# Cast Shot and Grit Size Specifications for Peening and Cleaning—SAE J444a

SAE Recommended Practice
Last Revised November 1976



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# CAST SHOT AND GRIT SIZE SPECIFICATIONS FOR PEENING AND CLEANING—SAE J444a

**SAE Recommended Practice**

Report of Production Division approved January 1946 and last revised by Mechanical Prestressing of Metals Division November 1976.

{This SAE Recommended Practice pertains to blast cleaning and shot peening and provides for standard cast shot and grit size numbers. It supersedes the previous SAE Recommended Practice, Shot for Peening. For shot, this number corresponds with the aperture size of the nominal screen. For grit, this number corresponds with the number of the nominal screen with the prefix G added. These screens are in accordance with the National Bureau of Standards series as given in ASTM E 11, Specification for Sieves for Testing Purposes.

The accompanying shot and grit classifications and size designations were formulated by representatives of shot and grit suppliers, equipment manufacturers, and automotive users who constituted the Shot Peening Division of the Iron and Steel Technical Committee.}

φ Shot should be round and solid. When used for peening or cleaning round, solid shot withstands breakage better than irregularly shaped or porous particles.

φ As used in the actual peening process, it is highly desirable that the shot be reasonably spherical and reasonably solid. It must be within the desired size limits.

φ Since it may be more economical for the user to mechanically *season* the shot, the degree of control of shape and quality of shot may be established by agreement between user and shot supplier.

**Testing Procedure**

1. (a) A rotating and tapping type of testing machine shall be used.
   (b) The shaking speed shall be 275 to 295 rpm.
   (c) The taps per minute shall be 145 to 160, when tapping machines are used.
2. The size of the sample shot shall be 100 g, to be obtained from a representative quantity.

φ 3. Screening sieves shall be in accordance with the National Bureau of Standards series as given in ASTM E 11. They shall be of the 8 in (203 mm) diameter series, of either standard 1 in (25 mm) or 2 in (51 mm) height.

4. The time of test shall be 5 min ± 5 s for shot size up to and including U.S. Standard Screen size 35; and 10 min ± 5 s for finer screen sizes.
5. Any alternate method agreed upon between the supplier and user which gives equivalent results will be acceptable.

**Grit for Cleaning—See Table 2.**

φ **Cross References:**

SAE J827—Cast Steel Shot: for information on Composition and Shapes

SAE J445—Metallic Shot and Grit Mechanical Testing: for information on Shot Quality Determination

## TABLE 1—CAST SHOT SPECIFICATIONS FOR SHOT PEENING OR BLAST CLEANING

| NBS Screen No. | Standard mm | Screen Size (in) | Screen Opening Sizes and Screen Numbers with Maximum and Minimum Cumulative Percentages Allowed on Corresponding Screens — SAE Shot Number | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | S1320 | S1110 | S930 | S780 | S660 | S550 | S460 | S390 | S330 | S280 | S230 | S170 | S110 | S70 |
| 4 | 4.75 | (0.187) | All Pass | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 5 | 4.00 | (0.157) | – | All Pass | – | – | – | – | – | – | – | – | – | – | – | – |
| 6 | 3.35 | (0.132) | 90% min | – | All Pass | – | – | – | – | – | – | – | – | – | – | – |
| 7 | 2.80 | (0.111) | 97% min | 90% min | – | All Pass | – | – | – | – | – | – | – | – | – | – |
| 8 | 2.36 | (0.0937) | – | 97% min | 90% min | – | All Pass | – | – | – | – | – | – | – | – | – |
| 10 | 2.00 | (0.0787) | – | – | 97% min | 85% min | – | All Pass | All Pass | – | – | – | – | – | – | – |
| 12 | 1.70 | (0.0661) | – | – | – | 97% min | 85% min | – | 5% max | All Pass | – | – | – | – | – | – |
| 14 | 1.40 | (0.0555) | – | – | – | – | 97% min | 85% min | – | 5% max | All Pass | – | – | – | – | – |
| 16 | 1.18 | (0.0469) | – | – | – | – | – | 97% min | 85% min | – | 5% max | All Pass | – | – | – | – |
| 18 | 1.00 | (0.0394) | – | – | – | – | – | – | 96% min | 85% min | – | 5% max | All Pass | – | – | – |
| 20 | 0.850 | (0.0331) | – | – | – | – | – | – | – | 96% min | 85% min | – | 10% max | All Pass | – | – |
| 25 | 0.710 | (0.0278) | – | – | – | – | – | – | – | – | 96% min | 85% min | – | 10% max | – | – |
| 30 | 0.600 | (0.0234) | – | – | – | – | – | – | – | – | – | 96% min | 85% min | – | All Pass | – |
| 35 | 0.500 | (0.0197) | – | – | – | – | – | – | – | – | – | – | 97% min | – | 10% max | – |
| 40 | 0.425 | (0.0165) | – | – | – | – | – | – | – | – | – | – | – | 85% min | – | All Pass |
| 45 | 0.355 | (0.0139) | – | – | – | – | – | – | – | – | – | – | – | 97% min | – | 10% max |
| 50 | 0.300 | (0.0117) | – | – | – | – | – | – | – | – | – | – | – | – | 80% min | – |
| 80 | 0.180 | (0.007) | – | – | – | – | – | – | – | – | – | – | – | – | 90% min | 80% min |
| 120 | 0.125 | (0.0049) | – | – | – | – | – | – | – | – | – | – | – | – | – | 90% min |
| 200 | 0.075 | (0.0029) | – | – | – | – | – | – | – | – | – | – | – | – | – | – |

[a]Corresponds to ISO Recommendations