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SURFACE VEHICLE RECOMMENDED PRACTICE

An American National Standard

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(R) CAST SHOT AND GRIT SIZE SPECIFICATIONS FOR PEENING AND CLEANING

1. *Scope*—This SAE Recommended Practice pertains to blast cleaning and shot peening and provides for standard cast shot and grit size numbers. For shot, this number corresponds with the opening of the nominal test sieve, in ten thousandths of inches[1], preceded by an S. For grit, this number corresponds with the sieve designation of the nominal test sieve with the prefix G added. These sieves are in accordance with ASTM E 11.

The accompanying shot and grit classifications and size designations were formulated by representatives of shot and grit suppliers, equipment manufacturers, and automotive users.

2. *References*

2.1 Applicable Publication—The following publication forms a part of this specification to the extent specified herein.

2.1.1 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM E 11—Standard Specifications for Wire Cloth Sieves for Testing Purposes

2.2 Related Publications—The following publications are provided for information purposes only and are not a required part of this document. The latest issue of SAE publications shall apply.

2.2.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J445—Metallic Shot and Grit Mechanical Testing—For Information on Shot Durability Determination
SAE J827—Cast Steel Shot—For Information on Composition and Shapes
SAE J1993—Cast Steel Grit—For Information on Composition and Shapes
SAE J2175—Low Carbon Steel Shot—For Information on Composition and Shapes

1. Example: S-550 indicates a cast steel shot identified by a nominal sieve opening of 0.0555 in.

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3. Testing Procedure—Sieve Analysis

3.1 Equipment

3.1.1 A rotating and tapping type of testing machine shall be used.

3.1.1.1 The shaking speed shall be 275 to 295 rpm.

3.1.1.2 The taps per minute shall be 145 to 160 when tapping machines are used.

3.2 Sieves

3.2.1 The testing sieves shall be in accordance with ASTM E 11. They shall be of the 203 mm (8 in) diameter series, of either 25 mm (1 in) or 51 mm (2 in) height.

3.3 Procedure

3.3.1 A 100 g sample of the shot or grit shall be obtained from a representative quantity.

3.3.2 The sample shall be placed on the top sieve of a stack of three or four sieves, depending on media and size (Figures 1 and 2). Nest the selected sieves and fit a pan to the bottom sieve.

3.3.3 The sample shall be run in the testing machine for 5 min ± 5 s for sizes using sieve designation 35 or coarser and 10 min ± 5 s for sizes using sieve designation finer than 35.

3.3.4 The stack of sieves shall be removed from the testing machine and the percentage of total weight shall be recorded for the media remaining on each sieve.

