



R1 47 01 01 Technical Directive

Quality and certification requirements of belt conveyors

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Information and modifications:

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1. PURPOSE OF THIS DOCUMENT

This technical directive aims to limit the number of types of belt conveyors.

This technical directive also describes the quality and certification requirements for belt conveyors that are supplied to Tata Steel IJmuiden.

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2. TECHNICAL REQUIREMENTS OF WEAR RESISTANT RUBBER BELT CONVEYORS WITH TEXTILE CARCASS AND COVER GRADE X

The belts must at least conform with NEN-ISO 14890 unless stated otherwise in Table 1. Cover layers of less than 3 mm thick must conform with the values in NEN-ISO 14890-15. Samples for the ageing test must be obtained from a single length of belt conveyor of 400 x 400 mm after ageing for 7 x 24 hours at 70°C.

Table 1

| | New | After aging |
|--|------------|-------------|
| Tensile strength (NEN-ISO 37) N/mm ² | ≥ 25 | ≥ 21.25 |
| Strain (NEN-ISO 37) % | ≥ 450 | ≥ 385 |
| Hardness (NEN-ISO 7619) Sh. A | 60 ± 5 | 63 ± 5 |
| Adhesive strength (NEN-ISO 36) N/mm | ≥ 8 - ≤ 16 | ≥ 6.8 |
| EP belts | ≥ 6 | ≥ 5 |
| P belts | | |
| Wear (NEN-ISO 4649) mm ³ | ≤ 120 | ≤ 150 |

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3. TECHNICAL REQUIREMENTS OF HEAT RESISTANT RUBBER BELT CONVEYORS WITH TEXTILE CARCASS AND COVER GRADE T

Only use class 2 heat resistant belt conveyors (heat resistant to 125°C). The belts must at least conform with NEN-ISO 14890 unless stated otherwise in Table 2. Samples for the ageing test must be obtained from a single length of conveyor belt of 400 x 400 mm after ageing for 7 x 24 hours at 125°C.

Table 2

| | New | After aging |
|--|---------|-------------|
| Tensile strength (NEN-ISO 37) N/mm ² | ≥ 20 | ≥ 10 |
| Strain (NEN-ISO 37) % | ≥ 400 | ≥ 200 |
| Hardness (NEN-ISO 7619) Sh. A | 60 ± 5 | ≤ 85 |
| Adhesive strength (NEN-ISO 36) N/mm | ≥ 10/16 | ≥ 4.5 |
| Wear (NEN-ISO 4649) mm ³ | ≤ 125 | ≤ 150 |

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4. TECHNICAL REQUIREMENTS OF OIL RESISTANT RUBBER BELT CONVEYORS WITH TEXTILE CARCASS AND COVER GRADE G.

The belts must at least conform with NEN-ISO 14890 unless stated otherwise in Table 3. The rubber cover must be resistant to gas oil containing 20 - 25% aromatic compounds.

Table 3

| | New | After aging |
|--|----------------|-------------|
| Tensile strength (NEN-ISO 37) N/mm ² | ≥ 17.5 | |
| Strain (NEN-ISO 37) % | ≥ 350 | |
| Hardness (NEN-ISO 7619) Sh. A | 60 ± 15 - 5 | |
| Adhesive strength (NEN-ISO 36) N/mm | ≥ 4,5 – 16 | |
| Wear (NEN-ISO 4649) mm ³ | ≤ 125 | |

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5. TECHNICAL REQUIREMENTS OF WEAR RESISTANT BELT CONVEYORS WITH STEEL CORD CARCASS AND COVER GRADE X

The belts must at least conform with DIN 22131, cover grade X, unless stated otherwise in Table 4.

Samples for the ageing test must be obtained from a single length of conveyor belt of 400 x 400 mm after ageing for 7 x 24 hours at 70°C.

