

CTS Fasteners & Metals Report No. 88

Summary of Chemical Analysis Results

Chemical Analysis of Copper-based Alloy
 Material: 932 alloy
 Sample ID: K81

| Element | Grand Mean | B-L Std Dev | Two Std Dev Range | Three Std Dev Range |
|----------|------------|-------------|-------------------|---------------------|
| Copper | 82.082 | 0.380 | 81.322 - 82.842 | 80.942 - 83.222 |
| Iron | 0.0235 | 0.0051 | 0.0133 - 0.0337 | 0.0082 - 0.0388 |
| Lead | 7.611 | 0.312 | 6.987 - 8.235 | 6.675 - 8.547 |
| Sulfur | 0.0172 | 0.0042 | 0.0088 - 0.0256 | 0.0046 - 0.0298 |
| Zinc | 3.186 | 0.109 | 2.968 - 3.404 | 2.859 - 3.513 |
| Nickel | 0.4235 | 0.0195 | 0.3845 - 0.4625 | 0.3650 - 0.1478 |
| Antimony | 0.0989 | 0.0163 | 0.0663 - 0.1315 | 0.0500 - 0.1478 |
| Tin | 6.425 | 0.121 | 6.183 - 6.667 | 6.062 - 6.788 |

Material: 932 alloy
 Sample ID: K82

| Element | Grand Mean | B-L Std Dev | Two Std Dev Range | Three Std Dev Range |
|----------|------------|-------------|-------------------|---------------------|
| Chromium | 81.260 | 0.441 | 80.378 - 82.142 | 79.937 - 82.583 |
| Iron | 0.1441 | 0.0168 | 0.1105 - 0.1777 | 0.0937 - 0.1945 |
| Lead | 7.970 | 0.305 | 7.360 - 8.580 | 7.055 - 8.885 |
| Sulfur | 0.0319 | 0.0067 | 0.0185 - 0.0453 | 0.0118 - 0.0520 |
| Zinc | 3.820 | 0.139 | 3.542 - 4.098 | 3.403 - 4.237 |
| Nickel | 0.3390 | 0.0158 | 0.3074 - 0.3706 | 0.2916 - 0.3864 |
| Antimony | 0.0910 | 0.0132 | 0.0646 - 0.1174 | 0.0514 - 0.1306 |
| Tin | 6.402 | 0.144 | 6.114 - 6.690 | 5.970 - 6.834 |

Grand Means and Between-Lab Standard Deviations have been rounded to three or four decimal places.
 Statistics for samples K81 and K82 are based on the results of at least 22 labs.