TABLE 10 Chemical Requirements

Copper Alloy UNS No.	Composition, % max, except as indicated															
	Major Elements								Residual Elements							
	Copper	Tin	Lead	Zinc	Iron	Nickel Including Cobalt	Alumi-num	Man-ganese	Iron	Anti-mony	Nickel Includ-ing Cobalt	Sul-fur	Phos-phorus	Alu-mi-num	Man-ga-nese	Sili-con
C83600	84.0–86.0	4.0–6.0	4.0–6.0	4.0–6.0	...	1.0	...	...	0.30	0.25	...	0.08	1.5	0.005	...	0.005
C83800	82.0–83.8	3.3–4.2	5.0–7.0	5.0–8.0	...	1.0	...	...	0.30	0.25	...	0.08	1.5	0.005	...	0.005
C84200	78.0–82.0	4.0–6.0	2.0–3.0	10.0–16.0	...	0.8	...	...	0.40	0.25	...	0.08	1.5	0.005	...	0.005
C84400	78.0–82.0	2.3–3.5	6.0–8.0	7.0–10.0	...	1.0	...	...	0.40	0.25	...	0.08	1.5	0.005	...	0.005
C84800	75.0–77.0	2.0–3.0	5.5–7.0	13.0–17.0	...	1.0	...	...	0.40	0.25	...	0.08	1.5	0.005	...	0.005
C85700	58.0–64.0	0.50–1.5	0.8–1.5	32.0–40.0	...	...	...	...	0.7	...	1.0	...	...	0.55	...	0.05
C86200	60.0–66.0	0.20	0.20	22.0–28.0	2.0–4.0	...	3.0–4.9	2.5–5.0	...	...	1.0	...	...	...	...	...
C86300	60.0–66.0	0.20	0.20	22.0–28.0	2.0–4.0	...	5.0–7.5	2.5–5.0	...	...	1.0	...	...	...	...	...
C86500	55.0–60.0	1.0	0.40	36.0–42.0	0.40–2.0	...	0.50–1.5	0.10–1.5	...	...	1.0	...	...	...	...	...
C89320[A]	87.0–91.0	5.0–7.0	0.09	1.0	...	1.0	...	...	0.20	0.35	...	0.08	0.30	0.005	...	0.005
C90300	86.0–89.0	7.5–9.0	0.30	3.0–5.0	...	1.0	...	...	0.20	0.20	...	0.05	1.5	0.005	...	0.005
C90500	86.0–89.0	9.0–11.0	0.30	1.0–3.0	...	1.0	...	...	0.20	0.20	...	0.05	1.5	0.005	...	0.005
C90700	88.0–90.0	10.0–12.0	0.50	0.50	...	0.50	...	...	0.15	0.20	...	0.05	1.5	0.005	...	0.005
C91000	84.0–86.0	14.0–16.0	0.20	1.5	...	0.8	...	...	0.10	0.20	...	0.05	1.5	0.005	...	0.005
C91300	79.0–82.0	18.0–20.0	0.25	0.25	...	0.50	...	...	0.25	0.20	...	0.05	1.5	0.005	...	0.005
C92200	86.0–90.0	5.5–6.5	1.0–2.0	3.0–5.0	...	1.0	...	...	0.25	0.25	...	0.05	1.5	0.005	...	0.005
C92300	85.0–89.0	7.5–9.0	0.3–1.0	2.5–5.0	...	1.0	...	...	0.25	0.25	...	0.05	1.5	0.005	...	0.005
C92500	85.0–88.0	10.0–12.0	1.0–1.5	0.50	...	0.8–1.5	...	...	0.30	0.25	...	0.05	1.5	0.005	...	0.005
C92700	86.0–89.0	9.0–11.0	1.0–2.5	0.7	...	1.0	...	...	0.20	0.25	...	0.05	1.5	0.005	...	0.005
C92800	78.0–82.0	15.0–17.0	4.0–6.0	0.8	...	0.8	...	...	0.20	0.25	...	0.05	1.5	0.005	...	0.005
C92900	82.0–86.0	9.0–11.0	2.0–3.2	0.25	...	2.8–4.0	...	...	0.20	0.25	...	0.05	1.5	0.005	...	0.005
C93200	81.0–85.0	6.3–7.5	6.0–8.0	2.0–4.0	...	1.0	...	...	0.20	0.35	...	0.05	1.5	0.005	...	0.005
C93400	82.0–85.0	7.0–9.0	7.0–9.0	0.8	...	1.0	...	...	0.20	0.50	...	0.08	1.5	0.005	...	0.005
C93500	83.0–86.0	4.3–6.0	8.0–10.0	2.0	...	1.0	...	...	0.20	0.30	...	0.08	1.5	0.005	...	0.005
C93600	79.0–83.0	6.0–8.0	11.0–13.0	1.0	...	1.0	...	...	0.20	0.55	...	0.08	1.5	0.005	...	0.005
C93700	78.0–82.0	9.0–11.0	8.0–11.0	0.8	...	1.0	...	...	0.15	0.50	...	0.08	1.5	0.005	...	0.005
C93800	75.0–79.0	6.3–7.5	13.0–16.0	0.8	...	1.0	...	...	0.15	0.80	...	0.08	1.5	0.005	...	0.005
C93900	76.5–79.5	5.0–7.0	14.0–18.0	1.5	...	0.8	...	...	0.40	0.50	...	0.08	1.5	0.005	...	0.005
C94000	69.0–72.0	12.0–14.0	14.0–16.0	0.50	...	0.5–1.0	...	...	0.25	0.50	...	0.08	1.5	0.005	...	0.005
C94100	72.0–79.0	4.5–6.5	18.0–22.0	1.0	...	1.0	...	...	0.25	0.8	...	0.08	1.5	0.005	...	0.005
C94300	67.0–72.0	4.5–6.0	23.0–27.0	0.8	...	1.0	...	...	0.25	0.8	...	0.08	1.5	0.005	...	0.005
C94700[B]	85.0–90.0	4.5–6.0	0.10	1.0–2.5	...	4.5–6.0	...	...	0.25	0.15	...	0.05	0.05	0.005	0.20	0.005
C94800	84.0–89.0	4.5–6.0	0.3–1.0	1.0–2.5	...	4.5–6.0	...	...	0.25	0.15	...	0.05	0.05	0.005	0.20	0.005
C95200	86.0 min	...	...	...	2.5–4.0	...	8.5–9.5	...	...	...	...	...	...	...	...	...
C95300	86.0 min	...	...	...	0.8–1.5	...	9.0–11.0	...	...	...	...	...	...	...	...	...
C95400	83.0 min	...	...	...	3.0–5.0	1.5	10.0–11.5	0.50	...	...	...	...	...	...	...	...
C95410	83.0 min	...	...	...	3.0–5.0	1.5–2.5	10.0–11.5	0.50	...	...	...	...	...	...	...	...
C95500	78.0 min	...	...	...	3.0–5.0	3.0–5.5	10.0–11.5	3.5	...	...	...	...	...	...	...	...
C95520[C]	74.5 min	0.25	0.03	0.30	4.0–5.5	4.2–6.0	10.5–11.5	1.5	...	...	...	...	...	...	...	...
C95700	71.0 min	...	0.03	...	2.0–4.0	1.5–3.0	7.0–8.0	11.0–14.0	...	...	...	...	...	...	...	0.10
C95800[D]	79.0 min	...	0.03	...	3.5–4.5	4.0–5.0	8.5–9.5	0.8–1.5	...	...	...	...	...	...	...	0.10
C95900	remainder	...	...	...	3.0–5.0	0.5	12.0–13.5	1.5	...	...	...	...	...	...	...	...
C96400[E]	65.0–69.0	...	0.03	...	0.25–1.50	28.0–32.0	...	1.5	...	...	...	0.02	0.02	...	...	...
C96900[F]	remainder	5.8-8.5	0.02	...	...	11.0-15.5	...	0.05-0.40	0.5	...	...	...	...	...	...	...
C97300	53.0–58.0	1.5–3.0	8.0–11.0	17.0–25.0	...	11.0–14.0	...	...	1.5	0.35	...	0.08	0.05	0.005	0.50	0.15
C97600	63.0–67.0	3.4–4.5	3.0–5.0	3.0–9.0	...	19.0–21.5	...	...	1.5	0.25	...	0.08	0.05	0.005	1.0	0.15
C97800	64.0–67.0	4.0–5.5	1.0–2.5	1.0–4.0	...	24.0–27.0	...	...	1.5	0.20	...	0.08	0.05	0.005	1.0	0.15
C99500[G]	remainder	...	0.25	0.5-2.5	3.0-5.0	3.5-5.5	0.5-2.0	0.5	...	...	...	...	...	...	...	...