Table 4

| | New | After aging |
|--|----------|-------------|
| Tensile strength (NEN-ISO 37) N/mm ² | ≥ 25 | ≥ 21.25 |
| Strain (NEN-ISO 37) % | ≥ 450 | ≥ 385 |
| Hardness (NEN-ISO 7619) Sh. A | 60 ± 5 | 63 ± 5 |
| Adhesive strength (NEN-ISO 36) N/mm | ≥ 8 - 16 | ≥ 6.8 |
| Wear (NEN-ISO 4649) mm ³ | ≤ 125 | ≤ 150 |

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6. CERTIFICATION

The manufacturer must submit a sample (end piece) of each belt to Tata Steel for analysis.
Tata Steel must be informed six days in advance of a sample being removed.
The principal may demand to be present at the removal of the sample at their own discretion.
The requirement to submit the sample to Tata Steel is unconditional.
The belt tests by the manufacturer must always be conducted at the start of the belt.

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7. NATURAL RUBBER BELTS

Dimensions in mm

| Belt Width | Type of belt | Thickness of the cover layers | | Class. Number | S.E.B. standard | |
|------------|--------------|-------------------------------|-------|---------------|-----------------|----------------|
| | | Upper | Under | | Belt Thickness | Belt mass kg/m |
| 650 | EP 400/ 3 | 3 | 3 | 47.01.07 | 8,1 | 6,0 |
| | EP 500/ 3 | 6 | 1,5 | | 13,2 | 9,6 |
| 800 | EP 400/ 3 | 3 | 1,5 | 47.01.08 | 8,1 | 7,4 |
| | EP 400/ 3 | 6 | 3 | | 12,6 | 11,4 |
| | EP 500/ 3 | 3 | 1,5 | | 8,7 | 7,8 |
| | EP 1250/ 5 | 6 | 3 | | 18,0 | 15,9 |
| 1000 | EP 400/ 3 | 3 | 1,5 | 47.01.10 | 8,1 | 9,2 |
| | EP 400/ 3 | 6 | 3 | | 12,6 | 14,4 |
| | EP 500/ 3 | 3 | 1,5 | | 8,7 | 9,7 |
| | EP 500/ 3 | 6 | 3 | | 13,2 | 14,7 |
| | EP 1250/ 5 | 6 | 3 | | 18,0 | 19,8 |
| 1200 | EP 400/ 3 | 6 | 3 | 47.01.12 | 12,6 | 17,0 |
| | EP 500/ 3 | 6 | 3 | | 13,2 | 17,7 |
| | EP 630/ 4 | 6 | 3 | | 14,6 | 19,6 |
| | EP 800/ 4 | 6 | 3 | | 15,4 | 21,2 |
| | EP 1250/ 5 | 6 | 3 | | 18,0 | 23,8 |
| 1400 | EP 630/ 4 | 6 | 3 | 47.01.14 | 14,6 | 22,9 |
| | EP 800/ 4 | 6 | 3 | | 15,4 | 24,8 |
| | EP 1250/ 5 | 6 | 3 | | 18,0 | 27,7 |
| 1600 | EP 500/ 4 | 6 | 3 | 47.01.16 | 13,8 | 25,3 |
| | EP 800/ 4 | 6 | 3 | | 15,4 | 28,5 |
| | EP 1250/ 5 | 6 | 3 | | 18,0 | 31,7 |
| 1800 | EP 800/ 4 | 6 | 3 | 47.01.18 | 15,4 | 32,0 |
| | EP 1250/ 4 | 6 | 3 | | 18,0 | 35,7 |
| 2000 | EP 400/ 3 | 6 | 3 | 47.01.20 | 12,6 | 28,4 |
| | EP 500/ 3 | 3 | 1 | | 8,7 | 19,4 |
| 2600 | EP 630/ 4 | 6 | 3 | 47.01.21 | 14,6 | 42,5 |
| | ----- | 3 | 1,5 | | 10,1 | 29,0 |

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8. HEAT-RESISTANT BELTS

Dimensions in mm

| Belt width | Type of belt | Thickness of the cover layers | | Class. Number | S.E.B. standard | |
|------------|--------------|-------------------------------|-------|---------------|-----------------|----------------|
| | | Upper | Under | | Belt Thickness | Belt mass kg/m |
| 650 | EP 400/ 3 | 3 | 1.5 | 47.01.47. | 8.1 | 6.0 |
| | EP 500/ 3 | 6 | 3 | | 13.2 | 9.6 |
| 800 | EP 500/ 3 | 6 | 3 | 47.01.48. | 13.2 | 11.8 |
| 1000 | EP 400/ 3 | 3 | 1.5 | 47.01.50. | 8.1 | 9.1 |
| | EP 500/ 4 | 3 | 1.5 | | 9.3 | 10.8 |
| | EP 500/ 3 | 6 | 3 | | 13.2 | 14.7 |
| 1200 | EP 630/ 4 | 6 | 3 | 47.01.52. | 14.6 | 19.6 |
| | EP 1250/ 5 | 6 | 3 | | 18.0 | 13.8 |

