[0011] It is also an object of the invention to provide the use of MoO_2Cl_2 as a precursor for producing a molybdenum-containing layer, which at least partially, and as fully as possible, overcomes the disadvantages of the prior art.

[0012] It is also an object of the invention to provide an electronic component having a molybdenum-containing layer, which at least partially, and as fully as possible, overcomes the disadvantages of the prior art.

Summary

[0012a] In one aspect, there is provided a method for producing MoO_2Cl_2 under inert conditions, comprising the steps of:

(i) charging a reaction vessel with MoO_2,

(ii) reacting the MoO_2 with supplied Cl_2 in the reaction vessel at a first temperature T_1 to give gaseous MoO_2Cl_2,

(iii) transferring the gaseous MoO_2Cl_2 into a receiving vessel,

(iv) resublimating the gaseous MoO_2Cl_2 in the receiving vessel to give solid MoO_2Cl_2 at a second temperature T_2 that is lower than T_1, and

(v) recovering solid MoO_2Cl_2 with a purity determined by ICP-OES/MS of 99.9996 wt.% or more.

[0012b] In another aspect, there is provided a method for producing a molybdenum-containing layer, comprising a method as defined herein, wherein subsequently the MoO_2Cl_2 obtained in step (v) or step (vi) is used in a vapor deposition as a precursor in order to form the molybdenum-containing layer.

[0012c] In another aspect, there is provided MoO_2Cl_2 obtainable by a method as defined herein.

[0012d] In another aspect, there is provided MoO_2Cl_2 which has a purity determined by ICP-OES/MS of 0.9996 wt.% or more and preferably a tungsten content determined by ICP-OES/MS of ≤ 200 ppb.

[0012e] In another aspect, there is provided the use of MoO_2Cl_2 as defined herein as a precursor for producing a molybdenum-containing layer.

[0012f] In another aspect, there is provided an electronic component, in particular a 3D NAND, comprising a molybdenum-containing layer produced as defined herein.

Disclosure of the invention

[0013] Surprisingly, the objects of the invention are achieved by methods, products and uses according to the patent claims.

[0014] The invention relates to a method for producing MoO_2Cl_2 under inert conditions, comprising the steps of:

(i) charging a reaction vessel with MoO_2,
(ii) reacting the MoO_2 with supplied Cl_2 in the reaction vessel at a first temperature T_1 to give gaseous MoO_2Cl_2,
(iii) transferring the gaseous MoO_2Cl_2 into a receiving vessel,
(iv) resublimating the gaseous MoO_2Cl_2 in the receiving vessel to give solid MoO_2Cl_2 at a second temperature T_2 that is lower than T_1, and
(v) recovering solid MoO_2Cl_2 with a purity determined by ICP-OES/MS of 99.9996 wt.% or more.

[0015] The method according to the invention is carried out under inert conditions and is preferably carried out continuously under inert conditions. Except for the Cl_2 supplied in step (ii), the method is thus carried out excluding

other reactive gases or substances. Accordingly, the method is preferably carried out excluding oxygen and/or excluding air and/or excluding water. The