Bearing Austenitizing and Tempering

The heat treatment of 52100 bearing steel must be controlled to produce a level of retained austenite that the bearing can tolerate in service. This often is considered to be <10% for most applications (nonstabilized) and <3% (stabilized) for superprecision applications.

The graph shows that austenitizing temperature and tempering temperature can be tailored to produce low amounts of retained austenite in the finished bearing. A tempering temperature of 230 °C (450 °F) is particularly effective in transforming any retained austenite to tempered martensite. The international standard DIN 623 Rolling Bearings provides a guide for tempering 52100 to achieve adequate dimensional stability at specific service temperatures.