Abrasive Characteristic Comparison

Material	Mesh Size	Shape	Density lbs/ft^3	Mohs	Friability	Initial Cost	No. of Cycles	Per Use Cost	Source	Typical Applications
Sil. Sand †	6-270	✸	100	5.0-6.0	high	low	1	med.	nat.	Outdoor blast cleaning
Min. Slag	8-80	✸	85-112	7.0-7.5	high	med.	1-2	med.	b-p	Outdoor blast cleaning
Steel Grit	10-325	✸	230	8.0	low	high	200+	med.	mfg.	Removing heavy scale
Steel Shot	8-200	●	280	8.0		high	200+	low	mfg.	Cleaning, peening
Al. Oxide	12-325	✸	125	8.0-9.0+	med.	high	6-8	med.	mfg.	Cleaning, finishing, deburring, etching
Glass Bead	10-400	●	85-90	5.5	med.	med.	8-10	low	mfg.	Cleaning, finishing
Plastic	12-80	✸	45-60	3.0-4.0	low/med.	high	8-10	med.	mfg.	Paint stripping, deflashing, cleaning
Wheat Starch	12-80	✸	45	3.0	med.	med.	12-15	high	mfg.	Paint, adhesive removal; composites
XL-Corn Hybrid Polymer	16-60	✸	45	3.0	low	high	14-17	med.	mfg.	Composite paint removal, adhesive deflash
Corn Cob	8-40	✸	35-45	2.0-4.5	med.	low	4-5	low	b-p	Removing paint from delicate surfaces

✸ = Angular ● = Spherical nat. = Natural b-p = By-product mfg. = Manufactured

† Consult OSHA regulations before using silica sand as a blast abrasive.

Compressed Air and Abrasive Consumption

Nozzle Orifice	Pressure at the Nozzle (psi) 50	60	70	80	90	100	125	150	
No. 2 (1/8")	11	13	15	17	18.5	20	25	30	Air (cfm)
	.67	.77	.88	1.01	1.12	1.23	1.52	1.82	Abrasive (cu.ft./hr
	67	77	88	101	112	123	152	182	& Lbs/hr)
	2.5	3	3.5	4	4.5	5	5.5	6.6	Compressor hp
No. 3 (3/16")	26	30	33	38	41	45	55	66	Air (cfm)
	1.50	1.71	1.96	2.16	2.38	2.64	3.19	3.83	Abrasive (cu.ft./hr
	150	171	196	216	238	264	319	383	& Lbs/hr)
	6	7	8	9	10	10	12	14	Compressor hp
No. 4 (1/4")	47	54	61	68	74	81	98	118	Air (cfm)
	2.68	3.12	3.54	4.08	4.48	4.94	6.08	7.30	Abrasive (cu.ft./hr
	268	312	354	408	448	494	608	730	& Lbs/hr)
	11	12	14	16	17	18	22	26	Compressor hp
No. 5 (5/16")	77	89	101	113	126	137	168	202	Air (cfm)
	4.68	5.34	6.04	6.72	7.40	8.12	9.82	1.178	Abrasive (cu.ft./hr
	468	534	604	672	740	812	982	1,178	& Lbs/hr)
	18	20	23	26	28	31	37	44	Compressor hp
No. 6 (3/8")	108	126	143	161	173	196	237	284	Air (cfm)
	6.68	7.64	8.64	9.60	10.52	11.52	13.93	1.672	Abrasive (cu.ft./hr
	668	764	864	960	1052	1152	1393	1,672	& Lbs/hr)
	24	28	32	36	39	44	52	62	Compressor hp
No. 7 (7/16")	147	170	194	217	240	254	314	377	Air (cfm)
	8.96	10.32	11.76	13.12	14.48	15.84	19.31	2.317	Abrasive (cu.ft./hr
	896	1032	1176	1312	1448	1584	1931	2,317	& Lbs/hr)
	33	38	44	49	54	57	69	83	Compressor hp
No. 8 (1/2")	195	224	252	280	309	338	409	491	Air (cfm)
	11.60	13.36	15.12	16.80	18.56	20.24	24.59	2.951	Abrasive (cu.ft./hr
	1160	1336	1512	1680	1856	2024	2459	2951	& Lbs/hr)
	44	50	56	63	69	75	90	108	Compressor hp

