

# Technical Data Sheet

## optibelt ALPHA FLEX AT10K13 - ST

### PU Timing Belt, Optionally with Fabric PAZ, Endless

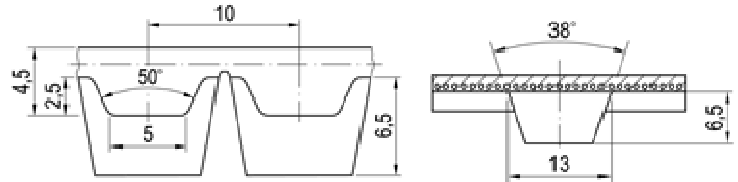


#### Dimensions, Tolerances

Profile:	AT10K13
Tooth pitch t:	10 mm
Total thickness without V guide:	4.5 mm
Tooth height:	2.5 mm
Tooth tip width:	5.0 mm
Tooth flank angle:	50°
Length tolerance:	±0.5 mm/m
Width tolerance:	±0.5 mm
Thickness tolerance:	±0.3 mm
V guide width, -height, -angle:	13 mm, 6.5 mm, 38°

#### Construction

Polyurethane:	Thermoplastic, 92 Shore A, white
Tension cord:	Steel, Ø 0.9 mm
Fabric, optional:	Polyamide, tooth side (PAZ), green PAZ from 2000 mm production length



#### Specific nominal power transmittable per tooth

Speed, small pulley $n_k$ [1/min]	Specific nom. power $P_{N\ spez}$ [W/mm]	Speed, small pulley $n_k$ [1/min]	Specific nom. power $P_{N\ spez}$ [W/mm]	Speed, small pulley $n_k$ [1/min]	Specific nom. power $P_{N\ spez}$ [W/mm]
0 <sup>1</sup>	0.000	1200	0.947	3600	1.898
20	0.025	1300	1.002	3800	1.952
40 <sup>2</sup>	0.048	1400	1.056	4000	2.003
60	0.072	1500	1.108	4500	2.119
80 <sup>3</sup>	0.094	1600 <sup>7</sup>	1.158	5000	2.220
100	0.116	1700	1.207	5500	2.308
200 <sup>4</sup>	0.220	1800	1.253	6000	2.383
300	0.314	1900	1.299	6500	2.447
400 <sup>5</sup>	0.401	2000	1.343	7000	2.500
500	0.482	2200	1.427	7500	2.545
600	0.559	2400	1.506	8000	2.580
700	0.631	2600	1.581	8500	2.606
800 <sup>6</sup>	0.700	2800	1.652	9000	2.625
900	0.766	3000	1.718	9500	2.636
1000	0.828	3200 <sup>8</sup>	1.782	10000	2.640
1100	0.889	3400	1.842		$v_{max} = 60\text{ m/s}$

<sup>1</sup>  $F_{N\ spez}$  [N/mm] 7.500 <sup>2</sup> 7.273 <sup>3</sup> 7.073 <sup>4</sup> 6.590 <sup>5</sup> 6.012 <sup>6</sup> 5.250 <sup>7</sup> 4.343 <sup>8</sup> 3.341

#### Nennleistung $P_N$

$$P_N = P_{N\ spez} \cdot Z_k \cdot Z_{eB} \cdot (b - 13) / 10^3 \text{ [kW]}$$

$P_{N\ spez}$  Specific nominal power transmittable per tooth [W/mm]

$Z_k$  Number of teeth, small pulley

$Z_{eB}$  Number of teeth in mesh, small pulley, limited to  $Z_{eB\ max}$

$Z_{eB\ max}$  12, maximum allowable no. of teeth

$b$  Belt width [mm]

#### Nominal torque $M_N$

$$M_N = P_N \cdot 9.55 \cdot 10^3 / n_k \text{ [Nm]}$$

$n_k$  Speed, small pulley [1/min]

#### Nominal tensile force $F_N$

$$F_N = F_{N\ spez} \cdot Z_{eB} \cdot (b - 13) \text{ [N]}$$

$$F_{N\ spez} = P_{N\ spez} \cdot 6 \cdot 10^4 / (n_k \cdot t) \text{ [N/mm]}$$

$F_{N\ spez}$  Specific nominal tensile force transmittable per tooth [N/mm]

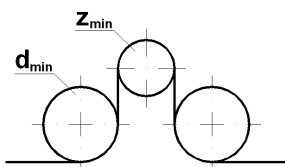
$t$  Tooth pitch [mm]

#### Cord tensile forces, belt weight

Belt width <sup>1</sup> $b$ [mm]	25	32	50
Breaking strength $F_{Br}$ [N]	13300	17000	28400
Allowable tensile force <sup>2</sup> $F_{zul}$ [N]	3325	4250	7100
Weight per metre [kg/m]	0.148	0.222	0.322
Min. belt length [mm]	1500	1500	1500

<sup>1</sup> Smaller and intermediate widths possible <sup>2</sup> Allowable tensile force  $F_{zul}$  equivalent to 25% breaking strength  $F_{Br}$  of the cords

#### Timing belt pulleys, inside and outside idlers



Minimum number of teeth of the pulley:

$$Z_{min} = 25$$

Minimum pitch diameter of the pulley:

$$d_{w\ min} = 79.58\text{ mm}$$

Plane, cylindrical idlers:

Minimum pitch diameter of an inside idler:

$$d_{min} = 76\text{ mm}$$

Minimum pitch diameter of an outside idler:

$$d_{min} = 100\text{ mm}$$