BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Acetylenogen (Calcium Carbide)	+ 1/2	70-90	30A	2.0	B4	I	I	II	H
Adipic Acid	-100M	45	30A	0.5	D3	I	I	III	H, M, V
Alfalfa Meal	-1/8	14-22	30A	0.6	B4	I	I	IV	O, Q, V
Alfalfa Pellets	-1/2	41-43	45	0.5	B4	I	I	II	
Alfalfa Seed	-1/8	10-15	45	0.4	A1-A2-A3	I	I	I	H
Almonds	-1/2	28-30	30A	0.9	B4	I	I	III	K
Alum, Fines	-1/8	45-50	30A	0.6	A1-A2-A3	I	I	III	M, •
Alum, Lumpy	+ 1/2	50-60	30A	1.4	B1-B2	I	I	II	•
Alumina	-1/8	55-65	15	1.8	C4	III	I	II	G, Q
Alumina, Fines	-100M	35	15	1.6	C4	III	I	II	G, Q
Alumina, Sized or Briquette	-3	65	15	2.0	C4	III	I	III	
Aluminate Gel (Aluminate Hydroxide)	-1/8	45	30A	1.7	B4	I	I	III	V
Aluminum Chips, Dry	-1/2	7-15	30A	1.2	B4	I	I	IV	H, N
Aluminum Chips, Oily	-1/2	7-15	30A	0.8	B4	I	I	IV	N, Q, V
Aluminum Hydrate (Aluminum Hydroxide)	-1/2	13-20	30A	1.4	A1-A2-A3	I	I	III	H, V
Aluminum Oxide	-100M	60-120	15	1.8	C4	III	I	I	G, H
Aluminum Ore (Bauxite)	-3	75-85	15	1.8	D4	III	I	II	
Aluminum Silicate (Andalusite)	-1/2	49	30A	0.8	C1-C2	I	III	III	V
Aluminum Sulfate (Alum)	-1/2	45-58	45	1.0	A1-A2-A3	I	I	II	
Ammonium Chloride, Crystalline	-100M	45-52	30A	0.7	C1-C2	I	III	IV	A, L
Ammonium Nitrate	-1/8	45-62	30A	1.3	C3	I	II	III	H, M, •
Ammonium Sulfate	-1/2	45-58	30A	1.0	A1-A2-A3	I	II	III	A, I, M, •
Antimony Powder	-100M	•	30A	1.6	B4	II	I	II	V, •
Apple Pomace, Dry	-1/2	15	30A	1.0	B4	I	I	IV	Q, V
Arsenate of Lead (Lead Arsenate)	-1/64	72	30A	1.4	A1-A2-A3	I	I	III	G, L
Arsenic Oxide (Arsenolite)	-100M	100-120	30A	•	•	I	•	III	L, •
Arsenic, Pulverized	-100M	30	45	0.8	B4	I	•	II	L, •
Asbestos Rock, Ore	-3	81	15	1.2	C4	III	I	III	L
Asbestos, Shredded	Fibers	20-40	30B	1.0	B4	II	I	IV	L, P, Q
Ash, Black, Ground	-1/8	105	30A	2.0	A1-A2-A3	I	I	III	
Ashes, Coal, Dry	-1/2	35-45	30B	3.0	C4	II	II	IV	Q

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Ashes, Coal, Dry	-3	35-40	30B	2.5	C4	II	II	IV	
Ashes, Coal, Wet	-1/2	45-50	30B	3.0	D4	II	II	IV	P
Ashes, Coal, Wet	-3	45-50	30B	4.0	D4	II	II	IV	P
Asphalt, Crushed	-1/2	45	30A	2.0	A1-A2-A3	I	I	IV	
Bagasse, Dry	Fibers	7-10	30A	1.5	B1-B2-B3	I	I	IV	L, N, P, Q
Bakelite	-1/8	30-45	45	1.4	A1-A2-A3	I	I	II	
Baking Powder	-100M	40-55	30A	0.6	A2	I	I	III	
Baking Soda (Sodium Bicarbonate)	-100M	40-55	45	0.6	A2	I	I	II	
Barite (Barium Sulfate)	+1/2	120-180	30B	2.6	D4	II	I	III	
Barite, Powder	-100M	120-180	30B	2.0	B4	I	I	III	G, P
Barium Carbonate	-100M	72	30B	1.6	B4	I	I	IV	L
Bark, Wood	+1/2	10-20	30B	2.0	C4	I	II	IV	N, Q
Barley, Fine Ground	-1/8	24-38	30B	0.4	A1-A2-A3	I	I	III	
Barley, Malted	-1/2	31	30A	0.4	A1-A2-A3	I	I	III	
Barley, Meal	-1/2	28	30A	0.4	A1-A2-A3	I	I	III	
Barley, Whole	-1/8	36-48	45	0.5	A1-A2-A3	I	I	II	H
Basalt	-1/8	80-105	15	1.8	C4	III	I	II	
Bauxite, Crushed	-3	75-85	30B	2.5	D4	II	I	III	
Bauxite, Dry, Crushed	-1/8	68	15	1.8	C4	I	I	II	
Beans, Castor, Meal	-1/8	35-40	30A	0.8	A1-A2-A3	I	I	III	O
Beans, Castor, Whole, Shelled	-1/2	36	45	0.5	A1-A2-A3	I	I	I	O
Beans, Navy, Dry	-1/2	48	45	0.5	A1-A2-A3	I	I	I	
Beans, Navy, Steeped	-1/2	60	45	0.8	A1-A2-A3	I	I	II	
Beans, Soy	-1/2	45-50	45	0.5	A2	I	I	I	
Beet Pulp, Dry	•	11-16	•	•	•	•	•	•	•
Beet Pulp, Wet	•	25-45	•	•	•	•	•	•	•
Bentonite	-100M	50-60	45	0.7	B4	I	I	II	G, P, Q
Bentonite, Crude	-3	34-40	30A	1.2	B2	I	I	IV	P
Benzene Hexachloride	-100M	56	30A	0.6	A1-A2-A3	I	I	IV	L
Blood, Dried	-3	35-45	30A	2.0	B4	I	I	IV	M
Blood, Dried, Ground	-100M	30	30A	1.0	A1-A2	I	I	III	M
Bluestone (Copper Sulfate)	-1/2	75-95	30A	1.0	B1-B2-B3	I	III	III	•
Bone Ash (Tricalcium Phosphate)	-100M	40-50	30A	1.6	A1-A2	I	I	IV	
Boneblack	-100M	20-25	45	1.5	A1-A2	I	I	II	Q

