[0011a] In one aspect, the present disclosure refers to a device for introducing an odorizing agent into a cryogenic fluid in a liquid state, said device comprising:

1) a feed zone, which is fed with odorizing agent in liquid or gaseous form, preferably liquid form,

2) a buffer zone in which the liquid or gaseous odorizing agent is brought to a temperature of about the temperature of the cryogenic fluid, and

3) a contact zone, wherein said odorizing agent in a solid form comes into contact with said cryogenic fluid to be odorized;

wherein the odorizing agent arrives in the buffer zone by means of at least one or more elements chosen from a cannula, a nozzle, an injector or any other means for drip or spray feeding.

CLAIMS

1. A device for introducing an odorizing agent into a cryogenic fluid in a liquid state, said device comprising:

1) a feed zone, which is fed with odorizing agent in liquid or gaseous form, preferably liquid form,

2) a buffer zone in which the liquid or gaseous odorizing agent is brought to a temperature of about the temperature of the cryogenic fluid, and

3) a contact zone, wherein said odorizing agent in a solid form comes into contact with said cryogenic fluid to be odorized;

wherein the odorizing agent arrives in the buffer zone by means of at least one or more elements chosen from a cannula, a nozzle, an injector or any other means for drip or spray feeding.

2. The device according to claim 1, wherein in the contact zone, the odorizing agent is in the form of droplets of solidified odorizing agent or else in the form of a solidified spray.

3. The device according to claim 1, wherein the odorizing agent arrives in the buffer zone, by entrainment of said odorizing agent with a carrier gas, or a portion of the cryogenic fluid to be odorized, said fluid having been previously vaporized.

4. The device according to claim 1, wherein the feed zone is equipped with a means for maintaining the temperature of the odorizing agent above its crystallization temperature.

5. The device according to any of the previous claims, wherein the odorizing agent is selected from methyl ethyl sulfide, dimethyl sulfide, diethyl sulfide, dimethyl disulfide, diethyl disulfide, methyl mercaptan, ethyl mercaptan, *tert*-butyl mercaptan, *sec*-butyl mercaptan, *iso*-propyl mercaptan, n-propyl mercaptan, cyclohexyl mercaptan, tetrahydrothiophene, methyl acrylate, ethyl acrylate, methyl methacrylate, ethyl methacrylate, methylethylpyrazine, dimethyl selenide and dimethyl diselenide.

6. The device according to any of the previous claims, wherein the odorizing agent is used pure, mixed or diluted with other compounds compatible with the cryogenic fluid.

7. The device according to any of the previous claims, wherein the cryogenic fluid is liquefied natural gas.

8. The device according to any of the previous claims, wherein the odorizing agent, in a liquid or gaseous form, is fed continuously in the feed zone.

9. The device according to claim 1, wherein the flow rate of odorizing agent in the contact zone is proportional to the flow rate of the cryogenic fluid.