CLAIMS

1. A drilling mud treatment unit comprising:

- a primary duct for feeding previously coagulated drilling mud;

- an in-line flocculation system for flocculating the previously coagulated drilling mud flowing in the primary duct; and

- at least one hydrocyclone fed by the primary duct and arranged downstream from the flocculation system, the hydrocyclone having an overflow orifice for receiving a liquid product resulting from treatment of the drilling mud and an underflow orifice for receiving a solid product resulting from treatment of the drilling mud, the overflow orifice presenting an overflow diameter and the underflow orifice presenting an underflow diameter, and the underflow diameter being greater than the overflow diameter, with a ratio greater than 1.1 between the underflow diameter and the overflow diameter.

2. A treatment unit according to claim 1, wherein the primary feed duct is provided with a pump, and the in-line flocculation system includes a secondary duct for feeding flocculating agent, said secondary duct being connected to the primary duct at a junction situated downstream from the pump.

3. A treatment unit according to claim 2, wherein the in-line flocculation system comprises in-line mixer means for mixing the coagulated drilling mud and the flocculating agent, said means being provided in the primary duct downstream from the junction.

4. A treatment unit according to claim 3, wherein the mixer means comprise a static mixer.

5. A treatment unit according to claim 3 or claim 4, wherein the mixer means are arranged at a distance from

the hydrocyclone in the primary duct that is shorter than 5 m, preferably shorter than 2 m.

6. A treatment method for treating drilling mud, the method comprising at least the following succession of steps:

- feeding a primary feed duct with coagulated drilling mud;
- flocculating said coagulated drilling mud in-line while it is flowing in said primary duct;
- introducing the coagulated and flocculated drilling mud into a hydrocyclone having an overflow orifice presenting an overflow diameter, and an underflow orifice presenting an underflow diameter, the underflow diameter being greater than the overflow diameter, with a ratio greater than 1.1 between the underflow diameter and the overflow diameter; and
- discharging a solid product resulting from treatment of the drilling mud via the underflow orifice, and a liquid product resulting from treatment of the drilling mud via an overflow orifice.

7. A treatment method according to claim 6, wherein said drilling mud includes a stabilizing agent such as, for example, smectic clay or a hydrosoluble organic polymer.

8. A treatment method according to claim 6 or claim 7, wherein the solid product of treating the drilling mud presents dryness greater than 30%.

9. A treatment method according to any one of claims 6 to 8, wherein the liquid product of treating the drilling mud is water containing less than 600 milligrams per liter of matter in suspension.

10. A treatment method according to any one of claims 6 to 9, wherein the primary duct is fed with previously coagulated drilling mud under turbulent conditions.