suitable for Flexobord applications is the controlled transversal stiffness, also named cross stabilized construction.

The following sketches indicate the consequences due to a wrong choice of the base belt:




**Correct**

Cross stabilized base belt




**Wrong**

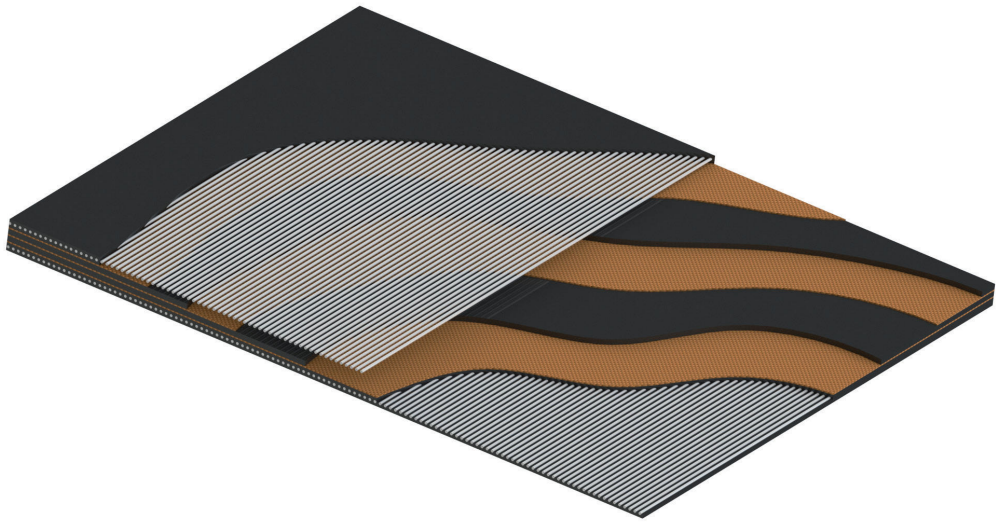
Common quality base belt

*Standard base belt without any specific transversal stiffness can be used only for horizontal flat belts made with only corrugated sidewalls and without transversal cleats.*

## BASE BELT SELECTION

According to the heaviness of the application, the following base belt typologies are available:

**XR** Composed by only textile fabrics with high transversal stiffness, feature provided by 2 additional special synthetic layers set in the cover rubber, assure the correct cross stabilizing properties.
They are provided with cut edges for light and medium applications.
This base construction can be sold as independent product with the brand name **TEXRIGID®**. The sketch below shows the cross stabilized construction.

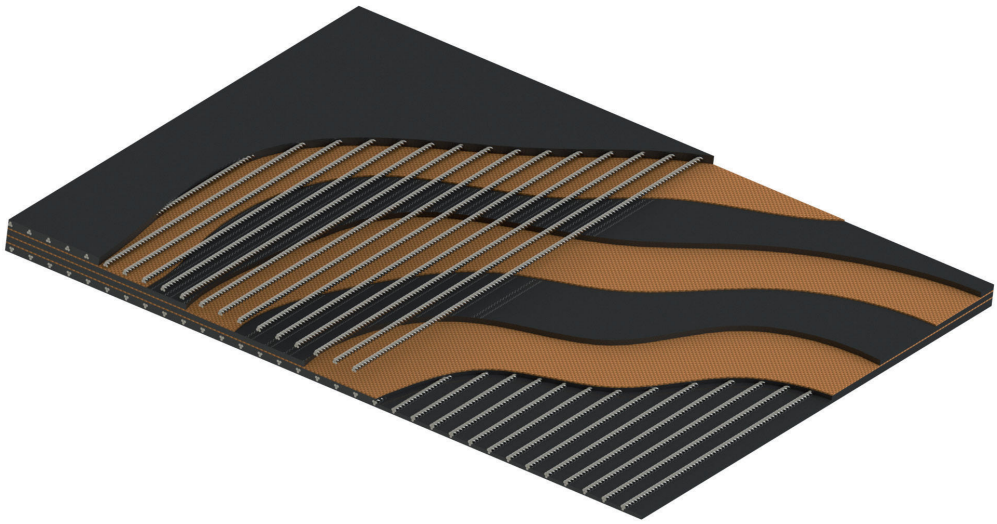


| TEXRIGID® Standard construction |
|---|
| 500/3+2 5+3 |
| 630/4+2 5+3 |
| 800/5+2 5+3 |
| 1000/5+2 5+3 |
| 1250/5+2 5+3 |

*where "5+3" are top and bottom covers thickness*

*Unless specifically designed, TEXRIGID® are not suitable for sealing applications*