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Bonechar	-1/8	27-40	30A	1.6	A1-A2	I	I	III	
Bonemeal	-1/8	50-60	30A	1.7	B4	I	I	III	
Bones, Crushed	-3	35-50	30A	2.0	B4	I	I	IV	
Bones, Ground	-1/8	50	30A	1.7	B4	I	I	III	
Bones, Whole	Irregular	35-50	30A	3.0	B4	I	I	IV	N
Borate of Lime	-100M	60	30A	0.6	A1-A2-A3	I	I	III	•
Borax Lumps	1 1/2 to 2	55-60	30A	1.8	B4	I	I	III	
Borax Lumps	2 to 3	60-70	30A	2.0	B4	I	I	III	
Borax, Fines	-1/8	45-55	45	0.7	C4	I	II	II	
Borax, Screenings	-1/2	55-60	30A	1.5	B4	I	I	III	
Boric Acid	-1/8	55	45	0.8	C4	I	II	II	
Boron	-100M	75	15	1.0	B4	III	I	III	
Bran, Rice—Rye—Wheat	-1/8	16-20	30A	0.5	A1-A2-A3	I	I	III	H, Q
Braunite (Manganese Oxide)	-100M	120	30B	2.0	B4	II	I	III	
Bread, Crumbs	-1/8	20-25	30A	0.6	A1-A2-A3	I	I	III	J,K
Brewers Grain, Spent, Dry	-1/2	14-30	30A	0.5	A1-A2-A3	I	I	IV	
Brewers Grain, Spent, Wet	-1/2	55-60	30A	0.8	D3	I	II	IV	
Brick, Ground	-1/8	100-120	15	2.2	C4	III	I	III	
Bronze Chips	-1/8	30-50	30A	2.0	B4	I	I	IV	
Buckwheat	-1/8	37-42	45	0.4	A1-A2-A3	I	I	II	H
Calcine, Flour	-100M	75-85	30A	0.7	A1-A2-A3	I	I	III	
Calcium Carbide	-3	70-90	30A	2.0	B4	I	I	II	H
Calcium Lactate	-3	26-29	30A	0.6	B1-B2	I	II	IV	K, L, P
Calcium Magnesium Carbonate	+ 1/2	90-100	30B	2.0	B4	II	I	II	
Calcium Phosphate	-100M	40-50	30A	1.6	A1-A2-A3	I	I	IV	
Carbon, Activated, Dry, Fine	-1/8	8-20	30A	1.2	B4	I	I	II	K, •
Carbon Black, Fine	-100M	4-7	30A	0.4	A2	I	I	III	P, Q, •
Carbon Black, Pelleted	-1/8	20-25	45	•	•	I	•	I	M, P, •
Carborundum*	-3	100	15	3.0	C4	III	I	II	
Casein	-1/8	36	30A	1.6	B4	I	I	III	
Cashew, Nuts	-1/2	32-37	30A	0.7	B4	I	I	IV	
Cast Iron, Chips	-1/2	130-200	30A	4.0	B4	I	I	IV	
Caustic Soda (Sodium Hydroxide)	-1/8	88	30A	1.8	D4	I	III	III	L, M
Caustic Soda, Flakes (Sodium Hydroxide)	-1/2	47	30A	1.5	D4	I	III	IV	K, L, M, P

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Celite (Diatomaceous Earth)	-1/64	11-17	30B	1.6	C4	II	I	III	G, P, Q, •
Cement, Aerated (Portland)	-100M	60-75	30B	1.4	B4	II	I	I	G
Cement, Clinker	-3	75-95	30B	1.8	D4	II	I	III	
Cement, Mortar	-1/8	133	30A	3.0	C4	I	I	III	K
Cement, Portland	-100M	94	30B	1.4	B4	II	I	II	G
Cerrusite (Lead Carbonate)	-1/64	240-260	30A	1.0	B4	I	I	III	G, L
Chalk, Crushed	-3	75-95	30A	1.9	B4	I	I	II	P
Chalk, Ground	-100M	67-75	45	1.4	B4	I	I	II	G, P, Q
Charcoal, Ground	-100M	18-28	30A	1.2	B4	I	I	IV	H
Charcoal, Lumps	-3	18-28	30A	1.4	B4	I	I	IV	H, K
Chips, Pulpwood	+1/2	12-25	30A	1.0	B1	I	I	III	N, Q
Chocolate, Cake, Pressed	-3	40-45	30A	1.5	B2	I	I	II	
Chrome Ore	-3	125-140	30B	2.5	C4	II	I	III	
Cinders, Blast Furnace	-3	57	30B	1.9	D4	II	II	III	
Cinders, Coal	-3	40	30B	1.8	D4	II	II	III	
Clay, Brick, Dry, Fines	-1/2	100-120	30B	2.0	C4	II	I	III	
Clay, Calcined	-1/8	80-100	30B	2.4	C4	II	I	III	
Clay, Ceramic, Dry, Fines	-100M	60-80	30A	1.5	A1-A2-A3	I	I	III	J
Clay, Dry, Lumpy	-3	60-75	30A	1.8	B4	I	I	III	
Clinker, Cement	-3	75-95	30B	1.8	D4	II	I	III	
Clover, Seed	-1/8	45-48	45	0.4	A1-A2-A3	I	I	II	H
Coal, Anthracite (Culm and River)	-1/8	55-61	30A	1.0	B1-B2	I	II	III	
Coal, Anthracite, Sized	-1/2	49-61	45	1.0	B1-B2	I	I	II	
Coal, Bituminous, Mined	-3	40-60	30A	0.9	A1-A2	I	I	III	F, H, P, Q
Coal, Bituminous, Mined, Sized	-3	45-55	30A	1.0	A1-A2	I	I	III	H, K, N
Coal, Bituminous, Mined, Slack	-1/2	43-50	30A	0.9	B1-B2	I	II	IV	H
Coal, Lignite	-3	37-45	30A	1.0	B4	I	II	III	H
Cocoa, Beans	-1/2	30-45	45	0.5	A1-A2	I	I	II	K
Cocoa, Nibs	-1/2	35	45	0.5	B4	I	I	II	
Cocoa, Powdered	-100M	30-35	30A	0.9	A2	I	I	IV	G, P, Q
Coconut	Shredded	20-22	30A	1.5	B2	I	I	IV	
Coffee, Beans, Green	-1/2	25-32	45	0.5	A1-A2	I	I	II	J, K

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Coffee, Beans, Roasted	-1/2	20-30	45	0.4	A2	I	I	II	J, K
Coffee, Chaff	-1/8	20	45	1.0	A1-A2	I	I	II	G, Q
Coffee, Ground, Dry	-1/64	25	30A	0.6	A1-A2	I	I	III	J
Coffee, Ground, Wet	-1/64	35-45	30A	0.6	A1-A2	I	I	IV	P
Coffee, Soluble	-1/64	19	30A	0.4	A2	I	I	III	G,J,K,M,Q
Coke, Breeze	-1/2	25-35	15	1.2	C4	III	I	III	H, Q
Coke, Loose	-7	25-35	15	1.2	D4	III	I	III	H, K, N
Coke, Petrol, Calcined	-7	35-45	15	1.3	D4	III	I	III	N
Compost	-7	30-50	30A	1.0	C1-C2	I	II	IV	N, P, •
Concrete, Pre-Mix, Dry	-1/2	85-120	30B	3.0	C4	II	I	III	M
Copper Ore	+ 1/2	120-150	30B	4.0	D4	II	I	III	
Copper Ore, Crushed	+ 1/2	120-150	30B	4.0	C4	II	I	III	
Copper Sulfate (Bluestone)	-1/2	75-95	30A	1.0	B1-B2-B3	I	III	III	•
Copperas (Ferrous Sulfate)	-1/2	50-75	30A	1.0	B4	I	I	III	M
Copra, Cake, Ground	-1/8	40-45	30A	0.7	A1-A2-A3	I	I	IV	C, O
Copra, Cake, Lumpy	-3	25-30	30A	0.8	B1-B2-B3	I	I	III	C, O
Copra, Lumpy	+ 1/2	22	30A	1.0	B1-B2-B3	I	I	III	C, O
Copra, Meal	-1/8	40-45	30A	0.7	B4	I	I	III	C, O
Cork, Granulated	-1/2	12-15	30A	0.5	A1-A2-A3	I	I	III	D, V, Q
Cork, Ground	-1/8	5-15	30A	0.5	A1-A2-A3	I	I	III	D, V, Q
Corn, Cleanings	-1/8	20-30	30A	0.4	A1-A2-A3	I	I	III	J, Q
Corn, Cracked	-1/8	40-50	45	0.7	A1-A2-A3	I	I	II	H, J
Corn, Grits	-1/8	40-45	30A	0.5	A1-A2-A3	I	I	III	H, J
Corn, Seed	-1/2	45	45	0.4	A1-A2-A3	I	I	II	H, J, K
Corn, Steeped	-3	40-60	•	0.8	•	•	•	•	•
Corn, Shelled	-1/2	45	45	0.4	A1-A2-A3	I	I	II	H, V
Corn Cobs, Ground	-1/2	17	45	0.6	A1-A2-A3	I	I	II	H, Q
Corn Cobs, Whole	Irregular	12-15	30A	•	B1-B2	I	I	II	H, N, •
Corn Ear	-16	56	30A	•	B1-B2	I	I	III	H, N
Corn Fiber Feed	-1/8	15-35	30A	1.5	•	I	I	III	
Corn Fiber, Dewatered	-1/8	10-25	30A	0.6	A1-A2-A3	I	I	III	
Corn Fiber, Wet	-1/8	15-50	30A	0.8	A1-A2-A3	I	I	III	J, M
Corn Filter Aid	-1/8	15-50	15	2.5	C4	III	I	III	
Corn Germ	-1/8	21	30A	0.4	A1-A2-A3	I	I	III	H, J, O, Q

