

	SURFACE VEHICLE RECOMMENDED PRACTICE		J444 SEP2012
		Issued 1946-01 Revised 2012-09	
		Superseding J444 JUN2010	
Cast Shot and Grit Size Specifications for Peening and Cleaning			

RATIONALE

During the 2010 revision to this document a typo was made in Figure 1 for S-460 shot screening specification. The 5% max 1.7 mm sieve was changed to the 0% max and the 0% max 2.00 mm sieve became a non-specification sieve. These two errors have been corrected.

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 inches¹, 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 Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

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

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2.1.1 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

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

ASTM E 29 Using Significant Digits in Test Data to Determine Conformance with Specification

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J445 Metallic Shot and Grit Mechanical Testing

SAE J827 High-Carbon Cast-Steel Shot

SAE J1993 High-Carbon Cast Steel Grit

SAE J2175 Specifications for Low Carbon Cast Steel Shot

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 270 to 300 rpm.

3.1.1.2 The taps per minute shall be 140 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 \pm 5 s for sizes using sieve designation 35 or coarser and 10 min \pm 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.
- 3.5 For purposes of determining conformance with these specifications, an observed value or a calculated value shall be rounded "to the nearest unit" in the last right-hand digit used in expressing the specification limit, in accordance with the rounding method of ASTM E 29.

4. NOTES

4.1 Marginal Indicia

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY THE SAE SURFACE ENHANCEMENT COMMITTEE

Sieve Opening Standard (mm ²)	Sieve Designation	Nominal Sieve Opening (in)	Test Sieve Opening Sieve and Designation With Maximum and Minimum Cumulative Percentages Allowed on Corresponding Test Sieves															
			S1320	S1110	S930	S780	S660	S550	S460	S390	S330	S280	S230	S170	S110	S70		
4.75	4	(0.187)	0% max	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4.00	5	(0.157)	--	0% max	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3.35	6	(0.132)	90% MIN	--	0% max	--	--	--	--	--	--	--	--	--	--	--	--	--
2.80	7	(0.111)	97% MIN	90% MIN	--	0% max	--	--	--	--	--	--	--	--	--	--	--	--
2.36	8	(0.0937)	--	97% MIN	90% MIN	--	0% max	--	--	--	--	--	--	--	--	--	--	--
2.00	10	(0.0787)	--	--	97% MIN	85% MIN	0% max	--	--	--	--	--	--	--	--	--	--	--
1.70	12	(0.0661)	--	--	--	97% MIN	85% MIN	5% max	0% max	--	--	--	--	--	--	--	--	--
1.40	14	(0.0555)	--	--	--	--	--	85% MIN	5% max	0% max	--	--	--	--	--	--	--	--
1.18	16	(0.0469)	--	--	--	--	--	96% MIN	5% max	0% max	0% max	--	--	--	--	--	--	--
1.00	18	(0.0394)	--	--	--	--	--	--	85% MIN	0% max	0% max	0% max	--	--	--	--	--	--
0.85	20	(0.0331)	--	--	--	--	--	--	96% MIN	85% MIN	10% MAX	0% max	--	--	--	--	--	--
0.71	25	(0.0278)	--	--	--	--	--	--	--	96% MIN	10% MAX	10% MAX	0% max	--	--	--	--	--
0.60	30	(0.0234)	--	--	--	--	--	--	--	--	85% MIN	10% MAX	0% max	0% max	--	--	--	--
0.50	35	(0.0197)	--	--	--	--	--	--	--	--	96% MIN	10% MAX	0% max	10% MAX	0% max	--	--	--
0.425	40	(0.0165)	--	--	--	--	--	--	--	--	--	85% MIN	85% MIN	10% MAX	0% max	0% max	--	--
0.355	45	(0.0139)	--	--	--	--	--	--	--	--	--	96% MIN	97% MIN	10% MAX	10% MAX	10% MAX	0% max	0% max
0.300	50	(0.0117)	--	--	--	--	--	--	--	--	--	--	85% MIN	85% MIN	10% MAX	10% MAX	0% max	0% max
0.180	80	(0.0070)	--	--	--	--	--	--	--	--	--	--	97% MIN	97% MIN	10% MAX	10% MAX	0% max	0% max
0.125	120	(0.0049)	--	--	--	--	--	--	--	--	--	--	--	80% MIN	80% MIN	80% MIN	80% MIN	80% MIN
0.075	200	(0.0029)	--	--	--	--	--	--	--	--	--	--	--	90% MIN	90% MIN	90% MIN	90% MIN	90% MIN

FIGURE 1 - CAST SHOT SPECIFICATION FOR SHOT PEENING OR BLAST CLEANING

Sieve Opening Standard (mm ⁺)	Sieve Designation	Nominal Sieve Opening (in)	Test Sieve Opening Size and Designation With Minimum Cumulative Percentages Allowed on Corresponding Test Sieves														
			G10	G12	G14	G16	G18	G25	G40	G50	G80	G120	G200	G325			
4.75	4	(0.187)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4.00	5	(0.157)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3.35	6	(0.132)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2.80	7	(0.111)	0% max	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2.36	8	(0.0937)	--	0% max	--	--	--	--	--	--	--	--	--	--	--	--	--
2.00	10	(0.0787)	80% min	--	0% max	--	--	--	--	--	--	--	--	--	--	--	--
1.70	12	(0.0661)	90% min	80% min	0% max	--	--	--	--	--	--	--	--	--	--	--	--
1.40	14	(0.0555)	--	90% min	80% min	75% min	--	--	--	--	--	--	--	--	--	--	--
1.18	16	(0.0469)	--	--	--	85% min	75% min	0% max	--	--	--	--	--	--	--	--	--
1.00	18	(0.0394)	--	--	--	--	75% min	--	0% max	--	--	--	--	--	--	--	--
0.85	20	(0.0331)	--	--	--	--	--	70% min	--	--	--	--	--	--	--	--	--
0.71	25	(0.0278)	--	--	--	--	85% min	--	--	--	--	--	--	--	--	--	--
0.60	30	(0.0234)	--	--	--	--	--	--	0% max	--	--	--	--	--	--	--	--
0.50	35	(0.0197)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0.425	40	(0.0165)	--	--	--	--	--	70% min	0% max	--	--	--	--	--	--	--	--
0.355	45	(0.0139)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0.300	50	(0.0117)	--	--	--	--	--	80% min	--	65% min	0% max	--	--	--	--	--	--
0.180	80	(0.0070)	--	--	--	--	--	--	--	75% min	65% min	0% max	--	--	--	--	--
0.125	120	(0.0049)	--	--	--	--	--	--	--	--	75% min	60% min	70% min	55% min	0% max	--	--
0.075	200	(0.0029)	--	--	--	--	--	--	--	--	--	70% min	65% min	65% min	--	--	--
0.045	325	(0.0017)	--	--	--	--	--	--	--	--	--	--	--	--	20% min	--	--

FIGURE 2 - CAST GRIT SPECIFICATION FOR BLAST CLEANING