

Vibrating Screens

How to Estimate Capacities

To get a reasonable estimate of tons per hour (mt/h) that can be screened through a square foot (square meter) of the size mesh you are considering, simply multiply the estimated capacity (table 1) by the pertinent factors affecting your operation (table 11). Then multiply again by the number of square feet (square meters) of screen deck involved. That is;

Capacity through deck = mt/h per Sq.Metre (TPH per Sq.Ft.) (Table 1) x A x B x C x D x E x F x Sq.Meters (Sq.Ft.) Area of Deck

Table 1

- Capacity passing through square meter (square foot) of gradation screen.

Size of Mesh	mm	2.38	4.76	6.35	9.52	12.7	15.9	19.0	22.2	25.4	31.7	38.1	44.4	50.8	63.5	76.2	88.9	102
	in	³ / ₃₂ (#8)	³ / ₁₆ (#4)	¹ / ₄	³ / ₈	¹ / ₂	⁵ / ₈	³ / ₄	⁷ / ₈	1	1 ¹ / ₄	1 ¹ / ₂	1 ³ / ₄	2	2 ¹ / ₂	3	3 ¹ / ₂	4
Closed Cycle	mt/h	8.30	14.6	18.5	23.9	28.8	33.7	37.6	41.0	43.4	49.3	54.7	58.6	63.0	69.3	75.2	79.1	82.0
	TPH	0.85	1.50	1.90	2.45	2.95	3.45	3.85	4.20	4.45	5.05	5.60	6.00	6.45	7.10	7.70	8.10	8.40
Open Cycle	mt/h	6.35	10.7	13.2	16.6	20.0	23.4	26.4	28.8	30.3	34.7	38.1	41.0	43.9	48.3	52.7	55.2	57.6
	TPH	0.65	1.10	1.35	1.70	2.05	2.40	2.70	2.95	3.10	3.55	3.90	4.20	4.50	4.95	5.40	5.65	5.90

Estimated Capacities Based on: (1) 50% crushed gravel feed; (2) approximately 10-15% overrun with open cycle operation; (3) standard square opening wire mesh used on all decks.

Table 11

- Factors affecting capacity of vibrating screens.

Factor A		Factor B		Factor C		Factor D	
Correcting for No. of screening decks above		Amount of agg. fed to deck less than 1/2 screen opening		With water spray directly on screen		Estimate percent of oversize fed screen	
DECK	FACTOR A	AMOUNT (%)	FACTOR B	SCREEN OPENING	FACTOR C	AMOUNT (%)	FACTOR D
Top	1.0	0	0.40	2.38mm (3/32)	2.60	10%	1.70
Second	0.90	5	0.47	4.76mm (3/16)	2.50	20	1.04
Third	0.80	10	0.53	6.35mm (1/4)	2.40	30	1.00
Fourth	0.70	15	0.59	9.52mm (3/8)	2.10	40	0.95
		20	0.66	12.7mm (1/2)	1.85	50	0.90
		25	0.73	19.0mm (3/4)	1.50	60	0.85
		30	0.82	25.4mm (1)	1.15	70	0.79
		35	0.90	28.6mm (11/8)	1.00	80	0.70
		40	1.00			90	0.55
		45	1.10			92	0.50
		50	1.20			94	0.44
		55	1.30			96	0.35
		60	1.40			98	0.20
		65	1.50			100	0.00
		70	1.60				
		80	1.80				
		90	1.92				
		100	2.00				

Factor E		Factor F		
Type of Material		Weight of Material		
DESCRIPTION	FACTOR E	DESCRIPTION	DENSITY	FACTOR F
1. Uncrushed gravel - Free flowing - max.5% moisture	1.15	1. Sand and gravel	1600 kg/m ³ 100 lb/ft ³	1.00
Uncrushed gravel - Moist and dirty	0.85*	2. Crushed gravel or	1600kg/m ³ 100 lb/ft ³	1.00
2. 50% crushed gravel - Free flowing - Max. 5% moisture	1.00	3. Average broken iron ore	2160kg/m ³ 135 lbft ³	10.35
50% crushed gravel - Moist and dirty	0.70*	4. Average broken anthraite coal	1040kg/m ³ 65 lb/ft ³	0.65
3. 100% crushed gravel or rock - Free flowing - Max.5% moisture	0.90			
100% crushed rock - With dirt - Moist and dirty	0.60*			
100% crushed rock - Laminar or slabby	0.60			

*Factor can vary greatly depending on amount of clay, etc.

Controlled continuous feeding of proper size material uniformly spread across the screening surfaces of a well balanced screen is essential for maximum vibrating screen production. Screen capacity and efficiency will be affected by the factors listed in Tables 1 and 11 above and additionally by the speed, slope and balance of the machine; all the characteristics of the varying materials fed; ambient temperature at the operating site; and other factors.

