than 0.0001% by weight particularly preferably no more than 0.00005% by weight and the content of Zr is preferably no more than 0.0001% by weight

6. The magnesium alloy according to claim 1 or claim 2, characterized in that the individual elements from the group of the rare earths amount to no more than 0.001% by weight, preferably 0.0005% by weight, and still more preferably 0.0003% by weight in the total sum.

7. The magnesium alloy according to any of the preceding claims 1 to 6, characterized in that the alloy has a fine-grained microstructure having a grain size of less than 7.5 µm, and preferably <5 µm, and particularly preferably <2.5 µm, without considerable electrochemical potential differences between the individual matrix phases.

8. The magnesium alloy according to any of claims 1 to 7, characterized in that the intermetallic $Ca_2Mg_6Zn_3$ phase is ~~at least~~ equally as noble as, or less noble, and the precipitable MgZn phase is more noble, than the matrix phases.

9. The magnesium alloy according to any of the preceding claims 1 to 8, characterized in that the precipitations have a size of <5 µm, and preferably <1 µm, and are dispersely distributed at the grain boundaries or in the grain interior.

10. The magnesium alloy according to any of the preceding claims 1 to 9, characterized in that the alloy has a tensile strength of >275 MPa, and preferably >300 MPa, a yield point of >200 MPa, and preferably >225 MPa, and a yield ratio of <0.8, and preferably <0.75, wherein the difference between the tensile strength and yield point is >50 MPa, and preferably >100 MPa, and the mechanical asymmetry is <1.25.

11. A method for producing a magnesium alloy having improved mechanical and electrochemical properties, comprising the following steps:

a) generating a high-purity magnesium by way of vacuum distillation;