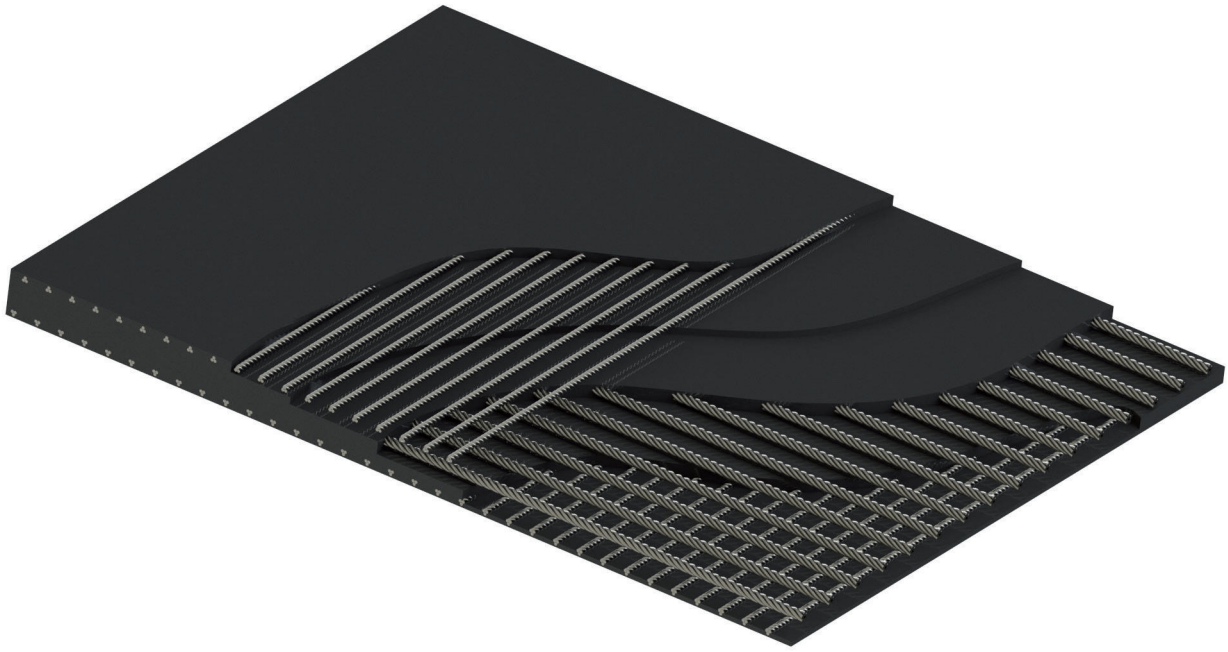
**SR** Composed by a mix of multi-ply synthetic carcass and suitable steel reinforcement to ensure high transversal stiffness for heavy Flexobord applications.
They are provided only with moulded edges.
This cross stabilized base belt can be sold as independent product with the brand name **CROSSRIGID®**.
The sketch shows the unique difference compared to Texrigid®, i.e. the presence of transversal steel cord in the cover.



| CROSSRIGID® Standard construction |
|---|
| 500/3 5+3 |
| 630/4 5+3 |
| 800/5 5+3 |
| 1000/5 5+3 |
| 1250/5 5+3 |

*where "5+3" are top and bottom covers thickness*

**ST** Designed for the heaviest applications where high elevation and/or conveying capacity are involved, it is composed by longitudinal steel cords with a special transversal steel reinforcement to assure the required stiffness. Full range is available from 800 to 3500 KN/m; for the correct belt selection, please contact our technical dept.
This cross stabilized base belt can be sold as independent product with the brand name **CROSSRIGID HR®**.
This belt type has a steel cords internal structure.



*The transversal stiffness of CROSSRIGID® is not suitable for sealing applications unless supported over the whole belt width with a suitable rigid structure; specific constructions are necessary for these special products to assure the static stability when they stay only along the edges: SIG SpA designs and produces such a products with the brand name SEALTEX.*

## MINIMUM SUGGESTED PULLEY DIAMETER RELATED ON BELT TYPE

| Belt Type | Belt Class [kN/m] | Drive Pulley [mm] | Take-up Pulley [mm] |
|---|---|---|---|
| XR / SR | 500 | 400 | 315 |
| | 630 | 500 | 400 |
| | 800 | 630 | 500 |
| | 1000 | 800 | 630 |
| | 1250 | 1000 | 800 |