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Corn Germ, Dewatered	-1/8	30-35	30A	0.6	A1-A2-A3	I	I	III	H, J, M
Corn Germ, Dry	-1/8	30-40	30A	0.5	A1-A2-A3	I	I	III	
Corn Germ, Expanded Cake	-1/8	30-40	30A	2.0	A1-A2-A3	I	I	III	
Corn Germ, Oil Meal	-1/8	30-35	30A	0.6	A1-A2-A3	I	I	III	
Corn Oil, Cake	-7	25	30A	0.6	A1-A2	I	I	IV	C, O
Corn Sugar	-1/8	30-35	30A	1.0	A2	I	I	III	H, J, M, V
Corn Sugar, Crystalline, Dry	-1/8	25-60	30A	1.5	A2	I	I	III	
Corn Sugar, Crystalline, Wet	-1/8	30-60	30A	1.5	A2	I	I	III	
Corn Meal	-1/8	32-40	30A	0.5	A1-A2	I	I	III	H, J, O, V
Cottonseed, Cake, Crushed	-1/2	40-45	30A	1.0	A1-A2	I	I	IV	C, O, V
Cottonseed, Cake, Lumpy	-7	40-45	30A	1.0	B1-B2	I	I	IV	C, O, V
Cottonseed, Dry, Delinted	-1/2	22-40	45	0.6	A1-A2	I	I	II	P, V
Cottonseed, Dry, Not Delinted	-1/2	18-25	30A	0.9	A1-A2	I	I	IV	P, Q, V
Cottonseed, Flakes	-1/2	20-25	30A	0.8	A1-A2	I	I	III	C, O, Q, V
Cottonseed, Hulls	-1/8	12	30A	0.9	A1-A2	I	I	III	Q, V
Cottonseed, Meal, Expeller	-1/8	25-30	30A	0.5	C1-C2	I	I	IV	C, O, V
Cottonseed, Meal, Extracted	-1/8	35-40	30A	0.5	A1-A2	I	I	IV	C, O, V
Cottonseed, Meats, Dry	-1/8	40	30A	0.6	A1-A2	I	I	III	C, O, V
Cottonseed, Meals, Rolled	-1/2	35-40	30A	0.6	A1-A2	I	I	IV	C, O, V
Cracklings, Crushed	-3	40-50	30A	1.3	B1-B2-B3	I	I	IV	C, O, V
Cryolite, Dust (Kryalith)	-100M	75-90	30B	2.0	B4	II	I	III	F, G, L, V
Cryolite, Lumpy (Kryalith)	-16	90-110	30B	2.1	B4	II	I	III	L, V
Cullet, Fines	-1/2	80-120	15	2.0	D4	III	I	III	
Cullet, Lumps	-16	80-120	15	2.5	D4	III	I	III	
Cupric Sulfate (Copper Sulfate)	-1/2	75-95	30A	1.0	B1-B2-B3	I	III	III	•
Diatomaceous Earth (Diatomite)	-1/64	11-17	30B	1.6	C4	II	I	III	G, P, Q, •
Dicalcium Phosphate	-1/64	40-50	30A	1.6	A1-A2-A3	I	I	III	V
Disodium Phosphate	-1/64	25-31	30A	0.5	C4	I	I	III	K

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Distiller's Grain, Spent, Dry	-1/8	30	30A	0.5	B4	I	I	III	
Distiller's Grain, Spent, Wet	-1/2	40-60	30A	0.8	C1-C2	I	I	IV	N
Dolomite, Crushed	-1/2	80-100	30B	2.0	B4	II	I	III	
Dolomite, Lumpy	+1/2	90-100	30B	2.0	B4	II	I	III	
Earth, Loam, Dry, Loose	-1/2	76	30B	1.2	B4	II	I	III	
Ebonite	-1/2	63-70	30A	0.8	A1-A2-A3	I	I	III	V
Egg, Powder	-1/64	16	30A	1.0	A2	I	I	III	G, H, J, Q
Epsom Salts (Magnesium Sulfate)	-1/64	40-50	30A	0.8	A1-A2-A3	I	I	III	M, V
Ethanedioic Acid (Oxalic Acid)	-1/8	60	30A	1.0	A1-A2	I	III	III	L, M
Feldspar, Ground	-100M	65-80	15	2.0	B4	III	I	III	
Feldspar, Lumps	-7	90-100	15	2.0	B4	III	I	III	
Feldspar, Powder	-200M	100	30B	2.0	B4	II	I	III	
Feldspar, Screenings	-1/2	75-80	15	2.0	B4	III	I	III	
Ferrous Sulphate	-1/2	50-75	30A	1.0	B4	I	I	III	M
Ferrous Sulfide (Iron Sulfide), Lumps	-1/2	120-135	30B	2.0	A1-A2-A3	II	I	II	V
Ferrous Sulfide (Iron Sulfide), Mesh	-100M	105-120	30B	2.0	A1-A2-A3	II	I	III	V
Fish Meal	-1/2	35-40	30A	1.0	A1-A2-A3	I	I	IV	C, J, V
Fish Scrap	-7	40-50	30A	1.5	B1-B2-B3	I	I	IV	C, •
Flaxseed	-1/8	43-45	30A	0.4	A1-A2-A3	I	I	III	H, P, V
Flaxseed Cake (Linseed Cake)	-7	48-50	30A	0.7	B1-B2	I	I	IV	O
Flaxseed Meal (Linseed Meal)	-1/8	25-45	30A	0.4	A1-A2	I	I	IV	O, V
Flour, Wheat	-1/64	33-40	30A	0.6	A2	I	I	IV	F, H, J, V
Flue Dust, Basic Oxygen Furnace	-1/64	45-60	30B	3.5	C4	II	I	III	F, G
Flue Dust, Blast Furnace	-1/64	110-125	30B	3.5	C4	II	I	III	
Flue Dust, Boiler H, Dry	-1/64	30-45	30B	2.0	C4	II	I	III	F, G
Fluorspar (Calcium Fluoride)	-1/8	80-100	30B	2.0	B4	II	I	III	
Fluorspar, Lumps	-7	90-110	30B	2.0	B4	II	I	III	
Flyash	-1/64	30-45	30B	2.0	C4	II	I	III	G
Flyash, Coal	-1/64	30-60	30B	2.0	C4	II	I	III	G
Flyash, Fluidized Bed	-1/64	60-90	30B	3.0	C4	II	I	III	
Foundry Sand, Dry	-1/8	90-110	15	1.7	C4	III	I	III	

