CLAIMS

1. Method for conditioning wet concrete, the method comprising:
(i) agitating the wet concrete in a revolving-drum concrete mixer thereby bringing changing portions of the wet concrete to a free surface of the wet concrete inside the mixer, and
(ii) cooling the agitated wet concrete in the concrete mixer by supplying nitrogen in liquid form to the mixer so that the supplied nitrogen contacts the wet concrete at its free surface and cools the wet concrete,
characterized in that the agitated wet concrete is cooled and partially carbonated by supplying liquid and/or solid carbon dioxide to the concrete mixer simultaneously with the nitrogen so that both the supplied nitrogen and the supplied carbon dioxide contact the free surface of the wet concrete, the carbon dioxide being preferably solid carbon dioxide.

2. Method according to claim 1, whereby the liquid and/or solid carbon dioxide is dispersed in the liquid nitrogen before the liquid nitrogen is supplied to the concrete mixer.

3. Method according to claim 1, whereby (a) the nitrogen and (b) the liquid and/or solid carbon dioxide are supplied to the concrete mixer separately.

4. Method according to claim 3, whereby the liquid nitrogen is supplied to a nitrogen injector, the nitrogen injector injecting said nitrogen into the concrete mixer in one or more nitrogen streams which contact the free surface and whereby the liquid and/or solid carbon dioxide is supplied to the mixer and dispersed in at least in at least one of the one or more injected nitrogen streams, the nitrogen being preferably injected into the concrete mixer in a single nitrogen stream.

5. Method according to claim 4, whereby the one or more carbon-dioxide streams or at least one of the one or more carbon-dioxide streams are/is injected into the concrete mixer in contact with at least one of the one or more nitrogen streams.

6. Method according to any one of the preceding claims, whereby the wet concrete is cooled and partially carbonated:

- before transport of the wet concrete,
- between two transport stages of the wet concrete, or

- at a location where the wet concrete is subsequently cast to form a set concrete product.

7. Process for conditioning wet concrete, whereby during part of the process the wet concrete is cooled and partially carbonated by means of the method according to any one of the preceding claims and whereby during a different part of the process the wet concrete is cooled by supplying nitrogen in liquid form to the concrete mixer without carbon dioxide being supplied to the concrete mixer.

8. Installation for conditioning wet concrete, comprising:

- a revolving-drum concrete mixer for agitating the wet concrete, the concrete mixer having a revolution axis A-A and presenting a mouth at one end of the axis A-A,
- equipment for supplying a fluid to the concrete mixer through the mouth in a controlled amount and/or at a controlled flow-rate, said equipment including a source of the fluid to be supplied to the concrete mixer;

characterized in that the source is a source of liquid nitrogen containing liquid and/or solid carbon dioxide dispersed therein.

9. Installation according to claim 8, whereby the equipment comprises an injector for injecting the fluid in the controlled amount and/or at the controlled flow-rate into the concrete mixer in one or more streams, the injector being fluidly connected to the source by means of a conduit.

10. Installation for conditioning wet concrete, comprising:

- a revolving-drum concrete mixer for agitating the wet concrete, the concrete mixer having a revolution axis A-A and presenting a mouth at one end of the axis A-A,
- equipment for introducing a fluid in a controlled amount and/or at a controlled flow rate into the concrete mixer via the mouth, the equipment comprising a source of liquid nitrogen and an injector for injecting the liquid nitrogen in the controlled amount and/or at the controlled flow-rate into the concrete mixer in one or more streams, the injector being fluidly connected to the source of liquid nitrogen by means of a nitrogen conduit,

characterized in that:

- the equipment further comprises a source of liquid or particulate solid carbon dioxide, which is fluidly connected to the nitrogen conduit by means of a connector adapted to introduce

the liquid and/or solid carbon dioxide into the nitrogen conduit in a controlled amount and/or at a controlled flow rate into the nitrogen conduit upstream of the injector.