*For Flexobord ST, please ask our technical dept.*

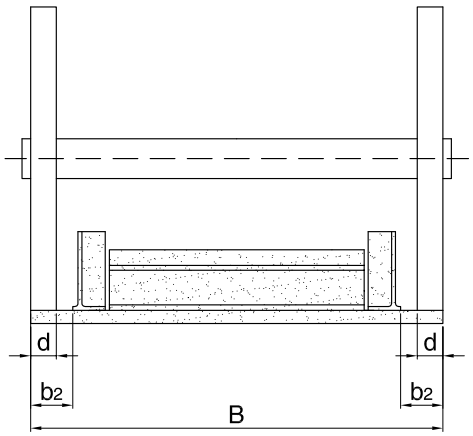
## MINIMUM SUGGESTED PULLEY DIAMETER RELATED ON SIDEWALL TYPE

| Sidewall Type | Drive Pulley [mm] | Take-up Pulley [mm] | Deflection Wheel [mm] |
|---|---|---|---|
| **40/30** | 250 | 250 | 280 |
| **40/50** | 250 | 250 | 280 |
| **60/50** | 250 | 250 | 280 |
| **80/50** | 280 | 280 | 315 |
| **100/50** | 360 | 360 | 480 |
| **120/50** | 360 | 360 | 480 |
| **160/70** | 480 | 480 | 640 |
| **200/80** | 600 | 600 | 800 |
| **200/75** | 600 | 600 | 800 |
| **240/80** | 720 | 720 | 960 |
| **240/75** | 720 | 720 | 960 |
| **250/75** | 750 | 750 | 1000 |
| **280/75** | 900 | 900 | 1200 |
| **300/100** | 900 | 900 | 1200 |
| **300/75** | 900 | 900 | 1200 |
| **400/100** | 1200 | 1200 | 1600 |
| **500/100** | 1500 | 1500 | 2000 |
| **600/100** | 1800 | 1800 | 2400 |
| **630/100** | 1900 | 1900 | 2500 |

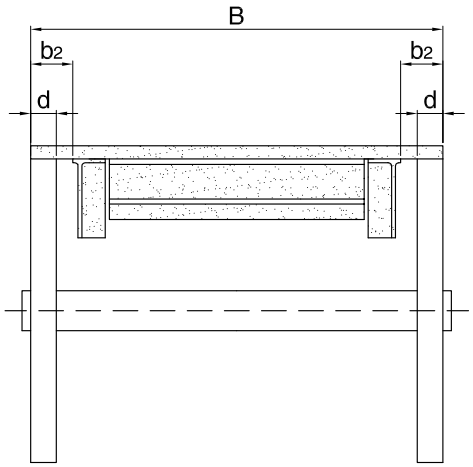
*The minimum pulleys diameter must be the highest values between those set in the tables, influenced by the belt construction and the sidewall type.*

## DEFLECTION WHEELS - FREE LATERAL SPACE WIDTH

***Carrying side***




***Return side***




| Belt width B [mm] | Free lateral space $b_2$ [mm] | Wheel min width [mm] |
|---|---|---|
| **400** | 60 | 48 |
| **500** | 60 | 48 |
| **650** | 75 | 60 |
| **800** | 100 | 80 |
| **1000** | 125 | 100 |
| **1200** | 150 | 120 |
| **1400** | 175 | 140 |
| **1600** | 200 | 160 |
| **1800** | 225 | 185 |
| **2000** | 250 | 210 |

## OTHER USEFUL INFORMATIONS FOR PLANT DESIGN

- Minimum cleat pitch = 1,5 x Max lump size
- Minimum cleat height = (1,5 to 2) x Max lump size
- Width of support idlers (mm) = Belt width (mm) + 100 mm
- Idler pitch – carrying side ≤ 1 m max
- Pitch of full width return idlers ≤ 2 m
- Pitch of short return idlers ≤ 1 m
- Lateral idlers for alignment: min 4 for each straight section; max distance = 12 m

# COVERS SELECTION

Base belt, sidewalls and cleats can be provided with alternative rubber covers with reference to the specific application. Sidewalls and cleats are produced with the same compound of the base belt.

## ABRASION SERVICE

**CL (L grade ISO 10247 – Y grade DIN 22102 – RMA II grade) - Standard abrasion resistance compound:** CL is a cover rubber recommended for all ground applications and for the majority part of the materials, where resistance to abrasion is required. Flexobord belts with CL compounds are suitable to handle heavy and/or abrasive material such as gravel, stone, sand, aggregates, coal, cement, etc.

**EC (D grade ISO 10247 – W grade DIN 22102 – RMA I grade) - Extra abrasion resistance compound:** EC is superior quality cover rubber, especially designed where maximum resistance to abrasion is required. The characteristics of resistance to cut, tear and ozone cracking, together with long duration, improve the quality of this cover. EC is expressly recommended for steel works and iron mines; however, it is recommended for heavy lump ore, coke, salt, limestone too.

## OIL SERVICE

**OM (G grade DIN 22102) - Vegetable oil resistance compound:** OM is a cover rubber that guarantees a good belt resistance against the chemically aggressive effects due to the transport of materials with moderate oil presence, like corn, fertilizers and general vegetable oily materials. OM is expressly designed to resist the terpene of wooden chips and to convey solid urban waste materials.

