

# Nominal Size Comparison of Metal Finishing Glass Bead Grades

POTTERS IS A WORLD LEADER, WITH OVER 100 YEARS OF EXPERIENCE IN MANUFACTURING GLASS BEADS.

U.S. STD SIEVES	MIL-PRF 9954D	AMS2431/6C AGB SPEC	FLEX-O-LITE <sup>a</sup> BOL	POTTERS	METAL IMPROVEMENT	ZERO <sup>b</sup>
20-30	SZ. 3	AGB-70	BOL 20-30	A	GP-234	801-203
25-45	--	--	--	AAA	--	--
30-40	SZ. 4	AGB-50	BOL 30-40	B	GP-165	801-204
40-50	SZ. 5	AGB-35	--	--	GP-100	801-205
40-60	--	--	BOL 40-60	C	--	--
45-60	--	AGB-30	--	--	--	--
40-70	--	--	BOL 40-70	AA	--	--
50-70	SZ. 6	AGB-25	--	D	GP-83	801-206
50-80	--	--	BOL 50-80	AB	--	--
60-80	SZ. 7	AGB-20	--	--	GP-70	801-207
70-100	SZ. 8	AGB-18	--	--	GP-60	801-208
60-120	--	--	BOL 60-120	AC	--	--
70-140	--	--	BOL 70-140	AD	--	--
80-120	SZ. 9	AGB-15	BOL 80-120	--	GP-50	801-209
100-140	--	--	--	--	GP-41	--
100-170	SZ. 10	AGB-12	BOL 100-170	AE	--	801-210
100-200	--	--	--	AF	--	--
120-170	--	--	--	--	GP-35	--
120-200	SZ. 11	AGB-10	--	--	--	801-211
140-200	--	--	--	--	GP-30	--
140-230	SZ. 12	AGB-9	--	--	--	801-212
120-270	--	--	BOL 120-270	AG	--	--
170-230	--	--	--	--	GP-25	--
170-325	SZ. 13	AGB-6	BOL 170-325	AH	--	801-213
200-270	--	--	--	--	GP-20	--
270-DOWN	--	--	--	AI	--	--

<sup>a</sup> Old Flex-O-Lite BT Nomenclature is Obsolete  
<sup>b</sup> Zero grades are certified to MIL-PRF 9954D

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<https://www.pqcorp.com/products>

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# Cleaning with Glass Beads

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## Definition

- Cleaning is the process of removing soils from a surface to prepare it for subsequent work.

## Benefits

- No measurable amount of metal removed
- No contamination of work surfaces
- Easy cleaning of hard-to-reach fillets
- No disposal costs

## Questions to Ask

- What surfaces are you cleaning?
- What material are removing?
- What issues are you experiencing?
- What type of equipment are you using?

## Example Answers

- i.e. base metal, finished surface, etc.
- i.e. rust on top of cast iron, thick paint on top of wood, organic matter on top of steel, grease on cast aluminum
- i.e. finish too rough, cleaning too slow
- i.e. suction cabinet, 2 hoses or direct pressure, 1 hose

## Other Considerations

- Time to finish a specific surface area?
- What is the blasting distance and angle?
- What are your pressure limitations?

	COARSER
	Remove larger soils, Cleans slower, less impacts per pound
AAA	Removal of oxides, slag flux and weld discoloration
AA	Remove grease and paint, and prevent stress corrosion
AB	Surface preparation for painting, plating, and welding
AC	Welding oxides, and automotive parts
AD	Remove epoxy, blending minor defects
AE	Electrical connections, hydraulic parts
AG	Produce glare-free surfaces
AH	Cleaning tool dies

FINER  
Remove finer soils, Cleans faster, more impacts per pound

## POTTERS ENVIRONMENTAL COMMITMENT

Potters respects the environment by the recycling of over one billion pounds of glass each year. Potters works closely with regulatory agencies and responsible customers around the world to ensure that we provide glass beads that don't harm employees, contaminate water supplies or land around roadways. We have set our own strict standards and voluntarily perform XRF analysis and other quality control procedures on incoming raw materials to ensure our glass beads are safe and meet heavy metals limitations.

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# Finishing with Glass Beads

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## Definition

- Finishing is a controlled surface treatment that is used to achieve the desired visual appearance by removing surface irregularities.

## Benefits

- Broad range of finishes provided from matte to bright satin
- Special effects achieved through simple masking
- Specified finishes easily reproducible

## Questions to Ask

- What surfaces are you finishing?
- What type of metal?
- What media have you used?
- What results do you see with your current media?
- What surfaces are you trying to achieve?
- What type of equipment are you using?

