

The invention relates to a process for separating ammonia from gases, in particular exhaust gases from combustion processes, in which the ammonia is formed or released or in which ammonia or a substance that forms ammonia under the influence of heat is supplied.

When treating exhaust gases from combustion processes in order to reduce the nitrogen oxide concentration, either ammonia is supplied to the gas flow in front of a reduction catalyst (SCR process) or ammonia or a substance that forms ammonia under the influence of heat (e.g. urea, sal volatile or the like) is injected into the gas flow in the temperature range above 700°C (SNCR process). In both cases, ammonia not consumed in the NO<sub>x</sub> reduction reaction can be discharged together with the exhaust gases as what is referred to as ammonia slip. This leads to contamination both of the atmosphere and of the subsequent exhaust gas scrubbers if ammonia or ammonium compounds (ammonium chloride, ammonium sulphate, ammonium bisulphate) are discharged together with the dust from a filter plant or the waste water from a wet scrubber.

Although the abovementioned ammonium salts formed in the exhaust gas path at temperatures < 300°C can be separated off very efficiently above all with cloth filters, the subsequent treatment of this filter dust causes problems. If it is moistened with water, ammonia is expelled again in gaseous form and escapes into the atmosphere or waste water containing ammonium salts is produced as refuse dump seepage. Safe final disposal of this dust is therefore jeopardised.

The aim of the invention is to provide a process with the aid of which ammonia can be removed from the gases to be purified

in such a manner that the substance receiving or absorbing the ammonia can be advanced for safe final disposal without ammonia being given off again.

This problem is solved by the measures specified in claim 1 or claim 2. The treating agent can advantageously be supplied in solid form or in the form of a suspension. If exhaust gases from combustion processes are to be purified, it is possible either to supply the treating agent to the exhaust gases in finely distributed form or to mix it directly with the fuel, as a result of which the desired reaction leading to absorption of the ammonia can take place as early as the ammonia formation stage.

The proposed compounds have the advantage that they not only remove the ammonia very efficiently from the exhaust gases by adsorption, but also can absorb it very strongly in their internal structure. This prevents the abovementioned subsequent environmental pollution caused by renewed release.

### CLAIMS

1. Process for separating ammonia from gases, in particular exhaust gases from combustion processes, in which the ammonia is formed or released or in which ammonia or a substance that forms ammonia under the influence of heat is supplied, characterised in that a substance from the group of zeolites is added in finely distributed form as a treating agent to the gas to be purified, being thoroughly mixed with the gas.
2. Process for separating ammonia from gases, in particular exhaust gases from combustion processes, in which the ammonia is formed or released or in which ammonia or a substance that forms ammonia under the influence of heat is supplied, characterised in that activated silicon dioxide is added in finely distributed form as a treating agent to the gas to be purified, being thoroughly mixed with the gas.
3. Process according to claim 1 or claim 2, characterised in that the treating agent is supplied in solid form.
4. Process according to claim 1 or claim 2, characterised in that the treating agent is supplied in the form of a suspension.
5. Process according to one of claims 1 to 4, for the purification of exhaust gases from combustion processes, characterised in that the treating agent is mixed with the fuel.

