CLAIMS

1. A solid composition for reducing heavy metals in flue gases comprising a mineral compound, non-functionalized, doped with a halide salt, i.e. for which the surface accessible to flue gases is partly or completely covered with a halide salt said mineral compound being selected from the group consisting of halloysite, calcium or magnesium ~~carbonates or~~ hydroxides, ~~and sodium carbonates~~ as well as of mixtures thereof, said halide salt being present in an amount on a dry basis ranging from 0.5% to 20% by weight of halide salt on the basis of the weight of the composition.

2. The composition according to claim 1, wherein said halide salt is an inorganic halide salt.

3. The composition according to claim 1 or 2, wherein said mineral compound is preferably selected from the group consisting of halloysite, slaked lime, ~~dolomite and limestone~~ as well as mixtures thereof.

4. The composition according to any of claims 1 to 3, wherein said halide salt is present in an amount on a dry basis ranging ~~from 0.5% to 20% by weight, preferably~~ from 1% to 15% by weight and in particular from 1.5% to 10% by weight of halide salt on the basis of the weight of the composition.

5. The composition according to any of the preceding claims, wherein said halide salt is an alkaline halide, an earth alkaline halide or the like, preferably selected from the group consisting of NaCl, NaBr, NaI, KCl, KBr, KI, $CaCl_2$, CaBr2, CaI_2, $MgCl_2$, $MgBr_2$, MgI_2, NH_4Cl, NH_4Br or NH_4I or mixtures thereof.

6. The composition according to any of the preceding claims, wherein the mineral compound is in powdery form and has a d_{90} of less than 1mm and in particular a particle size comprised between 1µm and 1mm.

7. A method for preparing a composition for reducing heavy minerals in flue gases according to any of claims 1 to 6 comprising the steps:

- supplying a mineral compound selected from the group consisting of halloysite, calcium or magnesium ~~carbonates or~~ hydroxides ~~and sodium carbonates~~ as well as mixtures thereof,
- supplying a halide salt, and
- putting into contact said mineral compound and said halide salt with formation of a mineral compound doped with the halide salt, said halide salt being present in an amount on a dry basis ranging from 0.5% to 20% by weight of halide salt on the basis of the weight of the composition.

8. The method according to claim 7, wherein said putting into contact

of said mineral compound and of said halide salt is achieved with stirring.

9. The method according to claim 7 or claim 8 wherein said supplied mineral compound has a humidity comprised between 0.1 and 100 g/kg, advantageously between 2 and 90 g/kg.

10. The method according to any of claims 7 to 9, wherein said putting into contact is carried out at room temperature.

11. The method according to any of claims 7 to 10, wherein said halide salt is in liquid form, in an aqueous phase.

12. The method according to any of claims 7 to 11, wherein said step for putting into contact said mineral compound and said halide salt is spraying of said halide salt on said mineral compound.

13. The method according to any of claims 7 to 11, wherein said step for putting into contact said mineral compound and said halide salt is soaking of said mineral compound in said halide salt in a liquid phase.

14. The method according any of claims 11 to 13 wherein said halide salt in a liquid phase is either an solution aqueous or not, having a halide salt content comprised between 1% and the salt saturation of the solution, notably between 1% and 35%, preferably between 5% and 27% by weight based on the total weight of said solution.

15. The method according to one of claims 7 to 14, further comprising a step for drying and/or deagglomerating said mineral compound doped with the halide salt, preferably at a temperature comprised between 60 and 200°C, in particular between 75 and 170°C.

16. The method according to any of claims 7 to 15, wherein said halide salt is an alkaline halide, an alkaline-earth halide or the like, preferably selected from the group consisting of NaCl, NaBr, NaI, KCl, KBr, KI, $CaCl_2$, CaBr2, CaI_2, $MgCl_2$, $MgBr_2$, MgI_2, NH_4Cl, NH_4Br or NH_4I or mixtures thereof.

17. The use of the composition according to any of claims 1 to 6, for reducing heavy metals, preferably in the gas state, in particular mercury and most particularly metallic mercury Hg^0 in flue gases.

18. The use according to claim 17, with another solid material, in particular a mixture with a basic agent such as lime.

19. The use according to claim 17 or 18, wherein said doped mineral compound is put into contact with the flue gases at a temperature ranging from 70 to 350°C, notably between 110 and 300°C and preferably between 120 and 250°C.