[A] Bismuth 4.0–6.0
[B] It is possible that the mechanical requirements of Copper Alloy UNS No. C94700 in the heat-treated condition will not be attained if the lead content exceeds 0.01 %.
[C] Chromium content shall be 0.05 max, cobalt 0.20 max, and silicon 0.15 max.
[D] Iron content shall not exceed nickel content. Other major element chemical requirements: Silicon 0.10 % max.
[E] Chemical requirements for other elements: Sulfur 0.02 % max (major), carbon 0.15 % max (residual), and niobium 0.5-1.5 (major).
[F] Magnesium 0.15 max (major), silicon 0.30 max (residual), niobium 0.10 max (residual).
[G] Silicon 0.5-2.0

8.2.2 *Copper Alloy UNS Nos. C86200, C86300, C86400, C95200, C95300, C95400, C95410, C95500, C95520, C95800, C95900, and C96400*—The outside periphery of continuously cast tubing shall be concentric with the bore within a permissible variation of 4 % of the nominal wall thickness.

8.3 *Diameter Tolerances for Continuously Cast Rod and Bar*—See Table 5.

8.4 *Tolerances of Average Diameter for Continuously Cast Tube (Round only)*—See Table 6.

8.5 *Roundness*—For continuously cast tubing in straight lengths, the roundness tolerances shall be as shown in Table 7.

8.6 *Dimensional Tolerances for All Other Shapes (not Covered by* 7.1 *or* 8.2*)*—See Table 8.

8.7 *Straightness Tolerances for Continuously Cast Rod, Tube, Bars, and Shapes*—See Table 12.

9. Casting Repair

9.1 Continuous castings shall not be mechanically repaired, plugged, or burned in.