



AEROSPACE MATERIAL SPECIFICATION

AMS5688™

REV. M

Issued	1939-12
Reaffirmed	2012-10
Revised	2019-01

Superseding AMS5688L

Steel, Corrosion Resistant, Wire
18Cr - 9.0Ni (302)
Spring Temper
(Composition similar to UNS S30200)

RATIONALE

AMS5688M introduces exceptions (3.6), revises chemical analysis standards (3.1), reports (4.4), and identification (5.1.1), and results from a Five-Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers a corrosion resistant steel in the form of wire.

1.2 Application

This wire has been used typically for springs requiring corrosion and heat resistance up to 500 °F (260 °C), but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

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<http://standards.sae.org/AMS5688M>**

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

- AMS2241 Tolerances, Corrosion and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Bars and Wire
- AMS2248 Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
- AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
- ARP1917 Clarification of Terms Used in Aerospace Metals Specifications

2.2 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 E8/E8M Tension Testing of Metallic Materials

ASTM A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	--	0.15
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	8.00	10.00
Molybdenum	--	0.75
Copper	--	0.75

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Condition

Spring temper, cold drawn or rolled to required size.

3.2.1 Wire shall be supplied in coils or as ordered.

3.3 Properties

Wire shall conform to the following requirements:

3.3.1 Tensile Strength

Round wire, square wire, and rectangular wire having nominal width not greater than four times the nominal thickness shall have tensile strength as shown in Table 2, determined in accordance with ASTM E8/E8M.

Table 2A - Tensile properties, inch/pound units

Nominal Diameter or Thickness Inch	Tensile Strength	Tensile Strength
	ksi Round	ksi Square and Rectangular
Up to 0.009, incl	325 - 355	295 - 325
0.010	320 - 350	290 - 320
0.011	318 - 348	288 - 318
0.012	316 - 346	286 - 316
0.013	314 - 344	284 - 314
0.014	312 - 342	282 - 312
0.015	310 - 340	280 - 310
0.016	308 - 338	278 - 308
0.017	306 - 336	276 - 306
0.018	304 - 334	274 - 304
0.020	300 - 330	270 - 300
0.022	296 - 326	266 - 296
0.024	292 - 322	262 - 292
0.026	291 - 320	261 - 291
0.028	289 - 318	259 - 289
0.031	285 - 315	255 - 285
0.034	282 - 310	252 - 282
0.037	280 - 308	250 - 280
0.041	275 - 304	245 - 275
0.045	272 - 300	242 - 272
0.050	267 - 295	237 - 267
0.054	265 - 293	235 - 265
0.058	261 - 289	231 - 261
0.063	258 - 285	228 - 258
0.070	252 - 281	222 - 252
0.075	250 - 278	220 - 250
0.080	246 - 275	216 - 246
0.087	242 - 271	212 - 242
0.095	238 - 268	208 - 238
0.105	232 - 262	202 - 232
0.115	227 - 257	197 - 227
0.125	222 - 253	192 - 222
0.135	217 - 248	187 - 217
0.148	210 - 241	180 - 210
0.162	205 - 235	175 - 205
0.177	198 - 228	168 - 198
0.192	194 - 225	164 - 194
0.207	188 - 220	158 - 188
0.225	182 - 214	152 - 182
0.250	175 - 205	145 - 175
0.278	168 - 198	138 - 168
0.306	161 - 192	131 - 161
0.331	155 - 186	125 - 155
0.362	150 - 180 ¹	118 - 148
0.394	145 - 173 ¹	112 - 142
0.438	140 - 170 ¹	
0.500	135 - 165 ¹	
Over 0.500	130 - 160 ¹	

¹These properties have not been verified in accordance with AMS statistical procedures.