11. Installation for conditioning wet concrete, comprising:

- a revolving-drum concrete mixer for agitating the wet concrete, the concrete mixer having a revolution axis A-A and presenting a mouth at one end of the axis A-A,
- equipment for introducing fluid into the concrete mixer via the mouth, the equipment comprising a source of liquid nitrogen and a nitrogen injector for injecting the liquid nitrogen in a controlled amount and/or at a controlled flow-rate into the concrete mixer in one or more streams, the nitrogen injector being fluidly connected to the source of liquid nitrogen by means of a nitrogen conduit,

characterized in that:

- the equipment further comprises a source of liquid and/or particulate solid carbon dioxide and a carbon-dioxide injector for injecting liquid and/or particulate solid carbon dioxide in a controlled amount and/or at a controlled flow-rate into the concrete mixer in one or more streams, the carbon-dioxide injector being fluidly connected to the source of the liquid and/or particulate solid carbon dioxide by means of a carbon-dioxide conduit, the nitrogen injector and the carbon-dioxide injector being positioned with respect to one another so that, inside the concrete mixer, the carbon dioxide injected by the carbon-dioxide injector is contacted by and dispersed in at least one of the one or more nitrogen streams injected by the nitrogen injector.

12. Installation for conditioning wet concrete, comprising:

- a revolving-drum concrete mixer for agitating the wet concrete, the concrete mixer having a revolution axis A-A and presenting a mouth at one end of the axis A-A,
- equipment for introducing fluid into the concrete mixer via the mouth, the equipment comprising a nitrogen injector for injecting liquid nitrogen in a controlled amount and/or at a controlled flow-rate into the concrete mixer in one or more streams, the nitrogen injector being fluidly connected to a nitrogen source of the liquid nitrogen by means of a nitrogen conduit,

characterized in that:

- the equipment further comprises a carbon-dioxide injector for injecting liquid and/or particulate solid carbon dioxide in a controlled amount and/or at a controlled flow-rate into the concrete mixer in one or more streams, the carbon-dioxide injector being fluidly connected to a source of the liquid and/or particulate solid carbon dioxide by means of a carbon-dioxide conduit, the nitrogen injector and the carbon-dioxide injector being positioned with respect to

one another so that the carbon dioxide is injected into the concrete mixer in contact with the nitrogen stream or with at least one of the nitrogen streams one another and so that the injected carbon dioxide is dispersed in the nitrogen stream or in the at least one of the nitrogen streams.

13. Installation for injecting media into a revolving-drum concrete mixer for agitating wet concrete, the installation comprising:

- an upwardly extending support structure,
- a nitrogen injector mounted on said support structure above ground level,
- a first source of liquid nitrogen in which liquid and/or solid carbon dioxide is dispersed, said first source being fluidly connected to the nitrogen injector, and optionally
- a second source of liquid nitrogen in which no liquid or solid carbon dioxide has been dispersed, said second source being fluidly connected to the nitrogen injector,
- a control unit adapted to control:
- an amount and/or a flow rate of liquid nitrogen in which liquid or solid carbon dioxide is dispersed flowing form the first source to the nitrogen injector, and optionally
- an amount and/or a flow rate of liquid nitrogen flowing from the second source to the nitrogen injector.

14. Installation for injecting media into a revolving-drum concrete mixer for agitating wet concrete, comprising:

- an upwardly extending support structure,
- a nitrogen injector mounted on said support structure above ground level,
- a first source of liquid nitrogen in which no liquid or solid carbon dioxide has been dispersed, said first source being fluidly connected to the nitrogen injector by means of a nitrogen conduit,
- a second source of liquid and/or particulate solid carbon dioxide, said second source being fluidly connected to the nitrogen conduit by means of a connector,
- a control unit adapted to control:
- a first amount and/or a first flow rate of liquid nitrogen form the first source flowing through the nitrogen conduit to the nitrogen injector, and
- a second amount and/or a second flow rate of liquid or particulate solid carbon dioxide from the second source flowing into the nitrogen conduit via the connector.

15. Installation for injecting media into a concrete mixer, comprising:

- an upwardly extending support structure,
- an injector unit mounted on said support structure above ground level, said injector unit comprising:
- a nitrogen injector and
- a carbon-dioxide injector,
- a first source of liquid nitrogen in which no liquid or solid carbon dioxide has been dispersed, said first source being fluidly connected to the nitrogen injector by means of a first conduit,
- a second source of liquid and/or particulate solid carbon dioxide, said second source being fluidly connected to the carbon-dioxide injector by means of a second conduit,
- a control unit adapted to control:
- a first amount and/or a first flow rate of liquid nitrogen flowing form the first source to the nitrogen injector via the first conduit, and
- a second amount and/or a second flow rate of liquid and/or particulate solid carbon dioxide flowing from the second source to the carbon-dioxide injector via the second conduit.