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Fuller's Earth, Oil Filter, Burned	-1/8	40	15	2.0	C4	III	I	II	
Fuller's Earth, Oil Filter, Raw	-1/8	35-40	30B	2.0	B4	II	I	II	
Fuller's Earth, Oil Filter, Spent	35% oil	60-65	15	2.0	D4	III	I	III	I, O
Galena (Lead Sulfide)	-100M	240-260	30A	1.2	B4	II	I	II	G, L, P
Gelatin, Granulated	-1/8	32	30A	0.8	A2	I	I	III	J, K, M, V
Gilsonite	-1/2	37	30B	1.5	D4	II	II	III	H, L
Glass, Batch	-1/2	80-100	15	2.5	D4	III	I	III	
Glue, Ground	-1/8	40	30A	1.7	B4	II	I	IV	M
Glue, Pearl	-1/2	40	30A	0.5	A1-A2-A3	I	I	III	M
Glue, Veg. Powdered	-1/64	40	30A	0.6	A1-A2-A3	I	I	IV	M
Gluten Cake, Wet	-1/2	30-50	30A	2.5	A2	I	I	IV	
Gluten, Meal, Dry	-1/8	30-40	30A	0.6	A2	I	I	III	J
Granite, Broken	+1/2	95-100	15	2.5	D4	III	I	II	
Granite, Fines	-1/2	80-90	15	2.5	C4	III	I	II	
Grape, Pomace	-3	15-20	30A	1.4	B4	I	I	IV	M, Q, V
Graphite Flakes	-1/8	40	45	0.5	A1-A2-A3	I	I	II	F, J, V
Graphite Flour	-100M	28	30A	0.5	A1-A2-A3	I	I	III	F, G, J, V
Graphite Ore	+1/2	65-75	30A	1.0	B4	I	I	III	F
Grass Seed	-1/8	10-32	30A	0.4	A2	I	I	III	H, Q
Guano, Dry	-1/2	70	30A	2.0	C1-C2	I	I	III	•
Gypsum, Calcined	-1/8	55-60	30A	1.6	B4	I	I	III	M
Gypsum, Calcined, Powdered	-100M	60-80	30A	2.0	B4	I	I	III	M
Gypsum, Raw	-3	70-80	30A	2.0	B4	I	I	II	
Green Vitriol (Ferrous Sulfate)	-1/2	50-75	30B	1.0	B4	II	I	II	
Hay, Chopped	-1/2	8-12	30A	1.6	B1-B2	I	I	III	D, Q, •
Hexanedioic Acid (Adipic Acid)	-100M	45	30A	0.5	D3	I	I	III	H, M
Hominy	-1/2	35-50	30A	0.4	A1-A2-A3	I	I	II	J, V
Hops, Spent, Dry	-3	35	30A	1.0	B1-B2-B3	I	I	III	V
Hops, Spent, Wet	-3	50-55	30A	1.5	D3	I	II	IV	N, V
Hydroxybenzoic Acid (Salicylic Acid)	-1/8	29	15	0.6	C4	III	I	III	M
Ice, Crushed	-3	35-45	30A	0.4	B1-B2	I	I	III	K, V
Ice, Cubed	-3	33-35	30A	0.4	A2	I	I	III	K, V
Ice, Flaked	-1/2	40-45	30A	0.6	A2	I	I	III	K, V, •
Ice, Shells	-3	33-35	30A	0.4	A2	I	I	IV	K, V
Ilmenite Ore	-3	140-160	15	2.0	C4	III	I	III	
Iron Ore	-1/64	120-180	15	2.2	C4	III	I	III	
Iron Oxide Pigment	-100M	25	30B	1.0	A1-A2-A3	II	I	III	F, G, J

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Iron Oxide, Millscale	-1/2	75	30B	1.6	B4	I	I	III	
Kafir (Corn)	-1/2	40-45	30A	0.5	C4	I	I	II	V
Kaolin Clay	-3	63	30A	2.0	B4	I	I	II	
Kaolin Talc	-1/64	42-56	30A	2.0	B4	I	I	III	F, G, J
Lactose	-1/64	32	30A	0.6	A2	I	I	III	H, J, M, P
Lead Arsenate	-1/64	72	30A	1.4	A1-A2-A3	I	I	III	G, L
Lead Arsenite	-1/64	72	30A	1.4	A1-A2-A3	I	I	III	G, L
Lead Carbonate	-1/64	240-260	30A	1.0	B4	I	I	III	G, L
Lead Ore	-1/8	200-270	30A	1.4	C4	I	I	III	L
Lead Ore	-1/2	180-230	30B	1.4	C4	II	I	III	L
Lead Oxide, Red Lead	-100M	30-150	30A	1.2	B4	II	I	III	G, J, L
Lead Oxide, Red Lead	-200M	30-180	30A	1.2	B4	II	I	III	F, G, J, L
Lead Sulfide	-100M	240-260	30A	1.0	B4	II	I	III	G, L, P
Lignite, Air Dried	-3	37-45	30A	1.0	B4	I	II	III	H
Lime, Hydrated	-1/8	40	30A	0.8	B4	I	I	III	F, G, P, V
Lime, Hydrated, Pulverized	-1/64	32-40	30A	0.6	A1-A2	I	I	III	F, G, P, V
Lime, Unslaked	-1/8	60	30A	0.6	A2	I	I	III	P, V
Lime, Pebble, Unslaked	-1/2	53-56	45	2.0	B1	I	I	II	C, M
Limestone, Agricultural	-1/8	68	30A	2.0	B4	II	I	III	
Limestone, Crushed	+1/2	85-90	30B	2.0	B4	II	I	III	
Limestone, Dust	-1/64	55-95	30B	1.6-2.0	B4	II	I	IV	G, Q
Limonite, Ore	-1/2	120	15	1.7	C4	III	I	IV	
Lindane (Benzene Hexachloride)	-100M	56	30A	0.6	A1-A2-A3	I	I	IV	L
Litharge (Lead Oxide)	-100M	30-150	30A	1.2	B4	II	I	III	G, J, L
Lithopone	-200M	45-50	30A	1.0	A1-A2	I	I	III	G, L
Magnesium Chloride (Magnesite)	-1/2	33	30A	1.0	A1-A2	I	I	IV	
Magnesium Sulfate (Epsom Salts)	-1/64	40-50	30A	0.8	A1-A2-A3	I	I	III	M
Maize	-1/8	40-45	45	0.4	A1-A2-A3	I	I	I	H
Malt, Dry, Ground	-1/8	20-30	30A	0.5	A1-A2-A3	I	I	III	H, J, L, Q, V
Malt, Dry, Whole	-1/2	20-30	30A	0.5	A1-A2-A3	I	I	III	H, V
Malt, Wet or Green	-1/2	60-65	30A	0.4	A1-A2-A3	I	I	III	
Malt, Meal	-1/8	36-40	30A	0.4	A1-A2-A3	I	I	II	J, V
Malt, Sprouts	-1/2	13-15	30A	0.4	A1-A2-A3	I	I	III	J, V
Manganese Dioxide	-100M	70-85	30A	1.5	B1-B2	I	II	III	H, L, •

