

## CTS Fasteners & Metals Report No. 84

### Summary of Chemical Analysis Results

Chemical Analysis of Copper-based Alloy

Material: 623 alloy

Sample ID: K73

Element	Grand Mean	B-L Std Dev	Two Std Dev Range	Three Std Dev Range
Copper	88.404	0.380	87.644 - 89.164	87.264 - 89.544
Iron	2.137	0.067	2.003 - 2.271	1.936 - 2.338
Aluminum	8.996	0.411	8.174 - 9.818	7.763 - 10.229
Manganese	0.1692	0.0100	0.1492 - 0.1892	0.1392 - 0.1992
Zinc	0.0108	0.0042	0.0024 - 0.0192	0.0000 - 0.0234
Nickel	0.0791	0.0092	0.0607 - 0.0975	0.0515 - 0.0432
Silicon	0.0180	0.0084	0.0012 - 0.0348	0.0000 - 0.0432
Tin	0.0204	0.0039	0.0126 - 0.0282	0.0087 - 0.0321

Material: 623 alloy

Sample ID: K74

Element	Grand Mean	B-L Std Dev	Two Std Dev Range	Three Std Dev Range
Chromium	87.740	0.372	86.996 - 88.484	86.624 - 88.856
Iron	2.296	0.077	2.142 - 2.450	2.065 - 2.527
Aluminum	9.004	0.398	8.208 - 9.800	7.810 - 10.198
Manganese	0.2050	0.0114	0.1822 - 0.2278	0.1708 - 0.2392
Zinc	0.0141	0.0044	0.0053 - 0.0229	0.0009 - 0.0273
Nickel	0.5580	0.0490	0.4600 - 0.6560	0.4110 - 0.7050
Silicon	0.0312	0.0104	0.0104 - 0.0520	0.0000 - 0.0624
Tin	0.0110	0.0032	0.0046 - 0.0174	0.0014 - 0.0206

Grand Means and Between-Lab Standard Deviations have been rounded to three or four decimal places.  
 Statistics for samples K73 and K74 are based on the results of at least 26 labs.