## Example Answers

- i.e. base metal
- i.e. aluminum, brass, copper, steel
- i.e. sand, alumina, garnet
- i.e. finish too rough
- i.e. NACE Specification, Target Ra
- Suction Cabinet, or Direct Pressure



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## Other Considerations

- Time to achieve the targeted surface finish?
- What is the blasting distance and angle?
- What are your pressure limitations?

SURFACE FINISH $R_a$ [Micro Inch]			
COARSER	FINER		
Direct Pressure, 80psi	C	AD	AH
<b>Stainless Steel</b>	<b><math>89 \pm 4</math></b>	<b><math>59 \pm 1</math></b>	<b><math>45 \pm 5</math></b>
<b>Aluminum</b>	<b><math>189 \pm 6</math></b>	<b><math>116 \pm 4</math></b>	<b><math>72 \pm 6</math></b>

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# Glass Bead Peening

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## Definition

- Peening is the process of changing the shape of the crystalline structure of the metal by inducing compressive residual stresses. This in turn extends the life of the components or parts

## Benefits

- Prevent fatigue failure
- Prevent stress-corrosion cracking
- Reduce crack propagation
- Increase fatigue life

## Questions to Ask

- What is your build specification?
- What is the intensity requirement?

## Example Answers

- i.e. SAE, AGB, Mil Spec
- i.e. Intensity Conversion → N=3A, A=N/3

## Other Considerations

- What blasting pressure is used?
- What sized bead is used?



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## INTENSITY RELATED TO POTTERS BEAD DESIGNATION AND DIRECT PRESSURE

PRESSURE	< Larger Beads					Smaller Beads >			
	A	B	C	D	E	G	H	J	
20	11.3	8.3	5.4	4.0	3.4	9.5	6.7	4.0	
30	14.2	10.3	7.0	5.2	4.4	11.2	8.3	5.2	
40	17.5	12.2	7.6	6.0	4.8	12.0	9.4	6.0	
50	19.7	13.6	8.5	6.5	5.2	13.0	10.4	6.8	
60	22.5	14.7	9.5	7.2	5.8	14.0	11.3	7.6	
80	27.3	17	11.3	8.4	7.0	16.4	13.0	8.6	

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# Glass Bead Consumption Rate (%)

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## Definition

- Consumption tests are based on an accurate examination, weight of initial charge, and sieve analysis of the blasting media prior to impacting at a desired arch height peening intensity on the several specimens, also called targets, of known composition and hardness

Bead Size (US Mesh)	Arc Height (Almen)	Target & Hardness (Rockwell)	Pressure (psi)	Distance (inches)	Angle (°)	Consumption Per Cycle (%)
30-40	0.007N	2024 Aluminum	54B	30	10"	90°
30-40	0.007N	2024 Aluminum	75B	30	10"	90°
30-40	0.007N	Cold Rolled Steel	30C	30	10"	90°
30-40	0.007N	Cold Rolled Steel	50C	30	10"	90°
40-50	0.006A	Cold Rolled Steel	—	20	6"	90°
40-50	0.009A	Cold Rolled Steel	—	30	6"	90°
40-50	0.010A	Cold Rolled Steel	—	40	6"	90°
70-100	0.011N	Cold Rolled Steel	—	20	6"	90°
70-100	0.015N	Cold Rolled Steel	—	30	6"	90°
70-100	0.018N	Cold Rolled Steel	—	40	6"	90°
100-140	0.004A	2024 Aluminum	54B	45	10"	90°
100-140	0.004A	2024 Aluminum	75B	45	10"	90°
100-140	0.004A	Cold Rolled Steel	30C	45	10"	90°
100-140	0.004A	Cold Rolled Steel	50C	45	10"	90°
100-170	0.007N	Cold Rolled Steel	—	20	6"	90°
100-170	0.008N	Cold Rolled Steel	—	30	6"	90°
100-170	0.010N	Cold Rolled Steel	—	40	6"	90°
170-230	0.007N	2024 Aluminum	54B	45	10"	90°
170-230	0.007N	2024 Aluminum	75B	45	10"	90°
170-230	0.007N	Cold Rolled Steel	30C	45	10"	90°
170-230	0.007N	Cold Rolled Steel	50C	45	10"	90°
170-325	0.005N	Cold Rolled Steel	—	20	6"	90°
170-325	0.007N	Cold Rolled Steel	—	30	6"	90°
170-325	0.008N	Cold Rolled Steel	—	40	6"	90°

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