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Manganese Ore	+1/2	125-140	15	2.0	C4	III	I	III	
Manganese Oxide	-100M	120	30B	2.0	B4	II	I	III	
Manganese Sulfate	-1/2	70	15	2.4	C4	III	I	III	
Marble, crushed	-1/8	80-95	15	2.0	C4	III	I	III	
Marl (Clay)	+ 1/2	80	30B	1.6	B4	II	I	III	
Meat, Ground	-1/4	50-55	30A	1.5	B1-B2	I	II	IV	C, K, P, •
Meat, Scraps, With Bone	Scraps	40	30B	1.5	D4	II	I	IV	C, N, •
Mica, Flakes	-1/8	17-22	30B	1.0	B4	II	I	I	G, N, Q, V
Mica, Ground	-1/8	13-15	30B	0.9	B4	II	I	III	V
Mica, Pulverized	-100M	13-15	30B	1.0	B4	II	I	III	G, V
Milk, Dried, Flake	-1/8	5-6	30A	0.4	A2	I	I	III	H, J, M, Q
Milk, Malted	-1/64	27-30	30A	0.9	A2	I	I	IV	G, H, J, P
Milk, Powdered	-1/8	20-45	45	0.5	A2	I	I	II	G, H, J
Milk, Powdered, Whole	-1/8	20-36	30A	0.5	A2	I	I	III	J, M, P
Milk, Whole, Dried	-100M	20	30A	0.4	A2	I	I	III	G, J, M P
Milk Sugar (Lactose)	-100M	32	30A	0.8	A2	I	I	III	H, J, P
Mill Scale (Steel)	Irregular	120-125	30B	3.0	C4	II	II	IV	
Milo, Ground	-1/8	32-36	30A	0.5	A1-A2-A3	I	I	II	V
Milo, Maize (Kafir)	-1/8	40-45	45	0.4	A1-A2-A3	I	I	I	H, V
Molybdenite Powder	-1/8	107	30A	1.5	B4	II	I	II	
Monosodium Phosphate	-1/8	50	30B	0.6	B4	II	I	III	
Mortar, Wet	Irregular	150	30B	3.0	C4	II	II	IV	
Muriate of Potash	-1/8	77	15	1.8	D4	III	III	II	
Mustard Seed	-1/8	45	45	0.4	A1-A2-A3	I	I	I	H, V
Naphtalene, Flakes	-1/8	45	30A	0.7	A1-A2-A3	I	I	III	V
Nicotinic Acid (Niacin)	-1/64	35	30A	0.8	B4	I	I	III	J
Oakite (Trisodium Phosphate)	-1/8	60	30B	1.7	B4	II	I	II	
Oats	-1/2	26	45	0.6	A1-A2-A3	I	I	Ii	G, H, V
Oats, Crimped	-1/2	19-26	30A	0.5	A1-A2-A3	I	I	III	V
Oats, Crushed	-1/8	22	30A	0.6	A1-A2-A3	I	I	IV	H, Q, V
Oats, Flour	-100M	35	30A	0.5	A1-A2-A3	I	I	III	V
Oats, Hulls	-1/8	8-12	30A	0.5	A1-A2-A3	I	I	III	H, Q, V
Oats, Rolled	-1/2	19-24	30A	0.6	A1-A2-A3	I	I	III	H, Q, V
Oleo (Margarine)	Irregular	59	30A	0.4	B1-B2	I	I	IV	C, E, J, O, P
Oranges, Peels, Dry	Irregular	15	30A	1.5	B1-B2	I	I	IV	
Oxalic Acid, Crystal—Ethane Diacid Crystal	-1/8	60	30A	1.0	A1-A2	I	III	III	K, M

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Oyster Shells, Ground	-1/2	50-60	30B	2.0	B4	II	II	III	
Oyster Shells, Whole	-3	80	30B	2.5	B4	II	II	III	N
Paper Pulp, Stock	5%	62	30A	1.5	B1-B2	I	I	IV	N
Paper Pulp, stock	6-15%	60-62	30A	1.7	B1-B2	I	I	IV	N
Paraffin Cake, Broken	-1/2	45	30A	0.6	A1-A2	I	I	IV	E
Peanuts Meal	-1/8	30	30A	0.6	A2	I	I	III	J, V
Peanuts, Clean, Shelled	-3	15-20	30A	0.6	B1-B2	I	I	III	K
Peanuts, Raw, Uncleaned, Unshelled	-3	15-20	30B	0.7	C4	I	I	III	K
Peanuts, Shelled	-1/2	35-45	30A	0.4	A2	I	I	III	K, V
Peas, Dried	-1/2	45-50	45	0.5	A1-A2-A3	I	I	I	H, K, V
Perlite, Expanded	-1/2	8-12	30B	0.6	B4	II	I	III	
Phosphate Disodium	-1/8	50-60	30A	0.9	A1-A2	I	I	III	
Phosphate Acid, Fertilizer	-1/8	60	45	1.4	B1-B2	I	II	II	
Phosphate Rock, Broken	+ 1/2	75-85	30B	2.1	B2	II	I	III	
Phosphate Rock, Pulverized	-1/8	60	30B	1.7	B4	II	I	III	
Phosphate of Soda (Disodium Phosphate)	-1/64	25-31	30A	0.5	C4	I	I	III	K
Phosphate Sand, Granular	-1/8	90-100	15	2.0	C4	III	I	III	
Phosphoprotein (Casein)	-1/8	36	30B	1.6	B4	II	I	II	
Phosphoric Acid (Phosphate Acid)	-100M	60	30A	1.4	A2	I	I	II	
Plaster of Paris (Gypsum)	-200M	60-80	30B	0.9	B4	II	I	III	G
Polyethylene, Pellets	-1/8	35	30A	0.4	A2	I	I	III	J, K
Polystyrene Beads	-1/8	40	30A	0.4	A2	I	I	II	J, K, V
Polyvinyl Chloride, Pellets	Irregular	20-30	30A	0.6	A2	I	II	IV	E, J, K
Polyvinyl Chloride, Powder	-100M	20-30	30A	1.0	A1-A2-A3	I	II	IV	E
Potash, Dry (Muriate of Potash)	-1/8	70	15	2.0	D4	III	III	III	
Potash, Mine Run (Muriate of Potash)	+1/2	75	15	2.2	D4	III	III	III	

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Potassium Carbonate	-1/8	51	30B	1.0	B4	II	II	III	
Potassium Chloride, Pellets	-1/2	120-130	30A	1.6	C4	I	II	II	M
Potassium Nitrate	-1/2	76	30B	1.2	D4	II	II	I	H, V
Potassium Nitrate	-1/8	80	30B	1.2	D4	II	II	II	H, V
Potassium Sulfate	-1/8	42-48	30B	1.0	B4	II	I	IV	P
Potato, Flour	-200M	48	30A	0.5	A1-A2	I	I	III	G, H, J, V
Pumice	-1/8	42-48	30B	1.6	C4	II	I	IV	
Pyrite, pellets	-1/2	120-130	30B	2.0	C4	II	I	II	
Quartz	-1/2	80-90	15	2.5	C4	III	I	II	
Quartz	-100M	70-80	15	1.7	C4	III	I	II	
Quicklime (Lime, unslaked)	-1/8	60	30A	0.6	A2	I	I	III	P
Red Lead (Lead Oxide)	-100M	30-150	30A	1.2	B4	II	I	III	G, J, L
Rice Bran	-1/8	20	30A	0.4	A1-A2-A3	I	I	III	H, Q, V
Rice Grits	-1/8	42-45	30A	0.4	A1-A2-A3	I	I	III	J, V
Rice Hulled	-1/2	45-49	45	0.4	A1-A2-A3	I	I	II	J, V
Rice Hulls	-1/8	20-21	30A	0.4	A1-A2-A3	I	I	III	H, Q
Rice Polished	-1/2	30	45	0.4	A1-A2-A3	I	I	I	J, V
Rice Rough	-1/2	32-36	30A	0.6	A1-A2-A3	I	I	III	H, V
Rosin	-1/2	65-68	30A	1.5	A1-A2-A3	I	I	IV	K, V
Rubber, Pelleted	-3	50-55	30A	1.5	B1-B2-B3	I	I	IV	
Rubber, Reclaimed, Ground	-1/2	23-50	30A	0.8	A1-A2-A3	I	I	IV	V
Rye	-1/8	42-48	45	0.4	A1-A2-A3	I	I	I	H, V
Rye, Bran	-1/8	15-20	30A	0.4	A1-A2-A3	I	I	III	Q, V
Rye, Feed	-1/8	33	30A	0.5	A1-A2-A3	I	I	III	H, V
Rye, Meal	-1/8	35-40	30A	0.5	A1-A2-A3	I	I	III	V
Rye, Middlings	-1/8	42	30A	0.5	A1-A2	I	I	III	V
Rye, Shorts	-1/2	32-33	30A	0.5	B1-B2	I	I	III	V
Safflower, Cake	-3	50	30B	0.6	B4	II	I	II	
Safflower, Meal	-1/8	50	30A	0.6	A1-A2-A3	I	I	III	V
Safflower, Seed (Safflower)	-1/8	45	45	0.4	A1-A2-A3	I	I	I	H, V
Sal Ammoniac (Ammonium Chloride)	-100M	45-52	30A	0.7	C1-C2	I	III	IV	A, L
Salicylic Acid	-1/8	29	15	0.6	C4	III	I	III	M
Salt, Dry Coarse	-1/2	45-60	30B	1.0	C4	II	II	III	M, V
Salt, Dry Fine	-1/8	70-80	30B	1.7	C4	II	II	III	M, V
Salt Cake, Dry, Coarse (Sodium Sulfate)	-1/8	85	30B	2.1	C4	II	II	III	M
Salt Cake, Dry, Pulverized (Sodium Sulfate)	-1/8	65-85	30B	1.7	C4	II	II	III	M

