environmental unfriendly compounds during storage of said formulations over time.

[0019] The inventors have now discovered that the abovementioned objectives are achieved, in all or at least in part, by virtue of the formulations according to the disclosure as will be set out in the description which follows. Yet other objectives will become apparent in this same description.

[0019a] In an aspect, there is provided a corrosion-inhibiting formulation comprising:

a) at least one amine or amine derivative,

b) at least one compound A exhibiting at least the following characteristics:

- the compound A carries at least one –SH or $-S^{-}M^{p+}$ group, where M^{p+} represents a cation of an alkali metal (Group 1) or of an alkaline earth metal (Group 2), or of a metal of Groups 7, 8, 9, 10, 11 or 12 of the Periodic Table of the Elements, p representing the valency of said metal and being able to take the value 1, 2 or 3,

- the compound A comprises at least one –C-G-C- sequence, where G represents an atom of Group 16 of the Periodic Table of the Elements, and G preferably represents the oxygen atom or the sulfur atom,
- the compound A does not comprise a carboxyl –C(=O)-OH or -C(=O)-O^- group, and
- the molar mass of the compound A is between 90 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, preferably between 200 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, limits included, and

c) optionally a solvent or a mixture of two or more solvents, in which:

- the component a) represents from 40% to 99.5% by weight, preferably from 55% to 85% by weight and more preferably from 55% to 75% by weight, limits included, with respect to the total weight of the components a) + b) + c),
- the component b) represents from 0.5% to 30% by weight and preferably from 2% to 20% by weight, limits included, with respect to the total weight of the components a) + b) + c),
- the component c) represents from 0% to 59.5% by weight, preferably from 20% to 59% by weight and more preferably from 30% to 59% by weight, limits included, with respect to the total weight of the components a) + b) + c),

in which the component a) is chosen from amines, ethoxylated amines, amino acids, imidazolines, and also their derivatives and their salts, fatty amines, fatty amine derivatives (amino acids, amino alcohols, amidoamines, quaternary ammoniums, pyridines and derivatives, quinolines and derivatives), imidazolines substituted by at least one fatty chain, alkoxylated imidazolines, ester amines, ether amines, alkylamines, oxyalkylated amines, betaines and alkylbetaines, and also the N-oxide derivatives of the abovementioned amines.

[0019b] In another aspect, there is provided the use of at least one corrosion-inhibiting formulation as defined above in the treatment, advantageously the preventive treatment, of the corrosion of metal pipes corrodible in contact with corrosive media in the oil, gas and mining industry.

[0020] Thus, the anti-corrosion formulations according to the present disclosure comprise at least one specific sulfur-based compound which can advantageously replace the sulfur-based compounds commonly used in such corrosion-inhibiting compositions and which are well known from the prior art. These specific sulfur-based compounds confer a better stability on storage on said formulations, the amount of H_2S released during storage is lowered and the corrosion-inhibiting performances are at least of the same level, indeed even of a higher level, in comparison with the corrosion-inhibiting formulations used today but which have proven to be unstable on storage.

[0021] Thus, and according to a first aspect, the present invention relates to the use, as additive in a corrosion-inhibiting formulation in order to improve both the anti-corrosion effectiveness and the stability on storage thereof, of at least one compound A exhibiting at least the following characteristics:

- the compound A carries at least one –SH or $-S^-M^{p+}$ group, where M^{p+} represents a cation of an alkali metal (Group 1) or of an alkaline earth metal (Group 2), or of a metal of Groups 7, 8, 9, 10, 11 or 12 of the Periodic Table of the Elements, p representing the valency of said metal and being able to take the value 1, 2 or 3,
- the compound A comprises at least one –C-G-C- sequence, where G represents an atom of Group 16 of the Periodic Table of the Elements, and G preferably represents the oxygen atom or the sulfur atom,
- the compound A does not comprise a carboxyl –C(=O)-OH or $-C(=O)-O^-$ group, and
- the molar mass of the compound A is between 90 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, preferably between 200 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, limits included.

[0022] According to a preferred aspect, M^{p+} represents an alkali metal cation chosen from sodium or potassium and in this case p represents 1, or an alkaline

CLAIMS

1. A corrosion-inhibiting formulation comprising:

a) at least one amine or amine derivative,

b) at least one compound A exhibiting at least the following characteristics:

- the compound A carries at least one –SH or $-S^-M^{p+}$ group, where M^{p+} represents a cation of an alkali metal (Group 1) or of an alkaline earth metal (Group 2), or of a metal of Groups 7, 8, 9, 10, 11 or 12 of the Periodic Table of the Elements, p representing the valency of said metal and being able to take the value 1, 2 or 3,
- the compound A comprises at least one –C-G-C- sequence, where G represents an atom of Group 16 of the Periodic Table of the Elements, and G preferably represents the oxygen atom or the sulfur atom,
- the compound A does not comprise a carboxyl –C(=O)-OH or $-C(=O)-O^-$ group, and
- the molar mass of the compound A is between 90 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, preferably between 200 $g.mol^{-1}$ and 1000 $g.mol^{-1}$, limits included, and

c) optionally a solvent or a mixture of two or more solvents, in which:

- the component a) represents from 40% to 99.5% by weight, preferably from 55% to 85% by weight and more preferably from 55% to 75% by weight, limits included, with respect to the total weight of the components a) + b) + c),
- the component b) represents from 0.5% to 30% by weight and preferably from 2% to 20% by weight, limits included, with respect to the total weight of the components a) + b) + c),
- the component c) represents from 0% to 59.5% by weight, preferably from 20% to 59% by weight and more preferably from 30% to 59% by weight, limits included, with respect to the total weight of the components a) + b) + c),
- in which the component a) is chosen from amines, ethoxylated amines, amino acids, imidazolines, and also their derivatives and their salts, fatty amines, fatty amine derivatives (amino acids, amino alcohols, amidoamines, quaternary ammoniums, pyridines and derivatives, quinolines and derivatives), imidazolines substituted by at least one fatty chain, alkoxylated imidazolines, ester amines, ether amines, alkylamines, oxyalkylated amines, betaines and alkylbetaines, and also the N-oxide derivatives of the abovementioned amines.

2. The formulation as claimed in claim 1, in which the component b) is chosen from 2-mercaptoethyl ether, 2,2'-(ethylenedioxy)diethanethiol, 1,11-dimercapto-3,6,9-trioxaundecane, the compound of formula $C_2H_5C[CH_2OCH_2CH(OH)CH_2SH]_3$, and sodium mercaptobenzothiazolate.

3. The formulation as claimed in claims 1 or 2, in which the component c) is chosen from water, organic solvents and the mixtures of water with at least one organic solvent.

4. The formulation as claimed in any one of claims 1 to 3, additionally comprising one or more other inhibitors intended to inhibit other types of corrosion encountered in the field of the extraction of hydrocarbons or alternatively intended to inhibit the formation of hydrates or their agglomeration, to avoid or prevent the appearance of scale, to avoid or prevent the growth of bacteria or to promote flow.

5. The use of at least one corrosion-inhibiting formulation as claimed in any one of claims 1 to 4 in the treatment, advantageously the preventive treatment, of the corrosion of metal pipes corrodible in contact with corrosive media in the oil, gas and mining industry.