CLAIMS

1. A solid composition for reducing heavy metals in flue gases comprising a mineral compound, non-functionalized, doped with a halide salt, i.e. for which the surface accessible to flue gases is partly or completely covered with a halide salt said mineral compound being selected from the group consisting of halloysite, calcium or magnesium hydroxides, as well as of mixtures thereof, said halide salt being present in an amount on a dry basis ranging from 0.5% to 20% by weight of halide salt on the basis of the weight of the composition.

2. The composition according to claim 1, wherein said halide salt is an inorganic halide salt.

3. The composition according to claim 1 or 2, wherein said mineral compound is preferably selected from the group consisting of halloysite, slaked lime, as well as mixtures thereof.

4. The composition according to any of claims 1 to 3, wherein said halide salt is present in an amount on a dry basis ranging from 1% to 15% by weight and in particular from 1.5% to 10% by weight of halide salt on the basis of the weight of the composition.

5. The composition according to any of the preceding claims, wherein said halide salt is an alkaline halide, an earth alkaline halide or the like, preferably selected from the group consisting of NaCl, NaBr, NaI, KCl, KBr, KI, $CaCl_2$, CaBr2, CaI_2, $MgCl_2$, $MgBr_2$, MgI_2, NH_4Cl, NH_4Br or NH_4I or mixtures thereof.

6. The composition according to any of the preceding claims, wherein the mineral compound is in powdery form and has a d_{90} of less than 1mm and in particular a particle size comprised between 1µm and 1mm.

7. A method for preparing a composition for reducing heavy minerals in flue gases according to any of claims 1 to 6 comprising the steps:

- supplying a mineral compound selected from the group consisting of halloysite, calcium or magnesium hydroxides as well as mixtures thereof,
- supplying a halide salt, and
- putting into contact said mineral compound and said halide salt with formation of a mineral compound doped with the halide salt, said halide salt being present in an amount on a dry basis ranging from 0.5% to 20% by weight of halide salt on the basis of the weight of the composition.

8. The method according to claim 7, wherein said putting into contact of said mineral compound and of said halide salt is achieved with stirring.

9. The method according to claim 7 or claim 8 wherein said supplied

mineral compound has a humidity comprised between 0.1 and 100 g/kg, advantageously between 2 and 90 g/kg.

10. The method according to any of claims 7 to 9, wherein said putting into contact is carried out at room temperature.

11. The method according to any of claims 7 to 10, wherein said halide salt is in liquid form, in an aqueous phase.

12. The method according to any of claims 7 to 11, wherein said step for putting into contact said mineral compound and said halide salt is spraying of said halide salt on said mineral compound.

13. The method according to any of claims 7 to 11, wherein said step for putting into contact said mineral compound and said halide salt is soaking of said mineral compound in said halide salt in a liquid phase.

14. The method according any of claims 11 to 13 wherein said halide salt in a liquid phase is either an solution aqueous or not, having a halide salt content comprised between 1% and the salt saturation of the solution, notably between 1% and 35%, preferably between 5% and 27% by weight based on the total weight of said solution.

15. The method according to one of claims 7 to 14, further comprising a step for drying and/or deagglomerating said mineral compound doped with the halide salt, preferably at a temperature comprised between 60 and 200°C, in particular between 75 and 170°C.

16. The method according to any of claims 7 to 15, wherein said halide salt is an alkaline halide, an alkaline-earth halide or the like, preferably selected from the group consisting of NaCl, NaBr, NaI, KCl, KBr, KI, $CaCl_2$, CaBr2, CaI_2, $MgCl_2$, $MgBr_2$, MgI_2, NH_4Cl, NH_4Br or NH_4I or mixtures thereof.

17. The use of the composition according to any of claims 1 to 6, for reducing heavy metals, preferably in the gas state, in particular mercury and most particularly metallic mercury Hg^0 in flue gases.

18. The use according to claim 17, with another solid material, in particular a mixture with a basic agent such as lime.

19. The use according to claim 17 or 18, wherein said doped mineral compound is put into contact with the flue gases at a temperature ranging from 70 to 350°C, notably between 110 and 300°C and preferably between 120 and 250°C.