a) providing a particulate material comprising at least one calcium carbonate having a weight median particle size d_{50} value of 0.01 to 50.0 μm as defined herein,

b) providing at least one polysaccharide comprising glucose units and/or galactose units and/or mannose units as defined herein,

c) providing at least one cross-linker suitable for cross-linking the at least one polysaccharide of step b)

d) providing a proppant having a Mohs hardness of at least 2.5,

e) mixing the particulate material of step a) with the at least one polysaccharide of step b) for forming a mixture of the particulate material and the at least one polysaccharide,

f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and

g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, preferably an oil well or gas well, at a flow rate from 150 to 300 l/s and a pressure rate from ~~500 to 1500 bar~~, for hydraulically fracturing the formation.

It is preferred that the proppant is selected from the group comprising sand, glass, ceramics, like lightweight ceramics, alumina, mica, corundum, bauxite, mullite, rutile, barite, calcium oxide and mixtures thereof. It is further preferred that the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent, preferably a gel breaking agent selected from enzymes, oxidants and mixtures thereof.

If the gel breaking agent is an oxidant, the gel breaking agent is selected from the group comprising ammonium perborate, sodium perborate, ammonium persulfate, sodium persulfate, calcium peroxide, magnesium oxide and mixtures thereof.

fracturing of a subterranean formation is provided, the method comprises at least the steps of:

a) providing a particulate material comprising at least one calcium carbonate having a weight median particle size d_{50} value of 0.01 to 50.0 μm as defined above,
b) providing at least one polysaccharide comprising glucose units and/or galactose units and/or mannose units as defined above,
c) providing at least one cross-linker suitable for cross-linking the at least one polysaccharide of step b) as defined above,
d) providing a proppant having a Mohs hardness of at least 2.5,
e) mixing the particulate material of step a) with the at least one polysaccharide of step b) for forming a mixture of the particulate material and the at least one polysaccharide,
f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and
g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, at a flow rate from 150 to 300 l/s and a pressure rate from ~~500 to 1500 bar~~, for hydraulically fracturing the formation.

With regard to the particulate material provided in step a), the at least one polysaccharide provided in step b) and the at least one cross-linker of step c), it is referred to the definitions set out above when defining the instant composition and its single components.

The expression "hydraulically fracturing of a subterranean formation" refers to a method utilized for increasing the production of a well or for restoring the productivity of a non-productive well and is well known to the skilled person. This method typically includes injecting or pumping of a hydraulic fracturing fluid under

obtained in step e) with the at least one cross-linker of step c), the at least one gel delaying agent and the proppant of step d) forms the hydraulic fracturing fluid.

According to step g) of the instant process, the hydraulic fracturing fluid is injected into a subterranean formation, at a flow rate from 150 to 300 l/s and pressure rate from ~~500 to 1 500 bar~~, for hydraulically fracturing the formation.

In the method of the present invention, the hydraulic fracturing fluid can be injected into a subterranean formation by any conventional injecting means known to the skilled person. Typically, fracturing equipment operates over a range of pressures and injections rates such as from ~~500 to 1 500 bar~~, and preferably from ~~500 to 1 200 bar~~ and 150 l/s to 300 l/s and preferably from 150 to 250 l/s. The skilled man thus will adapt the injecting conditions (such as the flow rate and the pressure rate) according to his process equipment and the subterranean formation to be treated.

It is appreciated that the subterranean formation to be treated can be any subterranean formation suitable for hydraulic fracturing. For example, the subterranean formation is an oil well or gas well.

In one embodiment of the present invention, the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent. The at least one gel breaking agent can be used for degrading the viscous hydraulic fracturing fluid and assists in the backflow of the hydraulic fracturing fluid once the hydraulic fracturing has been completed.

The hydraulic fracturing fluid can be contacted with any gel breaking agent which is suitable for degrading the cross-linked at least one polysaccharide.

In one embodiment of the present invention, the gel breaking agent is selected from enzymes, oxidants and mixtures thereof. For example, if the gel breaking agent is an

7. The composition of any one of claims 1 to 3, wherein the at least one polysaccharide comprises galactose units and further units selected from arabinose units, rhamnose units, glucoronic acid units and mixtures thereof, preferably the at least one polysaccharide comprises galactose units, arabinose units, rhamnose units and glucoronic acid units.

8. The composition of any one of the preceding claims, wherein the at least one cross-linker is selected from the group comprising sodium tetraborate, a zirconium compound and mixtures thereof, preferably the at least one cross-linker is selected from the group comprising ammonium zirconium carbonate, potassium zirconium carbonate, zirconium lactate, zirconium glycolate, zirconium lactate triethanolamine, potassium pyroantimonate, potassium antimony tartrate, fused potassium antimony tartrate, antimony oxalate, antimony tartrate, and antimony ammonium fluoride and mixtures thereof.