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Saltpeter (Potassium Nitrate)	-1/2	76	30B	1.2	C4	II	II	I	H
Sand, Dry Bank, Damp	-1/8	110-130	15	2.8	C4	III	I	IV	
Sand, Dry Bank, Dry	-1/8	90-110	15	1.7	C4	III	I	III	
Sand, Foundry, Prepared	-1/8	90	15	3.0	C4	III	I	III	
Sand, Foundry, Shakeout	-3	90-100	15	3.0	D4	III	I	III	R
Sand, Silica, Dry	-1/8	90-100	15	2.0	C4	III	I	II	
Sand, Silica, Resin Coated	-1/8	104	15	2.0	C4	III	I	II	
Sand, Zircon, Resin Coated	-100M	115	15	2.3	C4	III	I	II	
Sawdust, Dry	-1/8	10-13	30A	1.4	A1-A2-A3	I	I	IV	M, P
Sea-Coal	-1/8	65	30B	1.0	B4	II	I	III	
Sesame Seed	-1/8	27-41	30B	0.6	B4	II	I	II	V
Shale, Crushed	-1/2	85-90	30B	2.0	B4	II	I	III	
Shellac, Powdered or Granulated	-1/8	31	30A	0.6	A2	I	I	III	J, V
Silica Flour	-1/64	80	30B	1.5	B4	II	I	IV	
Silica Gel (Silicic Acid)	-3	45	15	2.0	C4	III	I	III	C, E, K, M
Silicon Dioxide (Quartz)	-1/2	80-90	15	2.5	C4	III	I	II	
Slag, Blast Furnace, Crushed	-3	130-180	15	2.4	D4	III	I	III	Q
Slag, Furnace, Granular, Dry	-1/2	60-65	15	2.2	A1-A2-A3	III	I	III	
Slaked Lime (Lime, Hydrated)	-1/8	40	30A	0.8	B4	I	I	III	F, G, P
Slate, Crushed	-1/2	80-90	30B	2.0	B4	II	I	III	
Slate, Ground	-1/8	82-85	30B	1.6	B4	II	I	III	
Sludge, Sewage, Dry	Irregular	40-50	30B	0.8	D4	II	II	IV	O
Sludge, Sewage, Dry, Ground	-1/8	45-55	30B	0.8	D4	II	II	IV	
Snow, Fresh	-1/8	5-12	30A	0.4	A2	I	I	IV	
Snow, Packed	+1/2	15-35	30A	0.8	B1	I	I	IV	
Soap, Beads or Granules	-1/8	15-35	30A	0.6	A1-A2-A3	I	I	III	K, M
Soap, Chips	-1/2	15-25	30A	0.6	A1-A2-A3	I	I	III	K, M
Soap, Detergent	-1/8	15-50	30A	0.8	A1-A2-A3	I	I	III	A, K
Soap, Flakes	-1/8	5-15	30A	0.6	A1-A2-A3	I	I	III	K, M, P, Q
Soap, Powder	-1/8	20-30	30A	0.9	A1-A2-A3	I	I	II	P
Soapstone (Talc)	-200M	40-50	30A	2.0	A1-A2-A3	I	I	IV	G, P, Q

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Soda Ash, Heavy (Sodium Carbonate)	-1/8	55-65	30B	1.0	B4	II	I	III	
Soda Ash, Light (Sodium Carbonate)	-1/64	20-35	30B	0.8	B4	II	I	III	G, Q, V
Sodium Aluminate (Ground)	-1/8	72	30B	1.0	B4	II	I	III	
Sodium Aluminum Sulphate	-100M	75	30B	1.0	B4	II	I	III	•
Sodium Bicarbonate (Baking Soda)	-100M	40-55	45	0.6	A2	I	I	II	
Sodium Nitrate	-3	70-80	45	1.2	B1-B2	I	III	II	H
Sodium Phosphate	-1/8	50-60	30A	0.9	A1-A2	I	I	III	
Sodium Sulfate, Dry, Coarse	-1/8	85	30B	2.1	C4	II	II	III	M
Sodium Sulfate, Dry, Pulverized	-1/8	65-85	30B	1.7	C4	II	II	III	M
Sodium Sulfite	-1/8	96	30B	1.5	B4	II	I	IV	P
Sorghum Seed (Milo or Kafir)	-1/8	32-36	30A	0.5	A1-A2-A3	I	I	II	
Soybean, Dust	-1/64	25-35	30A	2.0	A1-A2-A3	I	I	III	G, H
Soybean, Cake	-1/2	40-43	30A	1.0	A1-A2-A3	I	I	III	O, V
Soybean, Cracked	-1/2	30-40	30B	0.6	B4	II	I	III	H, O, V
Soybean, Flakes, Raw	-1/2	15-35	30A	0.8	A1-A2-A3	I	I	III	Q, V
Soybean, Flakes, Spent	-1/4	18-20	30A	0.6	A2	I	I	II	Q, V
Soybean, Flour	-1/64	25-35	30A	1.0	A1-A2-A3	I	I	III	G, H, V
Soybean, Meal, Cold	-1/8	35-45	30A	0.6	A1-A2-A3	I	I	III	V
Soybean, Meal, Hot	-1/8	40	30A	0.6	D3	I	II	III	
Soybean, Whole	-1/2	45-50	30B	1.0	B4	II	I	II	H, O
Starch	-1/64	25-50	45	1.0	A1-A2-A3	I	I	I	G, H, V, •
Steel Turnings (Chips), Crushed	-3	100-150	30B	3.0	D4	II	I	IV	N, O
Stibium (Antimony)	-100M	•	30A	1.6	B4	II	I	II	•
Sugar, Powdered	-100M	50-60	30A	0.8	A2	I	I	III	H, J, P, V, •
Sugar, Raw, Cane	-1/8	55-65	30A	1.5	A2	I	I	III	H, J, P
Sugar, Refined, Granulated, Dry	-1/8	50-55	30A	1.0-1.2	A2	I	I	III	H, J, M, V
Sugar, Refined, Granulated, Wet	-1/2	55-65	30A	1.4-2.0	A2	I	I	III	P
Sugar Beet, Pulp, Dry	-1/2	12-15	30B	0.9	B4	II	I	II	H, •