3.4 Any alternate method agreed upon by the supplier and the user which gives equivalent results will be acceptable.

CAST SHOT SPECIFICATIONS FOR SHOT PEENING OR BLAST CLEANING

Sieve Opening Standard	Sieve Designation	Nominal Sieve Opening	Test Sieve Opening Size and Designation With Maximum and Minimum Cumulative Percentages Allowed on Corresponding Test Sieves SAE Shot Number												
			S1320	S1110	S930	S780	S660	S550	S460	S390	S330	S280	S230	S170	S110	S70
(mm)[1]		(in)														
4.75	4	(0.187)	All Pass	—	—	—	—	—	—	—	—	—	—	—	—	—
4.00	5	(0.157)	—	All Pass	—	—	—	—	—	—	—	—	—	—	—	—
3.35	6	(0.132)	90% min	—	All Pass	—	—	—	—	—	—	—	—	—	—	—
2.80	7	(0.111)	97% min	90% min	—	All Pass	—	—	—	—	—	—	—	—	—	—
2.36	8	(0.0937)	—	97% min	90% min	—	All Pass	—	—	—	—	—	—	—	—	—
2.00	10	(0.0787)	—	—	97% min	85% min	—	All Pass	All Pass	—	—	—	—	—	—	—
1.70	12	(0.0661)	—	—	—	97% min	85% min	—	5% max	All Pass	—	—	—	—	—	—
1.40	14	(0.0555)	—	—	—	—	97% min	85% min	—	5% max	All Pass	—	—	—	—	—
1.18	16	(0.0469)	—	—	—	—	—	97% min	85% min	—	5% max	All Pass	—	—	—	—
1.00	18	(0.0394)	—	—	—	—	—	—	96% min	85% min	—	5% max	All Pass	All Pass	—	—
0.850	20	(0.0331)	—	—	—	—	—	—	—	96% min	85% min	—	10% max	All Pass	—	—
0.710	25	(0.0278)	—	—	—	—	—	—	—	—	96% min	85% min	—	10% max	—	—
0.600	30	(0.0234)	—	—	—	—	—	—	—	—	—	96% min	85% min	—	All Pass	—
0.500	35	(0.0197)	—	—	—	—	—	—	—	—	—	—	97% min	—	10% max	—
0.425	40	(0.0165)	—	—	—	—	—	—	—	—	—	—	—	85% min	—	All Pass
0.355	45	(0.0139)	—	—	—	—	—	—	—	—	—	—	—	97% min	—	10% max
0.300	50	(0.0117)	—	—	—	—	—	—	—	—	—	—	—	—	80% min	—
0.180	80	(0.0070)	—	—	—	—	—	—	—	—	—	—	—	—	90% min	80% min
0.125	120	(0.0049)	—	—	—	—	—	—	—	—	—	—	—	—	—	90% min
0.075	200	(0.0029)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[1] Corresponds to ISO Recommendations

FIGURE 1—CAST SHOT SPECIFICATIONS FOR SHOT PEENING OR BLAST CLEANING

CAST GRIT SPECIFICATIONS FOR BLAST CLEANING

Sieve Opening Standard	Sieve Designation	Nominal Sieve Opening	Test Sieve Opening Size and Designation With Maximum and Minimum Cumulative Percentages Allowed on Corresponding Test Sieves SAE Grit Number												
			G10	G12	G14	G16	G18	G25	G40	G50	G80	G120	G200	G325
(mm[1])		(in)												
4.75	4	(0.187)	—	—	—	—	—	—	—	—	—	—	—	—
4.00	5	(0.157)	—	—	—	—	—	—	—	—	—	—	—	—
3.35	6	(0.132)	—	—	—	—	—	—	—	—	—	—	—	—
2.80	7	(0.111)	All Pass	—	—	—	—	—	—	—	—	—	—	—
2.36	8	(0.0937)	—	All Pass	—	—	—	—	—	—	—	—	—	—
2.00	10	(0.0787)	80%	—	All Pass	—	—	—	—	—	—	—	—	—
1.70	12	(0.0661)	90%	80%	—	All Pass	—	—	—	—	—	—	—	—
1.40	14	(0.0555)	—	90%	80%	—	All Pass	—	—	—	—	—	—	—
1.18	16	(0.0469)	—	—	90%	75%	—	All Pass	—	—	—	—	—	—
1.00	18	(0.0394)	—	—	—	85%	75%	—	All Pass	—	—	—	—	—
0.850	20	(0.0331)	—	—	—	—	—	—	—	All Pass	—	—	—	—
0.710	25	(0.0278)	—	—	—	—	85%	70%	—	—	—	—	—	—
0.600	30	(0.0234)	—	—	—	—	—	—	—	—	—	—	—	—
0.500	35	(0.0197)	—	—	—	—	—	—	—	—	All Pass	—	—	—
0.425	40	(0.0165)	—	—	—	—	—	80%	70%	—	—	—	—	—
0.355	45	(0.0139)	—	—	—	—	—	—	—	—	—	—	—	—
0.300	50	(0.0117)	—	—	—	—	—	—	80%	65%	—	All Pass	—	—
0.180	80	(0.0070)	—	—	—	—	—	—	—	75%	65%	—	All Pass	—
0.125	120	(0.0049)	—	—	—	—	—	—	—	—	75%	60%	—	All Pass
0.075	200	(0.0029)	—	—	—	—	—	—	—	—	—	70%	55%	—
0.045	325	(0.0017)	—	—	—	—	—	—	—	—	—	—	85%	20%

[1] Corresponds to ISO Recommendations

FIGURE 2—CAST GRIT SPECIFICATIONS FOR BLAST CLEANING