9. The composition of any one of the preceding claims, wherein the composition further comprises at least one gel delaying agent, preferably a gel delaying agent selected from mono-, di- tri- or polyalcohols, alcohol amines, ~~acidsand~~ mixtures thereof.

10. The composition of any one of the preceding claims, wherein the composition has a pH in the range of 5 to 12, preferably in the range of 6 to 11.

11. A method of preparing a composition having a gel strength of from 0.01 to 10.0 N according to any one of claims 1 to 10, the method comprising at least the steps of:

a) providing a particulate material comprising at least one calcium carbonate as defined in any one of claims 1 to 3 in an amount of 1.0 to 60.0 wt.-%, based on the total weight of the composition;

f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and

g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, preferably an oil well or gas well, at a flow rate from 150 to 300 l/s and a pressure rate from ~~500 to 1 500 bar~~, for hydraulically fracturing the formation.

15. The method of claim 14, wherein the proppant is selected from the group comprising sand, glass, ceramics, like lightweight ceramics, alumina, mica, corundum, bauxite, mullite, rutile, barite, calcium oxide and mixtures thereof.

16. The method of claim 14 or 15, wherein the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent, preferably a gel breaking agent selected from enzymes, oxidants and mixtures thereof.

17. A hydraulic fracturing fluid comprising the composition as defined in any one of claims 1 to 10 and a proppant having a Mohs hardness of at least 2.5, preferably the proppant is selected from the group comprising natural proppants, like mineral proppants, synthetic proppants, silica proppants, ceramic proppants, metallic proppants and mixtures thereof.

18. Use of a composition according to any one of claims 1 to 10 for hydraulic fracturing of a subterranean formation, preferably an oil well or gas well.

19. Use of a composition according to any one of claims 1 to 10 for the preparation of a hydraulic fracturing fluid, comprising the composition according to any one of claims 1 to 10 and a proppant having a Mohs hardness of at least 2.5, preferably the proppant is selected from the group

a) providing a particulate material comprising at least one calcium carbonate having a weight median particle size d_{50} value of 0.01 to 50.0 µm as defined herein,

b) providing at least one polysaccharide comprising glucose units and/or galactose units and/or mannose units as defined herein,

c) providing at least one cross-linker suitable for cross-linking the at least one polysaccharide of step b)

d) providing a proppant having a Mohs hardness of at least 2.5,

e) mixing the particulate material of step a) with the at least one polysaccharide of step b) for forming a mixture of the particulate material and the at least one polysaccharide,

f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and

g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, preferably an oil well or gas well, at a flow rate from 150 to 300 l/s and a pressure rate from 50 to 150 MPa (500 to 1 500 bar), for hydraulically fracturing the formation.

It is preferred that the proppant is selected from the group comprising sand, glass, ceramics, like lightweight ceramics, alumina, mica, corundum, bauxite, mullite, rutile, barite, calcium oxide and mixtures thereof. It is further preferred that the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent, preferably a gel breaking agent selected from enzymes, oxidants and mixtures thereof.

If the gel breaking agent is an oxidant, the gel breaking agent is selected from the group comprising ammonium perborate, sodium perborate, ammonium persulfate, sodium persulfate, calcium peroxide, magnesium oxide and mixtures thereof.

fracturing of a subterranean formation is provided, the method comprises at least the steps of:

a) providing a particulate material comprising at least one calcium carbonate having a weight median particle size d_{50} value of 0.01 to 50.0 µm as defined above,
b) providing at least one polysaccharide comprising glucose units and/or galactose units and/or mannose units as defined above,
c) providing at least one cross-linker suitable for cross-linking the at least one polysaccharide of step b) as defined above,
d) providing a proppant having a Mohs hardness of at least 2.5,
e) mixing the particulate material of step a) with the at least one polysaccharide of step b) for forming a mixture of the particulate material and the at least one polysaccharide,
f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and
g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, at a flow rate from 150 to 300 l/s and a pressure rate from 50 to 150 MPa (500 to 1 500 bar), for hydraulically fracturing the formation.

With regard to the particulate material provided in step a), the at least one polysaccharide provided in step b) and the at least one cross-linker of step c), it is referred to the definitions set out above when defining the instant composition and its single components.

The expression "hydraulically fracturing of a subterranean formation" refers to a method utilized for increasing the production of a well or for restoring the productivity of a non-productive well and is well known to the skilled person. This method typically includes injecting or pumping of a hydraulic fracturing fluid under

obtained in step e) with the at least one cross-linker of step c), the at least one gel delaying agent and the proppant of step d) forms the hydraulic fracturing fluid.

