Kase Conveyors

Engineered Bulk Material Handling

Bulk Material Handling Equipment

Our vast capabilities and quality products make Kase Conveyors the clear choice.

We specialize in transforming problems into quality engineered solutions. Count on Kase.

Screw Conveyor Engineering Guide

Conveyor Capacity

A capacity table is provided on the next section to aid you in calculation of proper conveyor size. To use this table, find the capacity at maximum RPM, opposite the recommended percentage of conveyor loading, which equals or exceeds the capacity of material required per hour. The recommended conveyor diameter will then be found in the appropriate column on the same line, as will the maximum particle size recommended for the screw diameter.

If the maximum particle size you plan to convey is larger than the maximum recommended particle size for the conveyor you've chosen from the table, you must then select a larger conveyor, adequate to handle the maximum particle size you intend to use.

Calculation of Conveyor Speed

Conveyor speed can be most conveniently calculated, by use of the nomographs supplied on pages To use this nomograph first locate the two known values (screw diameter, and required capacity, in cu. ft. per hour) then with a straight edge connect these two points, and the appropriate conveyor speed will be the intersection point on the third value column marked "speed".

Maximum economical capacities will be listed for reference opposite their respective conveyor diameters, and should not be exceeded. Another method of calculating conveyor speed is:

$$CS = \frac{CFH}{CFH \text{ at } 1 RPM}$$

Equation Symbols

CS = Conveyor Speed
CFH = Capacity in Cubic Feet per Hour

Capacity Factors for Special Pitch or Modified Flight Conveyors

Special conveyor types are selected in the same manner as standard conveyors, but the section capacity used for determining size and speed, must be modified to compensate for different characteristics of special conveyors.

Calculation of special screw conveyor capacities is as follows:

SC = CFH x CF

Equation Symbols

SC = Selection Capacity
CFH = Required Capacity in Cubic Feet per Hour
CF = Capacity Factor

Special Conveyor Pitch Capacity Factors

Pitch	Description	Capacity Factor
Standard	Pitch = Diameter	1.00
Short	Pitch = 2/3 Diameter	1.50
Half	Pitch = 1/2 Diameter	2.00
Long	Pitch = 1-1/2 Diameters	0.67

Special Conveyor Flight Capacity Factors

Type	Conveyor Loading			
	15%	30%	45%	95%
Cut flight	1.92	1.57	1.43	*
Cut & folded flight	*	3.75	2.54	*

Not Recommended Factors for Conveyors With Paddles*

Factor	Paddles Per Pitch			
	1	2	3	4
	1.08	1.16	1.24	1.32

* Std. paddles at 45° reverse pitch

Ribbon Conveyor Capacity Factors

Dia.	Ribbon Width	Conveyor Loading		

		15%	30%	45%
6	1	1.32	1.52	1.79
9	1-1/2	1.34	1.54	1.81
10	1-1/2	1.45	1.67	1.96
12	2	1.32	1.52	1.79
	2-1/2	1.11	1.27	1.50
14	2-1/2	1.27	1.45	1.71
16	2-1/2	1.55	1.69	1.90
18	3	1.33	1.53	1.80
20	3	1.60	1.75	1.96
24	3	2.02	2.14	2.28

Example:

A conveyor is required to transport 10 tons per hour of a material weighing 62 pounds per cubic foot and having a maximum particle size of 100 mesh. To further complicate the problem, we will require that the material be mixed in transit using cut and folded flights. Since the distance the material is to be conveyed is relatively short, we want to use short pitch screws, to insure proper mixing of material. The materials table recommends a loading percentage of 30% A.

Actual calculated volume:

$$\frac{\text{20,000 lbs.}}{\text{62 lbs. / cu. ft.}} = \text{323 cu. ft./hr.}$$

For proper calculation of size and speed, this volume must be corrected, by use of capacity factors, to compensate for cut and folded, and short (2/3) pitch flights.

These capacity factors, taken from the preceding charts are:

Cut and folded flights 30% loading = 3.75
Short pitch flights (2/3 pitch) = 1.50

With capacity factors included, capacity will now be calculated:

SC = 3.75 * 1.50 * 323
SC = 1817cu.ft.

This selection capacity value will be used in the capacity table, for calculating correct size and speed. In the appropriate column, under 30% A loading, we find that a 14" conveyor, at the maximum recommended speed will convey 2194 cu. ft. per hr. or 21.1 cu. ft. per revolution.

To calculate actual conveyor speed, the following formula should be used:

$$\frac{\text{1817 cu. ft. / hr.}}{\text{21.1 cu. ft. / hr. at 1 RPM}} = \text{86.1 RPM}$$

This is the correct speed at which the 14" conveyor with cut and folded, and short pitch flights will convey the actual capacity of 323 cu. ft. per hour.

Graphic selection of this conveyor could also be accomplished by use of the 30% A nomograph on page 22 and the selection capacity of 1817 cu. ft. per hour.