



Designation: E11 – 22

Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves¹

This standard is issued under the fixed designation E11; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This document specifies the technical requirements for; the woven wire test sieve cloth (sieve cloth) used in test sieves, the construction of test sieves, standard and non-standard test sieve frame sizes, and test procedures used to inspect sieve cloth and the test sieves. This specification applies to test sieves manufactured with sieve cloth having a nominal aperture size ranging from 125 millimetres (mm) down to 20 micrometres (μm).

1.2 Additional reference information can be found in Specifications [E161](#), [E323](#), [E2016](#), and in Test Methods [C430](#) and [E2427](#).

1.3 The values stated in SI units shall be considered standard for the dimensions of the sieve cloth openings and the wire diameters used in the sieve cloth. The values stated in inch-pound units shall be considered standard with regard to the sieve frames, pans, and covers.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee [E29](#) on Particle and Spray Characterization and is the direct responsibility of Subcommittee [E29.01](#) on Sieves, Sieving Methods, and Screening Media.

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2. Referenced Documents

2.1 *ASTM Standards*:²

[C430](#) Test Method for Fineness of Hydraulic Cement by the 45- μm (No. 325) Sieve

[E161](#) Specification for Electroformed Material and Test Sieves

[E323](#) Specification for Perforated-Plate Sieves for Testing Purposes

[E1638](#) Terminology Relating to Sieves, Sieving Methods, and Screening Media

[E2016](#) Specification for Industrial Woven Wire Cloth

[E2427](#) Test Method for Acceptance by Performance Testing for Sieves

2.2 *ASTM Manual*:²

[Manual 32](#) Test Sieving Methods: Guidelines for Establishing Sieve Analysis Procedures; 5th Edition

2.3 *Federal Standard*:³

[Fed. Std. No. 123](#) Marking for Shipment (Civil Agencies)

2.4 *Military Standard*:³

[MIL-STD-129](#) Marking for Shipment and Storage

2.5 *ISO Standard*:⁴

[ISO 3310-1](#) Test Sieves—Technical Requirements and Testing – Part 1: Test Sieves of Metal Wire Cloth

3. Terminology

3.1 *Definitions*—Additional terms can be found in Terminology [E1638](#).

3.1.1 *aperture, n*—the dimension defining an opening in a screening surface.

3.1.2 *backing cloth, n*—a wire mesh support layer used directly under the sieve cloth with an opening coarser than the sieve designation.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard

TABLE 1 Nominal Dimensions and Permissible Variations for Sieve Cloth and Compliance, Inspection and Calibration Test Sieves

