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Cut Wire Shot

SAE Recommended Practice
Revised May 1987

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CUT WIRE SHOT

1. This SAE Recommended Practice is considered to be tentative and is subject to modification to meet new developments or requirements. It is offered as a guide in the selection and use of cut wire shot.
2. DESCRIPTION: Cut wire shot shall be the product of carbon steel wire or stainless wire Type 302, 304, Condition B, Spring Temper, cut into the form of cylinders with lengths approximately equal to the wire diameter. Conditioned cut wire shot with cut edges pre-rounded may be specified when required for special applications.
3. IDENTIFICATION: All cut wire shot shall be classified according to the wire size from which it is obtained. It shall be identified by the prefix letters CW meaning cut steel wire or SCW meaning stainless cut wire. This designation shall be followed by a suffix number equivalent to the mean diameter of the wire from which the shot is produced.
4. CHEMICAL COMPOSITION: The chemical composition shall conform in general to the following specification:

Steel	Stainless
Carbon 0.45-0.75	Carbon 0.15 max
Manganese 0.60-1.20	Manganese 2.00 max
Phosphorous 0.045 max	Phosphorous045 max
Sulfur 0.050 max	Sulfur030 max
Silicon 0.10-0.30	Silicon 1.00 max
	Chromium 17.00-20.00
	Nickel 8.00-11.00

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5. TENSILE PROPERTIES: Shot shall be made from wire conforming to the tensile strengths shown in Table 1.
6. HARDNESS: The hardness of the shot particles (as cut) shall have the minimum values, given in Table 2, as determined by using a Vickers indenter having a 5 kg load on a Tukon hardness test machine or equivalent (converted to Rockwell C). Conditioned Stainless Cut Wire Shot shall be between 45-55 Rockwell C hardness.
7. SIZE CLASSIFICATION: Cut wire shot shall be made from wire of the diameters shown in Table 1. Shot sizes varying from those shown are available and may be obtained by arrangement between the shot manufacturer and user.
8. INSPECTION PROCEDURE: Shot particles to be checked for hardness are to be mounted, ground and polished to the centerline of the cylinder longitudinal cross section. The total weight of 50 random particles shall be within the limits of Table 3.
9. SOUNDNESS: Shot particles shall be free of shear cracks and laps and shall not contain excessive seams or burrs.
10. PACKAGING: This material shall be packaged to prevent loss during shipping and storage.

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TABLE 1

TENSILE PROPERTIES OF CUT STEEL WIRE SHOT

SHOT SIZE	MEAN WIRE DIAMETER		TENSILE STRENGTH Ksi (MPa)	
	(In)	(mm)	Steel Wire	Stainless Wire
CW-62	0.062	1.6	237/272 (1630/1880)	255/285 (1758/1965)
CW-54	0.054	1.4	243/279 (1680/1920)	260/290 (1793/1999)
CW-47	0.047	1.2	248/286 (1710/1970)	262/292 (1806/2013)
CW-41	0.041	1.0	255/293 (1760/2020)	269/299 (1855/2062)
CW-35	0.035	0.9	261/301 (1800/2080)	273/303 (1882/2089)
CW-32	0.032	0.8	266/306 (1870/2110)	277/307 (1910/2117)
CW-28	0.028	0.7	271/311 (1870/2140)	286/316 (1972/2179)
CW-23	0.023	0.6	279/319 (1920/2200)	292/322 (2013/2220)
CW-20	0.020	0.5	283/323 (1950/2230)	300/330 (2068/2275)

TABLE 2

HARDNESS OF CUT STEEL WIRE SHOT

Shot Size	Min Hardness, RC
CW-62	36
CW-54	39
CW-47	41
CW-41	42
CW-35	44
CW-32	45
CW-28	46
CW-23 & finer	48

TABLE 3

WEIGHT LIMITS FOR CUT WIRE SHOT-STEEL/STAINLESS

<u>Shot Size</u>	<u>Weight of 50 Random Pieces (g)</u>
CW-62	1.09 - 1.33
CW-54	0.72 - 0.88
CW-47	0.48 - 0.58
CW-41	0.31 - 0.39
CW-35	0.20 - 0.24
CW-32	0.14 - 0.18
CW-28	0.10 - 0.12
CW-23	0.05 - 0.07
CW-20	0.04 - 0.05

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