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9. OIL RESISTANT BELTS

Dimensions in mm

| | | | | |
|------|------------|---|-----|-----------|
| 1000 | EP 400/ 3 | 3 | 1.5 | 47.01.30. |
| 1400 | EP 1250/ 5 | 6 | 3 | 47.01.34. |
| 1600 | EP 400/ 3 | 3 | 1,5 | 46.01.36. |

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10. NATURAL RUBBER BELTS

Dimensions in mm

| | | | | |
|------|-----------|---|---|-----------|
| 1200 | EP 400/ 3 | 6 | 3 | 47.01.12. |
| 1400 | EP 500/ 3 | 6 | 3 | 47.01.14. |
| 1600 | EP 400/ 3 | 6 | 3 | 47.01.16. |

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11. NATURAL RUBBER BELTS WITH RIBS

Dimensions in mm

| | | | | |
|------|-----------|---|-----|-----------|
| 800 | EP 400/ 3 | 3 | 1.5 | 47.01.08. |
| 1200 | EP 400/ 4 | 6 | 3 | 47.01.12. |

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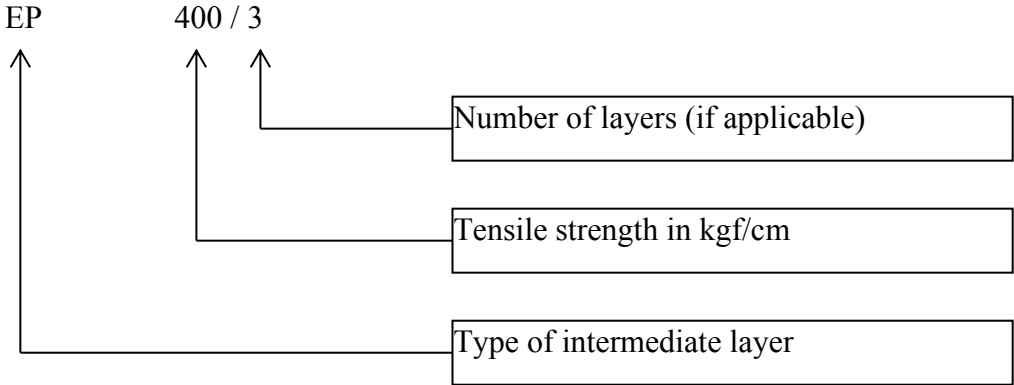
12. NATURAL RUBBER STEEL CORD BELTS

Dimensions in mm

| | | | | |
|------|---------|----|---|-----------|
| 1200 | ST 1600 | 10 | 5 | 47.01.12. |
| 1400 | ST 2000 | 10 | 5 | 47.01.14. |
| 1600 | ST 2500 | 10 | 6 | 47.01.16. |
| 1800 | ST 2500 | 10 | 6 | 47.01.18. |

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13. TYPE CODE



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14. REFERENCES

This document refers to:

| | | |
|------------|-------|---|
| NEN-EN-ISO | 14890 | Belt conveyors; Specifications for belt conveyors with a textile carcass and rubber or synthetic cover layers for general use |
| NEN-ISO | 37 | Vulcanised or thermoplastic rubber; Determining the tensile and strain properties |
| NEN-ISO | 7619 | Rubber; Determining the compression hardness using a portable hardness meter |
| NEN-ISO | 4649 | Rubber, vulcanised or thermoplastic; Determining the wear resistance using a rotating cylinder |
| NEN-ISO | 36 | Vulcanised or thermoplastic rubber; Determining the adhesion to the textile fabrics |
| DIN | 22131 | Schwerentflammbare Stahlseil-Fördergurte; Anforderungen, Prüfung |

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15. DECLARATION.

Version 1.0:

This technical directive replaces the previous HO standard 47.00.01.001.

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