BULK MATERIAL TABLE

Bulk Material	Maximum Particle Size (in.)	Bulk Density (lbs/ft³)	% Trough Loading	Material Factor (MF)	Component /Bearing Series	Abrasive-ness	Corrosive-ness	Flowability	Special Notes
Sugar Beet, Pulp, Wet	-1/2	25-45	30A	1.2	A1-A2-A3	I	I	III	H, P
Sulphur, Crushed	-1/2	50-60	30A	0.8	A1-A2	I	I	III	H
Sulphur, Ground	-1/64	50-60	30A	0.6	A1-A2	I	I	II	G, H
Sulphur, Lumps	-3	80-85	30A	0.8	D4	I	I	III	H
Sunflower Seed	-1/2	19-38	45	0.5	A1-A2-A3	I	I	I	V
Taconite, Pellets	+1/2	116-130	15	2.0	D4	III	I	II	K
Talc	-1/2	80-90	30B	0.9	B4	II	I	III	
Talc, Powder	-200M	50-60	30B	0.8	B4	II	I	III	G, P, V
Tanbark, Ground	-1/8	55	30A	0.7	A1-A2-A3	I	I	IV	•
Timothy Seed	-1/8	36	30A	0.6	B2	I	I	III	H, Q, V
Titanium Dioxide (Ilmenite)	-3	140-160	15	2.0	C4	III	I	III	
Tobacco, Scraps	-3	15-25	30A	0.8	B1-B2	I	I	IV	Q
Tobacco, Snuff	-1/8	30	30A	0.9	A1-A2-A3	I	I	IV	H, G, K, V
Tricalcium Phosphate	-1/64	40-50	30A	1.6	A1-A2	I	I	IV	
Triple Super Phosphate	-1/8	50-55	30B	2.0	C4	II	III	III	L
Trisodium Phosphate	-1/2	60	30B	1.7	B4	II	I	III	
Trisodium Phosphate, Granular	-1/8	60	30B	1.7	B4	II	I	III	
Trisodium Phosphate, Pulverized	-1/64	50	30B	1.6	B4	II	I	III	V
Tung Nuts	-3	25-30	30A	0.7	B1-B2	I	I	I	V
Tung Nut Meats, Crushed	-3	28	30A	0.8	B1-B2	I	I	II	O, V
Uintaite (Bentonite)	-100M	50-60	45	0.7	B4	I	I	II	G, P, Q
Urea Prills, Coated	-1/8	43-46	45	1.2	A1-A2-A3	I	I	II	
Vermiculite, Expanded	-1/2	16	30A	0.5	A1-A2	I	I	III	Q
Vermiculite, Ore	-3	80	30B	1.0	B4	II	I	III	
Vetch	-1/8	48	30B	0.4	A1-A2-A3	II	I	I	H, V
Vulcanite (Ebonite)	-1/2	63-70	30A	0.8	A1-A2-A3	I	I	III	
Walnut Shells, Crushed	-1/8	35-45	30B	1.0	B4	II	I	III	V
Wheat	-1/2	45-48	45	0.4	A1-A2-A3	I	I	II	H, V
Wheat, Cracked	-1/8	40-45	45	0.4	A1-A2-A3	I	I	II	H, V
Wheat, Germ	-1/8	18-28	45	0.4	A1-A2-A3	I	I	II	V
White Lead, Dry	-1/64	75-100	30B	1.0	B4	II	I	III	G, L, V
Wood Bark	+1/2	8-16	30B	1.5	B1-B2	I	I	IV	N, Q
Wood Chips, Screened	-3	10-30	30A	0.6	B1-B2	I	I	IV	N, Q
Wood, Flour	-1/8	16-36	30A	0.4	A1-A2	I	I	III	H, P, Q, V
Zinc Concentrate Residue	-1/8	75-80	15	1.0	C4	III	I	III	
Zinc Oxide, Heavy	-100M	30-35	30A	1.0	A1-A2	I	I	IV	G, P
Zinc Oxide, Light	-100M	10-15	30A	1.0	A1-A2	I	I	IV	G, P, Q, V

SCREW CONVEYOR CAPACITY

Capacity is defined as the weight or volume per hour of a bulk material that can be safely and feasibly conveyed using a screw conveyor. Screw conveyor diameter is determined by multiple factors including capacity.

The following steps are required for proper screw conveyor selection –

1. Calculate required capacity in cubic feet per hour (ft^3/hr).
2. Select the recommended trough loading percentage from the Bulk Material Table for the specific bulk material to be conveyed.
3. Select the screw conveyor diameter that corresponds with the recommended trough loading and is less than the capacity at maximum RPM from the Capacity Table.
4. Calculate actual conveyor speed by dividing the required capacity by the capacity at 1-RPM from the Capacity Table.

NOTE: Maximum speeds shown in the Capacity Table are not intended for every application and were developed for non-abrasive, free-flowing bulk materials. KWS recommends lower screw conveyor speeds for most industrial applications. A larger screw conveyor diameter will be required for lower screw conveyor speeds.

Maximum lump size must also be considered when designing a screw conveyor. Please refer to the Bulk Material Lump Size section for further information.

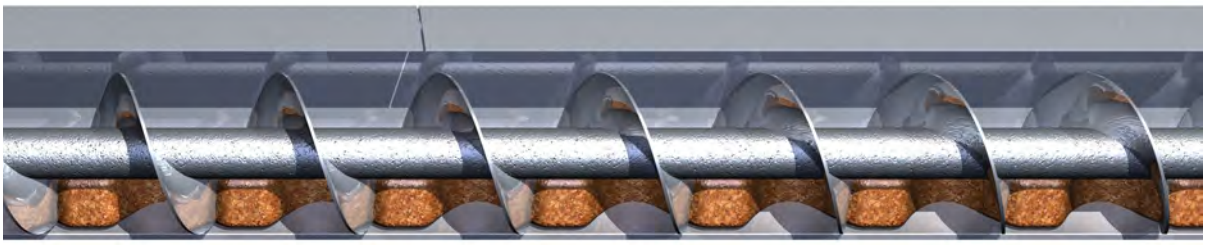
The Capacity Table is only intended for designing control fed screw conveyors. Conversely, screw feeders are flood loaded at the inlet and require special design considerations. Please refer to the Screw Feeder section for further information.

Calculation Of Conveyor Speed

The maximum recommended capacity for each screw diameter is listed in the Capacity Table for reference and should not be exceeded. Using the formula below, the exact conveyor speed (S) can be calculated:

$$S = \frac{CFH}{CFH\ AT\ 1\ RPM}$$

Nomenclature: S = Conveyor Speed
CFH = Capacity in Cubic Feet per Hour (ft^3/hr)



SCREW CONVEYOR CAPACITY

Capacity Factors for Special Pitches

Screw conveyors transfer bulk materials volumetrically and capacity is calculated in cubic feet per hour. Screw conveyor capacity is affected when the flight pitch is reduced from standard full pitch. Reducing the flight pitch reduces the capacity. For example, a 1/2 pitch screw carries 1/2 the capacity of a full pitch screw at the same level of trough loading and speed. Capacity Factors for Special Pitches are shown below.

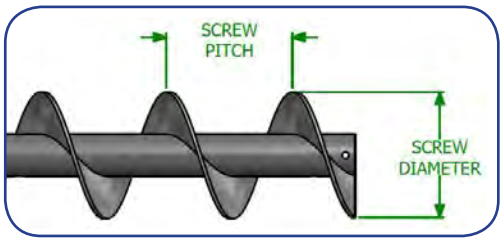
Selection Capacity (SC) is the capacity adjusted for special pitch or modified flights used in the process of selecting the screw conveyor diameter for the application.