Metric Nozzle Chart
Compressor Air and Abrasive Consumption

Nozzle Orifice	Pressure at the Nozzle (bar & kPa) 3.5 / 350	4.2 / 420	4.9 / 490	5.6 / 560	6.3 / 630	7.0 / 700	8.6 / 860	10.3 / 1035	Requirements: Air (m^3/min) Abrasive (kg/h) * & kW
5mm (3/16")	0.73	0.84	0.92	1.00	1.15	1.26	1.54	1.82	Air (m^3/min)
	68	78	89	98	108	120	145	174	Abrasive (kg/h)
	4.5	5.3	5.6	6.4	7.1	7.5	9.0	10.8	kW
6.5mm (1/4")	1.31	1.51	1.71	1.90	2.08	2.27	2.75	3.22	Air (m^3/min)
	122	142	161	165	203	224	276	325	Abrasive (kg/h)
	7.9	9.0	10.1	11.6	12.4	13.5	16.2	19.4	kW
8mm (5/16")	2.16	2.50	2.83	3.15	3.53	3.84	4.71	5.57	Air (m^3/min)
	212	242	274	305	336	368	445	534	Abrasive (kg/h)
	13.1	15.0	19.1	20.2	21.0	22.9	27.5	33.0	kW
9.5mm (3/8")	3.02	3.53	4.00	4.50	4.85	5.50	6.64	7.79	Air (m^3/min)
	303	347	392	435	477	573	632	758	Abrasive (kg/h)
	18.0	21.0	24.0	27.0	28.9	33.0	39.6	47.5	kW
11mm (7/16")	4.12	4.76	5.44	6.09	6.73	7.11	8.80	10.48	Air (m^3/min)
	406	468	533	595	657	719	876	1040	Abrasive (kg/h)
	24.8	28.5	32.6	36.4	40.1	42.4	50.9	61.1	kW
12.5mm (1/2")	5.46	6.28	7.06	7.85	8.65	9.46	11.46	13.45	Air (m^3/min)
	526	606	686	762	842	918	1115	1333	Abrasive (kg/h)
	32.6	37.5	42.0	46.9	51.6	56.3	67.5	81.1	kW

* Based on abrasive with a density of 1.5 kg per liter.

Effect of Nozzle Wear on Air Consumption

Nozzle Size.	Orifice size inches	Orifice size metric	Air Flow in cfm	Increase in Air Consumption
4	1/4	6.5mm	81 cfm	
5	5/16	8.0mm	137 cfm	**69%** more than No. 4
6	3/8	9.5mm	196 cfm	**43%** more than No. 5
7	7/16	11.0mm	254 cfm	**29%** more than No. 6
8	1/2	12.5mm	338 cfm	**33%** more than No. 7

Information shown is based upon air consumption at 100 psi (7 bar/700kPa)

Minimum Compressor Air Line Sizes

Nozzle No.	Nozzle Orifice Size	Minimum Air Line ID
No. 3	3/16" (5.0mm)	1" (25.0mm)
No. 4	1/4" (6.5mm)	1" (25.0mm)
No. 5	5/16" (8.0mm)	1-1/4" (32.0mm)
No. 6	3/8" (9.5mm)	1-1/2" (38.0mm)
No. 7	7/16" (11.0mm)	2" (50.0mm)
No. 8	1/2" (12.5mm)	2" (50.0mm)
No. 10	5/8" (16.0mm)	2-1/2" (64.0mm)
No. 12	3/4" (19.0mm)	3" (76.0mm)

Minimum Connector ID by Nozzle Orifice Size

Nozzle Orifice Size	Minimum Connector ID
3 3/16" (5mm)	3/4" (19mm)
4 1/4" (6.5mm)	1" (25mm)
5 5/16" (8mm)	1-1/4" (32mm)
6 3/8" (9.5mm)	1-1/2" (38mm)
7 7/16" (11mm)	2" (50mm)
8 1/2" (12.5mm)	2" (50mm)
10 5/8" (16mm)	2-1/2" (64mm)
12 3/4" (19mm)	3" (76mm)

