**Patent claims**

1. A method for producing a single crystal from silicon with <100> orientation, comprising
the doping of a melt with n-type dopant;
the pulling of a starting cone, a cylindrical portion and an end cone of the single crystal by the CZ method;
the pulling of the starting cone with a crystal angle of not less than 20° and not more than 30° in a middle portion of the starting cone, the crystal angle being an angle formed by the <100> orientation and a periphery of the single crystal, the length of which is not less than 50% of a length of the starting cone, fluctuations of the crystal angle being limited by means of angle control to not more than 0.01°/s;
the pulling of the cylindrical portion of the single crystal at a pulling rate that is not more than 75% of a limit pulling rate, in the event of the limit pulling rate being exceeded the deformation of the single crystal making continuation of the pulling difficult; and
the active cooling of the single crystal in the region in the vicinity of the phase boundary between the growing single crystal and the melt.

2. The method as claimed in claim 1, also comprising the pulling of the single crystal in a transitional region between the starting cone and the cylindrical portion at a pulling rate of not more than 1.5 mm/min.

3. The method as claimed in claim 1 or 2, the cooling of the single crystal being performed by means of a water-cooled cooling.

4. The method as claimed in one of claims 1 to 3, also comprising the slicing of semiconductor wafers from the cylindrical portion of the single crystal.