CLAIMS

1. An agent for forming a solid lubricating coating film in a thread portion of oil country tubular goods, wherein

two or more types of solid lubricants dispersed in a binder resin,

graphite is contained, as one of the two or more types of solid lubricants, in an amount of 50% or more and 90% or less of a total weight of the solid lubricants, the graphite having a scaly shape and an average particle diameter of 10.0 μm or less,

a solid lubricant made of a material selected from BN (boron nitride), MoS_2 (molybdenum disulfide) reinforced with a carbon fiber and PTFE (polytetrafluoroethylene) is further contained as other solid lubricants of the two or more types of solid lubricants,

the binder resin contains a PEEK resin having an average particle diameter of 15 μm or less as a main component, the PEEK resin being contained in an amount of 70% or more of a total weight of the binder resin, and

a ratio of total weight of the solid lubricant / total weight of the binder resin is 0.5 to 2, and a ratio of graphite weight / total coating weight is 28% to 45%.

2. The agent for forming a solid lubricating coating film according to claim 1, comprising

a solvent, wherein

a weight ratio of the solvent is 30% or more and 80% or less with respect to a weight of the sum of the total weight of the solid lubricants and the total weight of the binder resin.

3. The agent for forming a solid lubricating coating film according to claim 1 or 2, wherein

at least PTFE is contained as the other solid lubricants, and

the PTFE has an average particle diameter of 0.3 μm or more and 5 μm or less.

4. Oil country tubular goods comprising a lubricating coating film including a solid lubricating coating film, the lubricating coating film being formed in a thread portion, wherein

the solid lubricating coating film is formed by dispersing two or more types of solid lubricants in a binder resin,

graphite is contained, as one of the two or more types of solid lubricants, in an amount of 50% or more and 90% or less of a total weight of the solid lubricants, the graphite having a scaly shape and an average particle diameter of 10.0 μm or less,

a solid lubricant made of one or more materials selected from BN (boron nitride), MoS_2 (molybdenum disulfide) reinforced with a carbon fiber and PTFE (polytetrafluoroethylene) is further contained as other solid lubricants of the two or more types of solid lubricants,

the binder resin contains a PEEK resin having an average particle diameter of 15 μm or less as a main component, the PEEK resin being contained in an amount of 70% or more of a total weight of the binder resin,

a ratio of total weight of the solid lubricant/ total weight of the binder resin is 0.5 to 2, and a ratio of graphite weight/ total coating weight is 28 to 45% and

the solid lubricating coating film has a film thickness of 10 μm or more and 150 μm or less.

5. The oil country tubular goods according to claim 4, wherein

at least PTFE is contained as the other solid lubricants, and

the PTFE has an average particle diameter of 0.3 μm or more and 5 μm or less.

6. The oil country tubular goods according to claim 4 or 5, wherein

the solid lubricating coating film comprises a thread of the thread portion and is formed up to a region adjacent to the thread.

7. The oil country tubular goods according to any one of claims 4 to 6, wherein

the solid lubricating coating film has a hardness of 3H or more as pencil hardness.

8. The oil country tubular goods according to any one of claims 4 to 7, wherein

a material for the oil country tubular goods are carbon steel or low alloy steel, and

the lubricating coating film has a base layer between a tightening surface of the thread portion and the solid lubricating coating film, the base layer being formed of an electroplating film or a chemical conversion-treated film.

9. The oil country tubular goods according to any one of claims 4 to 7, wherein

a material for the oil country tubular goods are a stainless steel material, an Ni-based alloy, or a Ti alloy, and

the lubricating coating film has a base layer between a surface of the thread portion and the solid lubricating coating film, the base layer being formed of an electroplating film.

10. A threaded joint for oil country tubular goods configured to connect a box having a female thread and a pin having a male thread, wherein

at least one oil country tubular goods of the box and the pin is formed of the oil country tubular goods according to any one of claims 4 to 9 which is formed with the lubricating coating film.

11. The threaded joint for oil country tubular goods according to claim 10, wherein

a lubricating coating film including the solid lubricating coating film is formed on a tightening surface of a thread portion of one component of the box and the pin, and

a film softer than the solid lubricating coating film is formed on a tightening surface of a thread portion of the other component of the box and the pin.

12. The threaded joint for oil country tubular goods according to claim 11, wherein the softer film has a film hardness of 4B or less as pencil hardness.

13. A method for manufacturing the oil country tubular goods according to any one of claims 4 to 9, the method comprising:

using the agent according to any one of claims 1 to 3;

performing a film formation step of applying the agent to form a solid lubricating coating film having a film thickness of 50 μm or less repeatedly a plurality of times with a temporary drying step interposed between the film formation steps until a target total film thickness is attained;

performing a main drying step after the last film formation step,

the main drying step being performed by firing, infrared irradiation, ultraviolet irradiation, or by a drying means with hot air, or by a means of leaving in the air or natural drying; and

adjusting a total film thickness of the solid lubricating coating film to 10 μm or more and 150 μm or less.