

Belt Conveyors

Approximate Capacities

- Approximate capacity of belt conveyors with 22° idlers.

Belt Width (mm)	Maximum Lump		Kg per m ³	Typical Material	Belt Speed Per Minute						
	Sized (mm)	Unsized (mm)			46 m/m (m/h)	61 m/m (m/h)	76 m/m (m/h)	91 m/m (m/h)	107 m/m (m/h)	122 m/m (m/h)	152 m/m (m/h)
305	51	76	480	Coke	9	13	15	19	—	—	—
			800	Coal	16	22	27	33	—	—	—
			1200	Loose earth	23	31	38	46	—	—	—
			1600	Sand, gravel	30	40	50	60	—	—	—
			2400	Ore	47	61	79	95	—	—	—
406	76	127	480	Coke	16	22	27	33	38	—	—
			800	Coal	27	36	45	54	63	—	—
			1200	Loose earth	42	56	71	84	98	—	—
			1600	Sand, gravel	55	74	92	111	130	—	—
			2400	Ore	82	111	138	166	193	—	—
457	102	152	480	Coke	17	23	29	33	41	—	—
			800	Coal	35	47	59	71	82	—	—
			1200	Loose earth	52	69	86	103	121	—	—
			1600	Sand, gravel	71	94	118	141	165	—	—
			2400	Ore	95	140	174	209	245	—	—
610	152	203	480	Coke	38	51	63	76	89	102	—
			800	Coal	62	83	104	125	146	167	—
			1200	Loose earth	93	125	156	188	219	250	—
			1600	Sand, gravel	125	167	209	250	292	334	—
			2400	Ore	188	259	313	375	438	501	—
762	178	305	480	Coke	58	78	98	117	136	156	195
			800	Coal	98	131	163	196	229	261	326
			1200	Loose earth	147	196	236	294	343	392	490
			1600	Sand, gravel	196	261	326	392	457	522	653
			2400	Ore	294	392	490	588	688	784	980
914	203	406	480	Coke	88	116	147	177	207	236	295
			800	Coal	141	189	236	283	330	377	472
			1200	Loose earth	211	281	352	422	492	562	703
			1600	Sand, gravel	283	377	472	566	660	755	943
			2400	Ore	425	564	706	846	987	1128	1411
1067	254	508	480	Coke	115	154	192	231	270	308	376
			800	Coal	191	256	319	384	447	512	639
			1200	Loose earth	288	385	481	577	673	769	971
			1600	Sand, gravel	384	512	639	767	895	1023	1279
			2400	Ore	576	767	960	1151	1343	1535	1919
1219	305	610	480	Coke	153	205	256	307	359	410	512
			800	Coal	258	345	431	517	603	689	862
			1200	Loose earth	381	508	635	762	889	1016	1270
			1600	Sand, gravel	512	686	857	1029	1197	1372	1714
			2400	Ore	764	1020	1274	1529	1787	2039	2549

Cubic Meters Per Hour

305	18	24	30	37	—	—	—
406	34	46	57	69	80	—	—
457	44	58	72	87	102	—	—
610	78	104	130	156	182	208	—
762	122	164	205	245	286	327	409
914	176	236	294	353	413	471	588
1067	240	319	399	479	559	639	798
1219	321	428	535	642	748	856	1070

NOTE: When using 35° idlers, above capacities may be increased up to 15%.

NOTE: Shaded figures indicate recommended speeds which will be furnished unless otherwise specified.

Examples

- (1) 30" x 65' conveyor without gravity tightener and snubber drum, 10-foot extension sections:

$$N = \frac{65}{10} - 0 - 0 + 0 = 6.5 - 0 = 6.5 \text{ or } 6 \text{ idlers}^*$$

- (2) 36" x 228' conveyor with gravity tightener and snubber drum, 20-foot extension sections and one 15-foot extension sections:

$$N = \frac{228}{10} - 1 - 1 + 1 = 22.8 - 1 = 21.8 \text{ or } 22 \text{ idlers}^*$$

*When the fraction in the number of idlers required is 1/2 or less, the next smallest whole number should be used; when greater than 1/2 the next largest whole number should be used.

Troughing Idlers

To determine the number of troughing idlers required on the conveyor sections, use the following method:

- Two troughing idlers on the tail section
- One troughing idler 6" ahead of tail section joint frame.
- Balance of troughing idlers at standard spacing (every 5' on 18"; every 4' on 24", 30" and 36"; every 3' on 42" and 48" conveyors) with the uppermost idler approximately 2 1/2' from centerline of head drum.

The above troughing idler spacing can be expressed in a simple algebraic formula:

$$N = \frac{L - 7}{S} + 3$$

Where: N = Number of Troughing Idlers
L = Nominal centre to centre distance in feet between head and tail drums.
S = Idler spacing in feet (5' for 18"; 4' for 24", 30" and 36"; 3' for 42" and 48" widths).

Example

L = 70 feet
S = 4 feet

$$N = \frac{70 - 7}{4} + 3 = \frac{63}{4} + 3 = 15\frac{3}{4} + 3 = 18\frac{3}{4} \text{ or } 19 \text{ idlers}$$

Note: However a fractional number results, the next largest whole number should be used.

Return Idlers

To determine the number of return idlers required on the conveyor sections, use the following method:

- One idler on tail section joint frame. (When 2,3,4 or 5-foot extension section is provided, no idler is mounted on tail section joint frame: when total length of short extensions exceeds 5 feet, one idler is mounted on tail section joint frame).
- One idler on head section joint frame. (When snubber drum is provided, no idler is mounted on head section joint frame).
- One idler on each joint frame between 10-foot extension sections. (If 15 or 20-foot extension sections are used, one idler is mounted also in the middle of each section: when vertical gravity-belt tightener is provided, one idler is omitted at this joint frame).

The above return idler spacing can be expressed in a simple algebraic formula:

$$N = \frac{L}{10} - M - P + R$$

Where: N = Number of Return Idlers
L = Nominal centre length in feet between head and tail drum.
M = 1 when gravity tightener is used;
= 0 when no gravity tightener is used
P = 1 when snubber drum is used;
= 0 when no snubber drum is used
R = 1 when a 15-foot extension is used;
= 0 when no 15-foot extension section is used