Approximate Pressure Loss Caused by Commonly Used Fittings

based on 100 psi (7 bar) in 1" (25mm) pipe

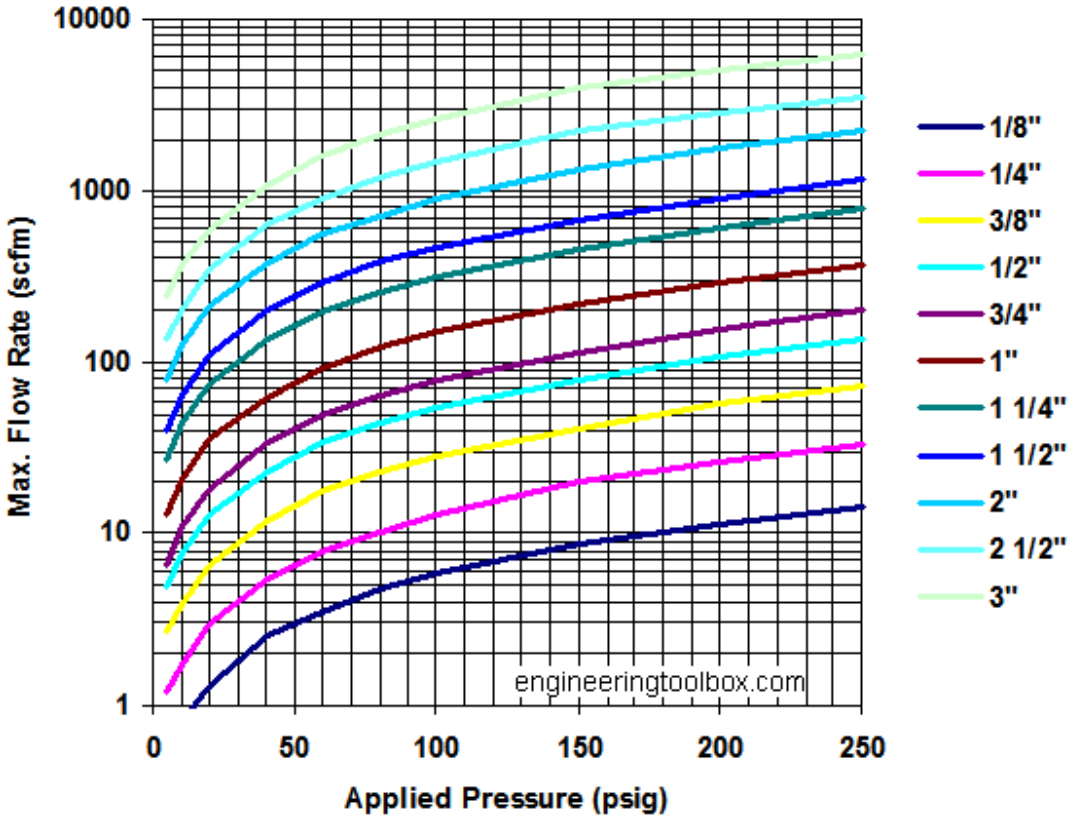
Fitting	Pressure Loss
90° pipe elbow	3 psi (0.2 bar/21 kPa)
pipe tee	5 psi (0.3 bar/34 kPa)
45° pipe elbow	1-1/2 psi (0.1 bar/10 kPa)
swing check valve	18 psi (1.2 bar/124 kPa)

Internal Area Loss Due to Hose Size Reduction

Main Hose Size	Whip Hose Size	% of reduction
2" (50mm)	1-1/2" (38mm)	44%
2" (50mm)	1-1/4" (32mm)	61%
1-1/2" (38mm)	1-1/4" (32mm)	31%
1-1/2" (38mm)	1" (25mm)	56%
1-1/4" (32mm)	1" (25mm)	36%
1-1/4" (32mm)	3/4" (19mm)	64%
1" (25mm)	3/4" (19mm)	44%

Applied Pressure - *psi*

The diagram below can be used to indicate compressed air pipeline flow capacity pressure ranging *5 - 250 psi.*



Consumo en CFM de los equipos Sponge Jet

100 HP/400HP

Controls: @ 100PSI inbound with about 5-10 CFM

Actuator- @100 PSI approximately 10-20 CFM
The actuator requires at least 100PSI to create the torque required.

Air motor, @30-50 PSI you will need 16 CFM.

Rasp Extreme

Controls @ 100PSI inbound with about 5-10 CFM

Vibrator @ 60-100 PSI you will need 10 CFM

Air Motor @ 30-50 PSI you will need 16 CFM

Degrees of Cleanliness

	SSPC Std.	NACE Std.	SIS Std.
White Metal Blast	SSPC-SP 5	NACE No. 1	SA-3
Near White Metal Blast	SSPC-SP 10	NACE No. 2	SA-2 1/2
Commercial Blast	SSPC-SP 6	NACE No. 3	SA-2
Brush-off Blast	SSPC-SP 7	NACE No. 4	SA-1