13. The process according to claim 5, wherein the alkanesulfonic acid halide is methanesulfonic acid halide and the alkali mono-alkylperoxosulfonate is sodium methylperoxosulfonate.

14. Use of the compound according to claim 1 or of the mixture according to claim 2 or 3 as an initiator for preparing methanesulfonic acid from methane and oleum.

15. A process according to claim 8, wherein the alkanesulfonic acid is methanesulfonic acid and the alkane is methane.

16. Use according to claim 9, wherein the alkane is methane.