(1)	(2a)	(2b)	(3) ^A	(4)	(5)	(6)	(7)	(8)	(9) ^{B, C}	(10)	(11) ^{B, C}	(12)	(13)	(14)	(15)
Standard	Sieve Designation		Nominal Sieve Opening	±Y Variation for Average Opening	+X Maximum Variation for Opening	Resulting Maximum Individual Opening	Compliance Sieves		Inspection Sieves		Calibration Sieves		Typical Wire Diameter	Permissible Average Wire Diameter	
	U.S. Alternative	mm					in.	mm	mm	mm	Sample Openings per 100 ft ²	Maximum Standard Deviation		Sample Openings per Sieve	Maximum Standard Deviation
125	5 in.		5.00	3.30	4.06	129.06	20	—	all	—	all	—	8.00	6.8	9.2
		112	4.41	2.96	3.74	115.74	20	—	all	—	all	—	8.00	6.8	9.2
106	4.24 in.		4.24	2.80	3.59	109.59	20	—	all	—	all	—	6.30	5.4	7.2
100	4 in.		4.00	2.65	3.44	103.44	20	—	all	—	all	—	6.30	5.4	7.2
90	3½ in.		3.50	2.39	3.18	93.18	20	—	all	—	all	—	6.30	5.4	7.2
		80	3.15	2.13	2.91	82.91	20	—	all	—	all	—	6.30	5.4	7.2
75	3 in.		3.00	2.00	2.78	77.78	20	—	all	—	all	—	6.30	5.4	7.2
		71	2.80	1.89	2.67	73.67	20	—	all	—	all	—	5.60	4.8	6.4
63	2½ in.		2.50	1.69	2.44	65.44	20	—	all	—	all	—	5.60	4.8	6.4
		56	2.20	1.50	2.24	58.24	20	—	all	—	all	—	5.00	4.3	5.8
53	2.12 in.		2.12	1.42	2.15	55.15	20	—	all	—	all	—	5.00	4.3	5.8
50	2 in.		2.00	1.34	2.06	52.06	20	—	all	—	all	—	5.00	4.3	5.8
45	1¾ in.		1.75	1.21	1.91	46.91	20	—	all	—	all	—	4.50	3.8	5.2
		40	1.57	1.08	1.75	41.75	20	—	all	—	all	—	4.50	3.8	5.2
37.5	1½ in.		1.50	1.01	1.67	39.17	20	1.103	all	—	all	—	4.50	3.8	5.2
		35.5	1.40	0.961	1.60	37.10	20	1.035	all	—	all	—	4.00	3.4	4.6
31.5	1¼ in.		1.25	0.855	1.47	32.95	20	0.907	all	—	all	—	4.00	3.4	4.6
		28	1.10	0.762	1.35	29.35	20	0.802	all	—	all	—	3.55	3.0	4.1
26.5	1.06 in.		1.06	0.722	1.29	27.79	20	0.758	all	—	all	—	3.55	3.0	4.1
25	1.00 in.		1.00	0.682	1.24	26.24	20	0.715	all	—	all	—	3.55	3.0	4.1
22.4	7/8 in.		0.875	0.613	1.14	23.54	150	0.641	15	0.431	30	0.460	3.55	3.0	4.1
		20	0.787	0.548	1.05	21.05	150	0.575	15	0.387	30	0.413	3.15	2.7	3.6
19	¾ in.		0.750	0.522	1.01	20.01	150	0.548	15	0.368	30	0.393	3.15	2.7	3.6
		18	0.709	0.495	0.97	18.97	150	0.521	15	0.350	30	0.374	3.15	2.7	3.6
16	5/8 in.		0.625	0.441	0.89	16.89	150	0.467	15	0.314	30	0.335	3.15	2.7	3.6
		14	0.551	0.387	0.81	14.81	150	0.414	15	0.278	30	0.297	2.80	2.4	3.2
13.2	0.530 in.		0.530	0.365	0.78	13.98	150	0.393	15	0.264	30	0.282	2.80	2.4	3.2
12.5	½ in.		0.500	0.346	0.75	13.25	150	0.374	15	0.251	30	0.268	2.50	2.1	2.9
11.2	7/16 in.		0.438	0.311	0.69	11.89	150	0.340	15	0.229	30	0.244	2.50	2.1	2.9
		10	0.394	0.279	0.64	10.64	150	0.308	15	0.207	30	0.221	2.50	2.1	2.9
9.5	3/8 in.		0.375	0.265	0.61	10.11	150	0.294	15	0.198	30	0.211	2.24	1.9	2.6
		9	0.354	0.251	0.59	9.59	150	0.281	15	0.189	30	0.202	2.24	1.9	2.6
8	5/16 in.		0.312	0.224	0.54	8.54	150	0.254	15	0.171	30	0.182	2.00	1.7	2.3
		7.1	0.280	0.200	0.50	7.60	150	0.230	15	0.155	30	0.165	1.80	1.5	2.1
6.7	0.265 in.		0.265	0.189	0.48	7.18	150	0.219	15	0.147	30	0.157	1.80	1.5	2.1
6.3	¼ in.		0.250	0.178	0.46	6.76	150	0.208	15	0.140	30	0.149	1.80	1.5	2.1
5.6	No. 3½		0.223	0.159	0.42	6.02	150	0.189	15	0.127	30	0.136	1.60	1.3	1.9
		5	0.197	0.142	0.39	5.39	150	0.172	15	0.116	30	0.123	1.60	1.3	1.9
4.75	No. 4		0.187	0.135	0.37	5.12	150	0.165	15	0.111	30	0.118	1.60	1.3	1.9
		4.5	0.177	0.128	0.36	4.86	150	0.158	15	0.106	30	0.113	1.40	1.2	1.7
4	No. 5		0.157	0.114	0.33	4.33	150	0.143	15	0.096	30	0.103	1.40	1.2	1.7
		3.55	0.140	0.102	0.30	3.85	200	0.130	20	0.092	40	0.097	1.25	1.06	1.50
3.35	No. 6		0.132	0.096	0.29	3.64	200	0.125	20	0.088	40	0.089	1.25	1.06	1.50
		3.15	0.124	0.091	0.28	3.43	200	0.119	20	0.084	40	0.081	1.12	0.95	1.30
2.8	No. 7		0.110	0.081	0.26	3.06	200	0.108	20	0.076	40	0.074	1.00	0.85	1.15
		2.5	0.0984	0.073	0.24	2.74	200	0.099	20	0.070	40	0.071	1.00	0.85	1.15
2.36	No. 8		0.0937	0.069	0.23	2.59	200	0.095	20	0.067	40	0.068	0.90	0.77	1.04
		2.24	0.0882	0.065	0.22	2.46	200	0.091	20	0.064	40	0.064	0.90	0.77	1.04
2	No. 10		0.0787	0.059	0.20	2.20	250	0.083	25	0.060	50	0.059	0.80	0.68	0.92
		1.8	0.0709	0.053	0.19	1.99	250	0.077	25	0.056	50	0.056	0.80	0.68	0.92
1.7	No. 12		0.0661	0.050	0.18	1.88	250	0.074	25	0.054	50	0.057	0.80	0.68	0.92

