

Compressor Air and Abrasive Consumption

Nozzle Orifice	Pressure at the Nozzle (psi)								Air (In cfm) Abrasive & HP requirements
	50	60	70	80	90	100	125	150	
No. 2 (1/8")	11	13	15	17	18.5	20	25	30	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	.57	.77	.88	1.01	1.12	1.23	1.52	1.82	
	67	77	88	101	112	123	152	182	
	2.5	3	3.5	4	4.5	5	5.5	6.6	
No. 3 (3/16")	26	30	33	38	41	45	55	62	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	1.5	1.71	1.96	2.16	2.38	2.64	3.19	3.83	
	150	171	196	216	238	264	319	383	
	6	7	8	9	10	10	12	14	
No. 4 (1/4")	47	54	61	68	74	81	98	118	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	2.68	3.12	3.54	4.08	4.48	4.94	6.08	7.30	
	268	312	354	408	448	494	608	730	
	11	12	14	16	17	18	22	26	
No. 5 (5/16")	77	89	101	113	126	137	168	202	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	4.68	5.34	6.04	6.72	7.40	8.12	9.82	1.178	
	468	534	604	672	740	812	982	1178	
	18	20	23	26	28	31	37	44	
No. 6 (3/8")	108	126	143	161	173	196	237	284	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	6.68	7.64	8.64	9.60	10.52	11.52	13.93	1.672	
	668	764	864	960	1052	1152	1393	1672	
	24	28	32	36	39	44	52	62	
No. 7 (7/16")	147	170	194	217	240	254	314	377	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	8.96	10.32	11.76	13.12	14.48	15.84	19.31	2.317	
	896	1032	1176	1312	1448	1584	1931	2317	
	33	38	44	49	54	57	69	83	
No. 8 (1/2")	195	224	252	280	309	338	409	491	Air (cfm) Abrasive (cu.ft./hr & Lbs/hr) Compressor hp
	11.60	13.36	15.12	16.80	18.56	20.24	24.59	2.951	
	1160	1336	1512	1680	1856	2024	2459	2951	
	44	50	56	63	69	75	90	108	

Pressure Loss in Compressor Air Line

ID	Pressure Loss	Production Loss
3/4"	11.1 psi	16.6%
1"	2.4 psi	3.6%
1-1/4"	0.7 psi	1.0%
1-1/2"	0.2 psi	0.3%

Based on 150 cfm @ 100 psi through 50 feet of compressor air hose

For maximum efficiency, provide large air lines from the compressor to the blast machine. Place the compressor as near as possible to the blast operation. Use the largest air hose available.

Minimum Compressor Air Line Diameter

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" (19.0)	3" (76.0mm)

Blast Media Characteristics Comparison

Material	Mesh Size	Shape	Density lbs/ft3	Mohs	Friability	Init. 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
Garnet	8-300	★	130-145	7.0	med.	med.	2-2.5	med.	nat..	Cleaning, finishing, deburring, etching
Steel Grit	10-325	★	230	8.0	low	high	200+	med.	mfd.	Removing heavy scale
Steel Shot	8-200	●	280	8.0		high	200+	low	mfd.	Cleaning, peening
Al. Oxide	12-325	★	125	9.0	med.	high	6-8	med.	mfd.	Cleaning, finishing, deburring, etching
Silicon Carbide	12-325	★	110	9.5	med.	high	5-6	med.	mfd.	Surface preparation on extremely hard substrates
Glass Bead	10-400	●	85-90	5.5-6.0	med.	med.	8-10	low	mfd.	Cleaning, finishing
Plastic	12-80	★	45-60	3.0-4.0	low/med.	high	8-10	med.	mfd.	Paint stripping, deflashing, cleaning
Bicarbonate of Soda	60-170	★	60	2.5	high	high	1	high	mfd.	Cleaning, paint removal
Wheat Starch	12-80	★	45	3.0	med.	med.	12-15	high	mfd.	Paint, adhesive removal; composites
XL Corn Hybrid Polymer	16-60	★	45	3.0	low	high	14-17	med.	mfd.	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 mfd.=Manufactured

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

Effects of Nozzle Wear on Air Consumption

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

Blast System Air Volume Estimates

Nozzle	Size of Orifice	Volume of Air	Plus Helmet	Plus 50% (reserve)	Minimum Air Required
No. 4	1/4" 6.5mm	81 2.3	20 0.5	50 1.4	151 cfm 4.2 m ³ /min
No. 5	5/16" 8.0mm	137 3.9	20 0.5	79 2.2	236 cfm 6.6m ³ /min
No.6	3/8" 9.5mm	196 5.5	20 0.5	108 3.0	324 cfm 9.0 m ³ /min
No. 7	7/16" 11.0mm	254 7.2	20 0.5	137 3.9	411 cfm 11.6 m ³ /min
No. 8	1/2" 12.5mm	338 9.6	20 0.5	179 5.0	537 cfm 16.1 m ³ /min

Blasting Media Comparison Chart

	Aluminum Oxide	Crushed Glass Grit	Glass Beads	Silicon Carbide	Plastic Abrasives
Description	Sharp, long lasting media for fast etching & profiling; Brown/black or White	Silica-free, 100% recycled glass; Efficient, economical stripping	Round, soda-lime glass to produce a bright, satin finish; Minimizes stress on part	Very hard, aggressive cutting media; Ideal for stone, glass and hard surfaces	Abrasive, soft media designed for automotive & aerospace applications
Surface Profile	High etch	Medium-high etch	No etch, satin finish	Very high etch	No etch, stripping
Working Speed	Fast	Fast	Medium-fast	Very fast	Medium
Recyclability	High	None; consumable	High	High	High
Surface Removal	Yes	Slight	Slight	Yes	Slight
Hardness, Moh	8 - 9	5 - 6	5 - 6	9 - 9.5	3 - 4
Bulk Density	110 lbs/ft ³	100 lbs/ft ³	95 lbs/ft ³	90 lbs/ft ³	50 lbs/ft ³
	Steel Shot	Steel Grit	Corn Cob	Walnut Shells	
Description	Carbon steel, round spheres designed for polishing and peening applications	Angular, carbon steel for fast stripping & aggressive cleaning	Organic, soft media ideal for soft surfaces such as wood	Angular, organic grit for mildly aggressive stripping w/out damage to surface	
Surface Profile	No etch	High etch	None	Low etch	
Working Speed	Medium	Medium-fast	Slow	Medium-slow	
Recyclability	Very high	Very high	Low	Low	
Surface Removal	No	Moderate	No	Very slight	
Hardness, Moh	40-51 HRC	40-65 HRC	4 - 4.5	4.5 - 5	
Bulk Density	230 lbs/ft ³	260 lbs/ft ³	40 lbs/ft ³	50 lbs/ft ³	

