



SURFACE VEHICLE STANDARD

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Chemical Compositions of SAE Wrought Stainless Steels

RATIONALE

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Foreword—This Document has also changed to comply with the new SAE Technical Standards Board Format.

1. Scope—The chemical composition of standard types of wrought stainless steels are listed in ASTM Specification A240. The UNS 20000 series designates nickel-chromium manganese, corrosion resistant types that are nonhardenable by thermal treatment. The UNS 30000 series are nickel-chromium, corrosion resistant steels, nonhardenable by thermal treatment. The UNS 40000 however, includes both a hardenable, martensitic chromium steel and nonhardenable, ferritic, chromium steel. Reference to SAE J412 is suggested for general information and usage of these types of materials. See Table 1.

2. References

2.1 Applicable Publications—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J412—General Characteristics and Heat Treatments of Steels

2.1.2 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM A 240—Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels

TABLE 1—CHEMICAL COMPOSITION REQUIREMENTS, %⁽¹⁾

UNS Designation ⁽²⁾	Type ⁽³⁾	Carbon ⁽⁴⁾	Manganese	Phosphorus	Sulfur	Silicon	Chromium	Nickel	Molybdenum	Nitrogen	Copper	Other Elements ⁽⁵⁾
Austenitic (Chromium-Nickel) (Chromium-Manganese-Nickel)												
N08367	—	0.030	2.00	0.040	0.030	1.00	20.00–22.00	23.50–25.50	6.00–7.00	0.18–0.25	0.75	—
N08800	—	0.10	1.50	0.045	0.015	1.00	19.0–23.0	30.0–35.0	—	—	0.75	Al 0.15–0.60 Ti 0.15–0.60
N08810	—	0.05–0.10	1.50	0.045	0.015	1.00	19.0–23.0	30.0–35.0	—	—	0.75	Al 0.15–0.60 Ti 0.15–0.60
N08904	904L ⁽⁶⁾	0.020	2.00	0.045	0.035	1.00	19.00–23.00	23.00–28.00	4.0–5.0	0.10	1.0–2.0	—
N08926	—	0.020	2.00	0.030	0.010	0.50	19.00–21.00	24.00–26.00	6.0–7.0	0.15–0.25	0.5–1.5	—
S20100	201	0.15	5.50–7.50	0.060	0.030	1.00	16.00–18.00	3.50–5.50	—	0.25	—	—
S20103	—	0.03	5.50–7.50	0.045	0.030	0.75	16.00–18.00	3.50–5.50	—	0.25	—	—
S20153	—	0.03	6.40–7.50	0.045	0.015	0.75	16.00–17.50	4.00–5.00	—	0.10–0.25	1.00	—
S20161	—	0.15	4.00–6.00	0.040	0.040	3.00–4.00	15.00–18.00	4.00–6.00	—	0.08–0.20	—	—
S20200	202	0.15	7.50–10.0	0.060	0.030	1.00	17.00–19.00	4.00–6.00	—	0.25	—	—
S20400	—	0.030	7.00–9.00	0.040	0.030	1.00	15.00–17.00	1.50–3.00	—	0.15–0.30	—	—
S20910	XM-19 ⁽⁷⁾	0.06	4.00–6.00	0.040	0.030	0.75	20.50–23.50	11.50–13.50	1.50–3.00	0.20–0.40	—	Cb 0.10–0.30 V 0.10–0.30
S21400	XM-31 ⁽⁷⁾	0.12	14.00–16.00	0.045	0.030	0.30–1.00	17.00–18.50	1.00	—	0.35 min	—	—
S21600	XM-17 ⁽⁷⁾	0.08	7.50–9.00	0.045	0.030	0.75	17.50–22.00	5.00–7.00	2.00–3.00	0.25–0.50	—	—
S21603	XM-18 ⁽⁷⁾	0.03	7.50–9.00	0.045	0.030	0.75	17.50–22.00	5.00–7.00	2.00–3.00	0.25–0.50	—	—
S21800	—	0.10	7.00–9.00	0.060	0.030	3.50–4.50	16.00–18.00	8.00–9.00	—	0.08–0.18	—	—
S24000	XM-29 ⁽⁷⁾	0.08	11.50–14.50	0.060	0.030	0.75	17.00–19.00	2.25–3.75	—	0.20–0.40	—	—
S30100	301	0.15	2.00	0.045	0.030	1.00	16.00–18.00	6.00–8.00	—	0.10	—	—
S30200	302	0.15	2.00	0.045	0.030	0.75	17.00–19.00	8.00–10.00	—	0.10	—	—
S30400	304	0.08	2.00	0.045	0.030	0.75	18.00–20.00	8.00–10.50	—	0.10	—	—
S30403	304L	0.030	2.00	0.045	0.030	0.75	18.00–20.00	8.00–12.00	—	0.10	—	—
S30409	304H	0.04–0.10	2.00	0.045	0.030	0.75	18.00–20.00	8.00–10.50	—	—	—	—
S30415	—	0.04–0.06	0.80	0.045	0.030	1.00–2.00	18.00–19.00	9.00–10.00	—	0.12–0.18	—	Ce 0.03–0.08
S30451	304N	0.08	2.00	0.045	0.030	0.75	18.00–20.00	8.00–10.50	—	0.10–0.16	—	—
S30452	XM-21	0.08	2.00	0.045	0.030	0.75	18.00–20.00	8.00–10.50	—	0.16–0.30	—	—
S30453	304LN	0.030	2.00	0.045	0.030	0.75	18.00–20.00	8.00–12.00	—	0.10–0.16	—	—
S30500	305	0.12	2.00	0.045	0.030	0.75	17.00–19.00	10.50–13.00	—	—	—	—
S30600	—	0.018	2.00	0.20	0.020	3.7–4.3	17.0–18.5	14.0–15.5	0.20	—	0.50	—
S30601	—	0.015	0.50–0.80	0.030	0.013	5.00–5.60	17.00–18.00	17.00–18.00	0.20	0.050	0.35	—
S30615	—	0.16–0.24	2.00	0.030	0.030	3.2–4.0	17.0–19.5	13.5–16.0	—	—	—	Al 0.8–1.5
S30815	—	0.05–0.10	0.80	0.040	0.030	1.40–2.00	20.00–22.00	10.00–12.00	—	0.14–0.20	—	Ce 0.03–0.08
S30908	309S	0.08	2.00	0.045	0.030	0.75	22.00–24.00	12.00–15.00	—	—	—	—
S30909	309H ⁽⁶⁾	0.04–0.10	2.00	0.045	0.030	0.75	22.00–24.00	12.00–15.00	—	—	—	—
S30940	309Cb ⁽⁶⁾	0.08	2.00	0.045	0.030	0.75	22.00–24.00	12.00–16.00	—	—	—	Cb 10 x 10 ⁻³ min, 1.10 max