TABLE 1 Continued

(1)	(2a)	(2b)	(3) ^A	(4)			(5)	(6)	(7)			(8)			(9) ^{B, C}			(10)			(11) ^{B, C}			(12)			(13)	(14)		(15)									
				Nominal Sieve Opening	±Y Variation for Average Opening	+X Maximum Variation for Opening			Resulting Maximum Individual Opening	Sample Openings per 100 ft ²	Maximum Standard Deviation	Sample Openings per Sieve	Maximum Standard Deviation	Sample Openings per Sieve	Maximum Standard Deviation	Sample Openings per Sieve	Maximum Standard Deviation	Sample Openings per Sieve	Maximum Standard Deviation	Sample Openings per Sieve	Maximum Standard Deviation	Typical Wire Diameter	Permissible Average Wire Diameter	Min	Max														
			in.	µm	µm	µm	µm																																
1.4	No. 14	1.6	0.0630	0.047	0.17	1.77	1018	400	45.51	40	35.22	80	36.74	50	0.054	0.80	0.68	0.92																					
			0.0555	0.042	0.16	1.56	964	400	43.66	40	33.79	80	35.25	80	0.052	0.71	0.60	0.82																					
		1.25	0.0492	0.038	0.15	1.40	909	400	41.79	40	32.34	80	33.74	80	0.047	0.63	0.54	0.72																					
1.18	No. 16		0.0469	0.036	0.14	1.32	811	500	38.36	50	30.43	100	31.62	100	0.045	0.63	0.54	0.72																					
		1.12	0.0441	0.034	0.14	1.26	811	500	35.23	50	27.95	100	29.04	100	0.044	0.63	0.54	0.72																					
1	No. 18		0.0394	0.030	0.13	1.13	691	500	34.04	50	27.00	100	28.06	100	0.044	0.56	0.48	0.64																					
			0.0220	0.020	0.13	1.13	647	500	32.43	50	25.73	100	26.73	100	0.044	0.56	0.48	0.64																					
500	No. 35	560	0.0197	0.0177	0.13	1.13	580	600	29.96	60	24.21	120	25.09	120	0.044	0.56	0.48	0.64																					
425	No. 40	450	0.0165	0.0147	0.13	1.13	525	600	27.86	60	22.51	120	23.32	120	0.044	0.56	0.48	0.64																					
355	No. 45	400	0.0157	0.0133	0.13	1.13	498	600	26.79	60	21.65	120	22.43	120	0.044	0.56	0.48	0.64																					
300	No. 50	315	0.0124	0.0108	0.13	1.13	470	600	25.71	60	20.78	120	21.52	120	0.044	0.56	0.48	0.64																					
250	No. 60	280	0.0110	0.0098	0.13	1.13	375	800	21.90	80	18.17	160	18.75	160	0.044	0.56	0.48	0.64																					
212	No. 70	224	0.0088	0.0079	0.13	1.13	358	800	20.26	80	16.81	160	17.34	160	0.044	0.56	0.48	0.64																					
180	No. 80	200	0.0079	0.0068	0.13	1.13	302	800	18.82	80	15.61	160	16.11	160	0.044	0.56	0.48	0.64																					
150	No. 100	140	0.0059	0.0055	0.13	1.13	273	800	17.53	80	14.54	160	15.01	160	0.044	0.56	0.48	0.64																					
125	No. 120	112	0.0044	0.0041	0.13	1.13	259	800	16.32	80	14.05	160	14.49	160	0.044	0.56	0.48	0.64																					
106	No. 140	100	0.0039	0.0035	0.13	1.13	245	800	15.27	100	12.91	200	13.28	200	0.044	0.56	0.48	0.64																					
90	No. 170	80	0.0031	0.0029	0.13	1.13	223	1000	14.20	100	12.00	200	12.34	200	0.044	0.56	0.48	0.64																					
75	No. 200	71	0.0028	0.0025	0.13	1.13	188	1000	13.65	100	11.53	200	11.86	200	0.044	0.56	0.48	0.64																					
63	No. 230	56	0.0022	0.0021	0.13	1.13	177	1000	13.09	100	11.06	200	11.38	200	0.044	0.56	0.48	0.64																					
53	No. 270	50	0.0021	0.0020	0.13	1.13	159	1000	12.23	100	10.33	200	10.63	200	0.044	0.56	0.48	0.64																					
45	No. 325	40	0.0017	0.0016	0.13	1.13	144	1000	11.46	100	9.68	200	9.96	200	0.044	0.56	0.48	0.64																					
38	No. 400	36	0.0015	0.0014	0.13	1.13	137	1000	10.73	100	9.07	200	9.33	200	0.044	0.56	0.48	0.64																					
32	No. 450	32	0.0012	0.0011	0.13	1.13	130	1000	10.10	100	8.53	200	8.78	200	0.044	0.56	0.48	0.64																					
25	No. 500	25	0.0010	0.0010	0.13	1.13	119	1000	10.10	100	8.53	200	8.78	200	0.044	0.56	0.48	0.64																					
20	No. 635	20	0.0008	0.0008	0.13	1.13	107	1000	9.45	100	7.99	200	8.33	200	0.044	0.56	0.48	0.64																					

^A Column 3—These numbers are only approximate but are in use for reference; the sieve shall be identified by the standard designation in millimetres or micrometres.

^B Columns 9 and 11—See Annex A1, which specifies that all openings will be inspected for test sieves having 15 openings or less.

^C Columns 9 and 11—These number of sample openings are based on an 8-in. diameter test sieve.