According to step g) of the instant process, the hydraulic fracturing fluid is injected into a subterranean formation, at a flow rate from 150 to 300 l/s and pressure rate from 50 to 150 MPa (500 to 1 500 bar), for hydraulically fracturing the formation.

In the method of the present invention, the hydraulic fracturing fluid can be injected into a subterranean formation by any conventional injecting means known to the skilled person. Typically, fracturing equipment operates over a range of pressures and injections rates such as from 50 to 150 MPa (500 to 1 500 bar), and preferably from 50 to 120 MPa (500 to 1 200 bar), and 150 l/s to 300 l/s and preferably from 150 to 250 l/s. The skilled man thus will adapt the injecting conditions (such as the flow rate and the pressure rate) according to his process equipment and the subterranean formation to be treated.

It is appreciated that the subterranean formation to be treated can be any subterranean formation suitable for hydraulic fracturing. For example, the subterranean formation is an oil well or gas well.

In one embodiment of the present invention, the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent. The at least one gel breaking agent can be used for degrading the viscous hydraulic fracturing fluid and assists in the backflow of the hydraulic fracturing fluid once the hydraulic fracturing has been completed.

The hydraulic fracturing fluid can be contacted with any gel breaking agent which is suitable for degrading the cross-linked at least one polysaccharide.

In one embodiment of the present invention, the gel breaking agent is selected from enzymes, oxidants and mixtures thereof. For example, if the gel breaking agent is an

7. The composition of any one of claims 1 to 3, wherein the at least one polysaccharide comprises galactose units and further units selected from arabinose units, rhamnose units, glucoronic acid units and mixtures thereof, preferably the at least one polysaccharide comprises galactose units, arabinose units, rhamnose units and glucoronic acid units.

8. The composition of any one of the preceding claims, wherein the at least one cross-linker is selected from the group comprising sodium tetraborate, a zirconium compound and mixtures thereof, preferably the at least one cross-linker is selected from the group comprising ammonium zirconium carbonate, potassium zirconium carbonate, zirconium lactate, zirconium glycolate, zirconium lactate triethanolamine, potassium pyroantimonate, potassium antimony tartrate, fused potassium antimony tartrate, antimony oxalate, antimony tartrate, and antimony ammonium fluoride and mixtures thereof.

9. The composition of any one of the preceding claims, wherein the composition further comprises at least one gel delaying agent, preferably a gel delaying agent selected from mono-, di- tri- or polyalcohols, alcohol amines, acids and mixtures thereof.

10. The composition of any one of the preceding claims, wherein the composition has a pH in the range of 5 to 12, preferably in the range of 6 to 11.

11. A method of preparing a composition having a gel strength of from 0.01 to 10.0 N according to any one of claims 1 to 10, the method comprising at least the steps of:

a) providing a particulate material comprising at least one calcium carbonate as defined in any one of claims 1 to 3 in an amount of 1.0 to 60.0 wt.-%, based on the total weight of the composition;

f) mixing the mixture obtained in step e) with the at least one cross-linker of step c) and the proppant of step d) for forming a hydraulic fracturing fluid, and

g) injecting the hydraulic fracturing fluid formed in step f) into a subterranean formation, preferably an oil well or gas well, at a flow rate from 150 to 300 l/s and a pressure rate from 50 to 150 MPa (500 to 1 500 bar), for hydraulically fracturing the formation.

15. The method of claim 14, wherein the proppant is selected from the group comprising sand, glass, ceramics, like lightweight ceramics, alumina, mica, corundum, bauxite, mullite, rutile, barite, calcium oxide and mixtures thereof.

16. The method of claim 14 or 15, wherein the method further comprises step h) of contacting the hydraulic fracturing fluid in the subterranean formation with at least one gel breaking agent, preferably a gel breaking agent selected from enzymes, oxidants and mixtures thereof.

17. A hydraulic fracturing fluid comprising the composition as defined in any one of claims 1 to 10 and a proppant having a Mohs hardness of at least 2.5, preferably the proppant is selected from the group comprising natural proppants, like mineral proppants, synthetic proppants, silica proppants, ceramic proppants, metallic proppants and mixtures thereof.

18. Use of a composition according to any one of claims 1 to 10 for hydraulic fracturing of a subterranean formation, preferably an oil well or gas well.

19. Use of a composition according to any one of claims 1 to 10 for the preparation of a hydraulic fracturing fluid, comprising the composition according to any one of claims 1 to 10 and a proppant having a Mohs hardness of at least 2.5, preferably the proppant is selected from the group