**OH - High oil resistance compound:** OH is a premium quality cover rubber with maximum resistance to oils and characterized by low volume variations after immersion in highly aggressive mineral oils. OH is expressly realized for belts conveying materials sodden with mineral oils, as for example the mechanical manufacturing rejects.

## FIRE RESISTANT

**BS (K grade DIN 22102, class 2A EN 12882) - Self-extinguish product:** BS is a product designed to service both underground and above ground application where safety is fundamental and fire risk is high. It is recommended in particular for coal and potash applications. BS is self-extinguish and antistatic according to ISO 340 and ISO 284 or equivalent.

**AG (K+G grade DIN 22102, class 2A EN 12882) – Self-extinguish and oil resistant product:** AG is a nitrile rubber, it provides superior resistances to vegetable oils and animal fats; it is also self-extinguish and antistatic according to ISO 340 and ISO 284, or equivalent in order to guarantee high safety to the conveyor plant.

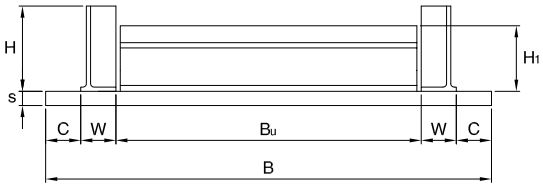
## HEAT SERVICE

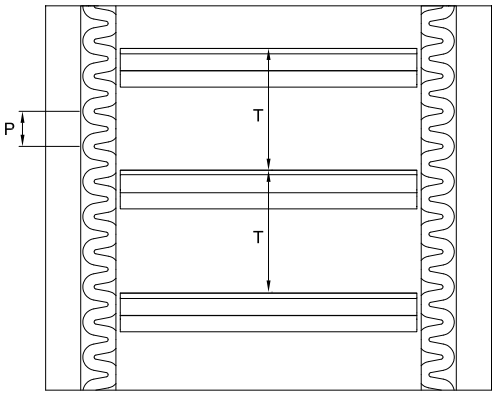
**CX – Medium temperature resistance:** CX is a rubber compound assuring a medium degree of abrasion resistance; it is formulated for continuous service with hot coarse materials at a temperature of 130°C with peaks of 150°C.

**MX – High temperature resistance:** MX is a rubber compound assuring a good abrasion resistance. It is designed for continuous service at a temperature of 150°C with peaks of 180°C.

# DATA SHEET

Our customer service is always at Your disposal to suggest the best choice for tensile strength calculation and cleat / edges geometrical selection.
In order to supply us all the necessary information for a careful calculation, please fill in the following data sheet as completely as possible.




B [mm] .....
S [mm] .....
$B_u$ [mm] .....
C [mm] .....
W [mm] .....
H [mm] .....
P [mm] .....
T [mm] .....
$H_1$ [mm] .....

Center distance [m] .....
Elevation [m] .....
Max belt slope [deg] .....
Speed [m/sec] .....
Motor power [kW] .....
Capacity [Ton/h] .....
Conveyed material .....
Lump size [mm] .....
Density [Ton/m3] .....
Angle of repose [deg] .....
Tensile strength [N/mm] .....

Cleat type (page 5) D ❍ N ❍ C ❍ U ❍

Plant profile (page 3) 1 ❍ 2 ❍ 3 ❍ 4 ❍ 5 ❍ 6 ❍

# DATA FOR ORDERING

To avoid errors or misunderstanding in the order, we suggest to use the following belt designation:

**150 m Flexobord 120 XR 500 / 3+2 5+3 CL 1000**

- **1000** — Belt width (mm)
- **CL** — Cover quality
- **5+3** — Top + Bottom cover thickness (mm)
- **3+2** — Number of plies + Number transversal breakers
- **500** — Tensile strength of base belt (N/mm)
- **XR** — Base belt designation
- **120** — Sidewall height (mm)
- **Flexobord** — Brand name
- **150 m** — Belt length (m)

Please also indicate the following information:

**Cleat pitch (mm) and type (D, N, C, U)**

**Transversal sketch (for example: 120 + 50 + 700 + 50 + 120 = 1000 mm)**

or enclose the above sketch filled in with all relevant elements.

THE MATTER OF THIS PUBBLICATION IS ONLY FOR INFORMATION; THEREFORE IT CAN NOT INVOLVE S.I.G. FOR ANY CONSEQUENCE DUE TO POSSIBLE ERRORS.

S.I.G. RESERVS THE RIGHT TO INTRODUCE AT ANY TIME SUCH MODIFICATION AS COULD BE JUSTIFIED BY CONTINUOUS DEVELOPMENT AND IMPROVEMENT.

01/2025 - Rev. 4

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