

## 1 Steel Cord

### 1.1 Nomenclature system

A tyre cord construction is normally defined by

- the structure (or configuration) of the cord
- the length and direction of lay
- the product type

#### 1.1.1 Structure

##### RULE

The description of the construction follows the sequence of manufacture of the cord i.e. starting with the innermost strand or wire and moving outwards.

##### FORMAT

The full description of the cord is given by the following formula:  $(N \times F) \times D + (N \times F) \times D + (N \times F) \times D$  where

N = number of strands

F = number of filaments

D = nominal diameter of filaments, expressed in mm

Examples:

$$(1 \times 3) \times 0.22 + (1 \times 9) \times 0.22 + (1 \times 15) \times 0.22 + (1 \times 1) \times 0.15$$

##### ABBREVIATED FORM

- When N or F equals 1, they should not be included.

Example:

$$3 \times 0.22 + 9 \times 0.22 + 15 \times 0.22 + 0.15$$

- If the diameter D is the same for two or more parts in sequence, it must only be stated at the end of the sequence. The diameter of the spiral wrap shall always be stated separately.

Example:

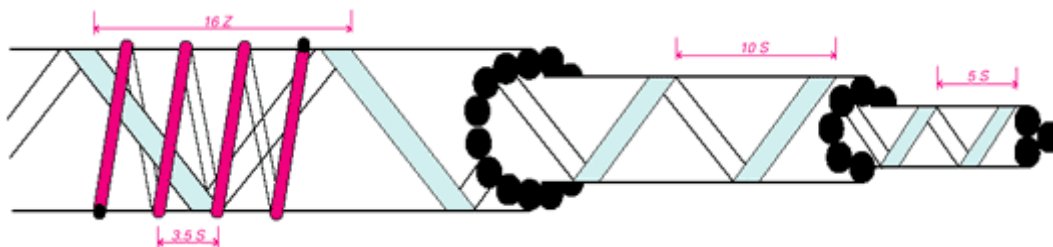
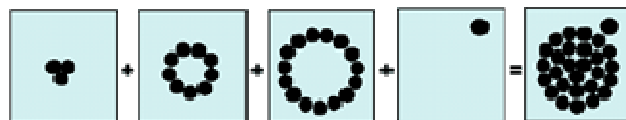
$$3 + 9 + 15 \times 0.22 + 0.15$$

- When the innermost strand or wire is identical to the adjacent strand or wires, the formula may be simplified by stating only the sum of the identical components and brackets need not be used.

Example:

$$0.22 + 6 \times 0.22 + 6 \times (0.22 + 6 \times 0.22)$$

becomes  $7 \times 7 \times 0.22$



### 1.1.2 Length of lay and direction of lay

#### RULE

The sequence or order in the designation follows the sequence of manufacturing i.e. starting with the innermost strand and moving outwards.

Example:

3+9+15x0.175+0.15

5/10/16/3.5 SSZS

5 S:

lay length and direction of the strand 3x0.175

10 S:

lay length and direction of the layer +9x0.175

16Z:

lay length and direction of the layer +15x0.175

3.5 S:

lay length and direction and direction of the wrap

### 1.1.3 Product types

#### REGULAR CORD (1)

Cord in which the direction of lay in the strands is opposite to the direction of lay in closing the cord.



#### LANG'S LAY CORD (LL) (2)

Cord in which the direction of lay in the strands is the same as the direction of lay in closing the cord.



#### OPEN CORD (OC) (3)

A cord in which wires are loosely associated and movable relative to each other to enable rubber to penetrate into the cord.



#### COMPACT CORD (CC) (4)

A cord in which the filaments mainly have linear contact with each other.



#### HIGH ELONGATION CORD (HE) (5)

Lang's lay cord in which the strands are loosely associated and movable relative to each other, to allow the cord to be stretched substantially at



a given load.

#### BETRU® CORD (6)

a cord with gaps between the filaments. The gaps allow the rubber to penetrate the cord and thus to block any moisture conduit. The BETRU® filaments are formed so to have a polygonal curve instead of a circular curve as perpendicular projection.



#### HIGH IMPACT CORD (7)

a protection layer cord of which the filaments are preformed thus that the cord has full rubber penetration. This avoids corrosion and enables to have excellent retreadability. The cord has a high impact absorption capability, as it has 5% elongation even when rubber embedded.

