What is claimed is:

1. A heat-resistant and humidity-resistant Pb-free solder alloy with a low melting point, comprising:

4-12 wt% of Zn,

0.5-4 wt% of Bi,

0.5-5 wt% of In,

0.005-0.5 wt% of P,

0.001-0.5 wt% of Zr,

at least one microelement selected from a group consisting of: 0-0.1 wt% of Y, 0-0.2 wt% of Ge, 0-0.05 wt% of Mg, 0-0.02 wt% of B, 0-0.05 wt% of Al, 0-0.2 wt% of Ni and 0-0.3 wt% of Ag, and

a balance of Sn and inevitable impurities.