

# Technical Data Sheet

## optibelt ALPHA LINEAR / V 5M - ST

### PU Timing Belt, Optionally with Fabric PAZ/PAR, Open-Ended / Endless Joined

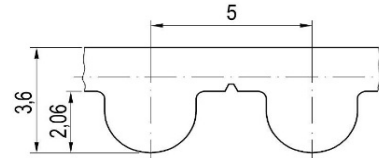


#### Dimensions, Tolerances

Profile:	5M
Tooth pitch t:	5 mm
Total thickness:	3.6 mm
Tooth height:	2.06 mm
Tooth tip width:	-
Tooth flank angle:	-
Length tolerance:	± 0.5 mm/m
Width tolerance:	± 0.5 mm
Thickness tolerance:	± 0.3 mm

#### Construction

Polyurethane:	Thermoplastic, 92 Shore A, white
Tension cord:	Steel, ø 0.5 mm
Fabric, optional:	Polyamide, tooth and back, (PAZ/PAR), green



#### Specific nominal tensile force transmittable per tooth

Input speed $n_1$ [1/min]	Spec. nom. tensile force $F_{N\ spez}$ [N/mm]	Input speed $n_1$ [1/min]	Spec. nom. tensile force $F_{N\ spez}$ [N/mm]	Input speed $n_1$ [1/min]	Spec. nom. tensile force $F_{N\ spez}$ [N/mm]
0	3.600	1200	2.478	3600	1.814
20	3.555	1300	2.433	3800	1.779
40	3.513	1400	2.391	4000	1.746
60	3.473	1500	2.351	4500	1.670
80	3.435	1600	2.314	5000	1.601
100	3.399	1700	2.278	5500	1.538
200	3.243	1800	2.244	6000	1.481
300	3.116	1900	2.212	6500	1.427
400	3.009	2000	2.181	7000	1.378
500	2.916	2200	2.123	7500	1.332
600	2.834	2400	2.070	8000	1.289
700	2.761	2600	2.020	8500	1.248
800	2.694	2800	1.973	9000	1.210
900	2.634	3000	1.930	9500	1.173
1000	2.578	3200	1.889	10000	1.139
1100	2.526	3400	1.850	$v_{max} = 80$ m/s	

#### Nominal tensile force $F_N$

$$F_N = F_{N\ spez} \cdot z_{eB} \cdot b \quad [N]$$

$F_{N\ spez}$  Specific nominal tensile force transmittable per tooth [N/mm]  
 $z_{eB}$  Number of teeth in mesh, driver pulley, limited to  $z_{eB\ max}$   
 $z_{eB\ max}$  ALPHA LINEAR: 12, ALPHA V: 6  
 $b$  Belt width [mm]

#### Nominal torque $M_N$

$$M_N = F_N \cdot d_{w1} / (2 \cdot 10^3) \quad [Nm]$$

$$d_{w1} = z_1 \cdot t / \pi$$

$d_{w1}$  Pitch diameter, driver pulley [mm]  
 $z_1$  Number of teeth, driver pulley  
 $t$  Tooth pitch [mm]

#### Nominal power $P_N$

$$P_N = F_N \cdot z_1 \cdot t \cdot n_1 / (6 \cdot 10^7) \quad [KW]$$

$n_1$  Speed, driver pulley [1/min]

#### Cord tensile force, minimum belt length, belt weight

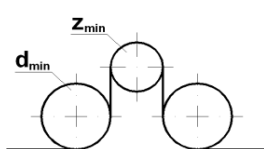
Belt width <sup>1</sup> $b$ [mm]	10	12	15	20	25	32	50	75	100
$F_{Br}$ [N], ALPHA LINEAR	2000	2560	3400	4840	6240	8240	13960	21920	29920
$F_{zul}$ [N] <sup>2</sup> , ALPHA LINEAR $\epsilon_{zul} = 0.47\%$	500	640	850	1210	1560	2060	3490	5480	7480
$F_{zul}$ [N] <sup>2</sup> , ALPHA V	250	320	425	605	780 / 390 <sup>3</sup>	1030	1745	2740	3740
Min. belt length ALPHA V [mm]	-	-	700	-	700 / 450 <sup>3</sup>	-	700	-	-
Weight per metre [kg/m]	0.038	0.046	0.057	0.076	0.095	0.122	0.190	0.285	0.380

<sup>1</sup> Smaller and intermediate widths possible

<sup>2</sup> Allowable tensile force  $F_{zul} = 25\% / 12.5\%$  (ALPHA LINEAR / V) of cord breaking strength  $F_{Br}$   $c_{spez} = F_{zul} / \epsilon_{zul}$  [N]

<sup>3</sup> Short joining from 450 mm. Allowable tensile force  $F_{zul} = 50\%$  of a standard joining

#### Timing belt pulleys, idlers, clamping plates



Minimum no. of teeth of the pulleys:

$$z_{min} = 15$$

Minimum pitch diameter of the pulleys:

$$d_{w\ min} = 23.87 \text{ mm}$$

Minimum no. of teeth in mesh, clamping plate:

$$z_{CP\ min} = 8$$

Minimum- of a plane inside idler:

$d_{min}$  = not recommended, see pulley

Minimum- of a plane outside idler:

$$d_{min} = 60 \text{ mm}$$