Calculation of special screw conveyor capacities is as follows:

$$SC = CFH \times CF$$

Nomenclature: SC = Selection Capacity
CFH = Required Capacity in Cubic Feet per Hour (ft^3/hr)
CF = Capacity Factor

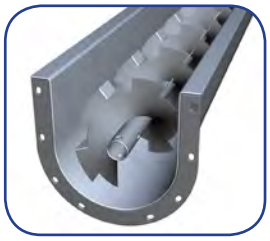
Capacity Factors for Special Pitches		
Pitch	Description	Capacity Factor
Standard	Pitch = Diameter	1.00
Short	Pitch = 2/3 Diameter	1.50
Half	Pitch = 1/2 Diameter	2.00
Long	Pitch = 1-1/2 Diameters	0.67



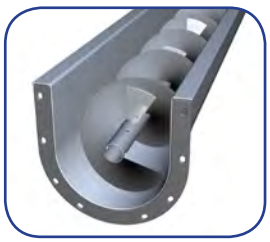
Capacity Factors for Modified Flight

Screw conveyor capacity is also affected by using modified flight types such as cut flight, cut-and-folded flight, ribbon and paddles. The use of modified flights reduces conveying capacity. Capacity Factors for Modified Flights are shown below for various flight types and trough loading

Capacity Factors for Cut or Cut and Fold Flights			
Flight Type	Conveyor Loading		
	15%	30%	45%
Cut flight	1.92	1.57	1.43
Cut & folded flight	X	3.75	2.54

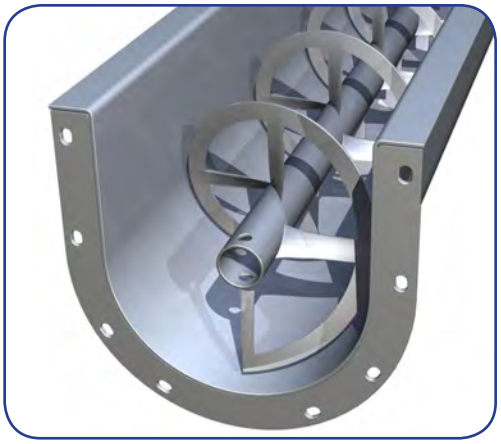


Capacity Factors for Paddles				
Paddles Per Pitch	1	2	3	4
Factor	1.08	1.16	1.24	1.32



SCREW CONVEYOR CAPACITY

Capacity Factors for Ribbon Flights			
Ribbon Screw Dia.	Conveyor Loading		
	15%	30%	45%
4	X	X	X
6	1.32	1.52	1.79
9	1.34	1.54	1.81
12	1.11	1.27	1.50
14	1.27	1.45	1.71
16	1.55	1.69	1.90
18	1.33	1.53	1.80
20	1.60	1.75	1.96
24	2.02	2.14	2.28
30	2.16	2.29	2.44
36	3.27	3.37	3.70



Example

A screw conveyor is required to transport 10 tons per hour of unslaked lime with a bulk density of 60 lbs/ft^3. The unslaked lime also needs to be mixed in transit using cut and folded flights. The conveying distance is 15-feet, so short (2/3) pitch screws will be used to ensure proper mixing. The recommended trough loading percentage from the Bulk Material Table is 30A.

Actual calculated capacity is:

$$CHF = \frac{20{,}000\ lbs/hr}{60\ lbs/ft^3} = 333\ ft^3/hr$$

For proper selection of screw conveyor diameter and speed, the actual capacity must be adjusted for the cut and folded flights and short pitch using the Capacity Factors for Special Pitches and Modified Flights. As stated above, the adjusted capacity is defined as Selection Capacity (SC).

The Capacity Factor for short (2/3) pitch is 1.50.

Capacity Factors for Special Pitches		
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

SCREW CONVEYOR CAPACITY

The Capacity Factor for cut and folded flights with 30-percent trough loading is 3.75.

Capacity Factors for Cut or Cut and Fold Flights			
Flight Type	Conveyor Loading		
	15%	30%	45%
Cut flight	1.92	1.57	1.43
Cut & folded flight	X	3.75	2.54

Therefore:

$$SC = 1.50 \text{ X } 3.75 \text{ X } 333 \text{ ft}^3/\text{hr}$$

$$SC = 1{,}873 \text{ ft}^3/\text{hr}$$

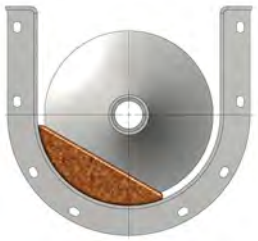
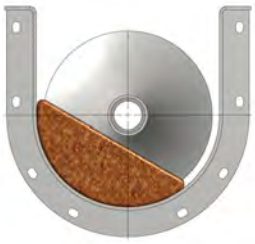
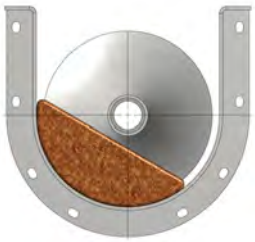
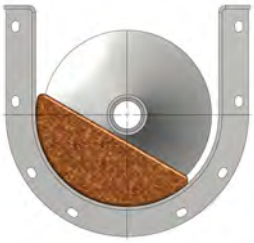
The Selection Capacity will be used to select the proper screw conveyor diameter and speed from the Capacity Table. With a recommended trough loading of 30A, the Selection Capacity must be less than the maximum capacity given in the Capacity Table. A 16-inch diameter screw conveyor will convey 2,496 cubic feet per hour at the maximum recommended speed of 80-rpm.

The actual screw conveyor speed is calculated by dividing the Selection Capacity by the capacity at 1-rpm.

$$1{,}873/31.2 = 60\text{-rpm}$$

60-rpm is the correct speed for a 16-inch diameter screw conveyor with cut and folded flights and short pitch for conveying and mixing 333 cubic feet per hour.

SCREW CONVEYOR CAPACITY

Capacity Table				
Trough Loading	Screw Dia. (in.)	Max. RPM *	Capacity in ft^3/hr	
			At Max. RPM	At 1 RPM
 15%	4	69	14.5	0.2
	6	60	45	0.8
	9	55	150	2.7
	12	50	323	6.5
	14	50	520	10.4
	16	45	702	15.6
	18	45	1,012	22.5
	20	40	1,248	31.2
	24	40	2,184	54.6
	30	35	3,728	106.5
	36	30	5,532	184.4
 30% A	4	139	57	0.4
	6	120	179	1.5
	9	100	545	5.5
	12	90	1,161	12.9
	14	85	1,768	20.8
	16	80	2,496	31.2
	18	75	3,375	45.0
	20	70	4,375	62.5
	24	65	7,085	109.0
	30	60	12,798	213.3
	36	50	18,440	368.8
 30% B	4	69	28	0.4
	6	60	90	1.5
	9	55	305	5.5
	12	50	645	12.9
	14	50	1,040	20.8
	16	45	1,404	31.2
	18	45	2,025	45.0
	20	40	2,500	62.5
	24	40	4,360	109.0
	30	35	7,465	213.3
	36	30	11,064	368.8
 45%	4	190	116	0.61
	6	165	368	2.2
	9	155	1,271	8.2
	12	145	2,813	19.4
	14	140	4,368	31.2
	16	130	6,071	46.7
	18	120	8,112	67.6
	20	110	10,307	93.7
	24	100	16,400	164.0
	30	90	28,800	320.0
	36	75	41,490	553.2

NOTE: Maximum speeds shown in the Capacity Table are not intended for every application and were developed for non-abrasive, free-flowing bulk materials. KWS recommends lower screw conveyor speeds for most industrial applications. A larger screw conveyor diameter will be required for lower screw conveyor speeds.