WHAT IS CLAIMED IS:

1. A coated pipe, comprising:

a pipe; and

a coating layer provided on an inner surface of the pipe,

wherein the coating layer is an alloy layer of a material different from a material of the pipe, the coating layer comprises iron, chromium, molybdenum, carbon, boron and additional components, and the coating layer further contains an amorphous phase in a proportion of equal to or greater than 90%,

wherein the thickness of the coating layer is 0.05 to 0.3 mm, and

wherein the additional components comprise at least one component selected from the group consisting of tungsten, cobalt, yttrium, manganese, silicon, aluminum, niobium, zirconium, phosphorus, nickel and scandium, and

each of the components is contained in an amount of equal to or less than 0.9 parts by weight per 100 parts by weight of iron.

2. The coated pipe of claim 1, wherein the coating layer is a thermal sprayed coating layer formed by a thermal spraying process in which an alloy or metal powder is melted and sprayed.

3. The coated pipe of claim 2, wherein when a thickness of the pipe is t1 and a thickness of the coating layer is t2, a relationship of $t1*0.05 \leq t2 \leq t1*0.3$ is fulfilled.

4. The coated pipe of claim 3, wherein the pipe is manufactured by forming a plate on which the coating layer is formed and seaming opposite ends of the plate.

5. The coated pipe of claim 4, wherein the coating layer provided on the inner surface is made of an Fe-based amorphous alloy.

6. The coated pipe of claim 5, wherein the Fe-based amorphous alloy is made of an Fe-based amorphous alloy powder containing chromium in an amount of 25.4 to 55.3 parts by weight and molybdenum in an amount of 35.6 to 84.2 parts by weight, per 100 parts by weight of Iron.

7. The coated pipe of claim 5, wherein the coating layer is formed by thermal spraying using the Fe-based amorphous alloy powder.

8. The coated pipe of claim 6, wherein the amorphous phase is contained in the alloy powder in a proportion of 90 to 100% by volume.

9. The coated pipe of claim 8, wherein when the coating layer is formed by the thermal spraying process using the alloy powder, a proportion of the amorphous phase of the coating layer is 90 to 100% by volume.

10. The coated pipe of claim 8, wherein a Vickers hardness of the coating layer is 700 to 1,200 Hv (0.2).

11. The coated pipe of claim 8, wherein a friction coefficient of the coating layer is 0.001 to 0.08 μ at a load of 100 N, and 0.06 to 0.12 μ at a load of 1,000 N.

12. The coated pipe of claim 11, wherein a coating density of the coating layer is 99 to 100%.

13. The coated pipe of claim 4, wherein a material of the plate is selected from the group consisting of cast iron, carbon steel, stainless steel, maraging steel, aluminum, brass, copper, carbon fiber reinforced plastic, and a mixture thereof.

14. A method of manufacturing a pipe, the method comprising:

(a) forming a thermal sprayed coating layer on a surface of a plate using an Fe-based amorphous alloy;

(b) forming the amorphous coated plate into a pipe shape such that a coating surface becomes an inner surface; and

(c) seaming opposite ends of the plate such that the plate maintains the pipe shape

wherein the thermal sprayed coating layer comprises iron, chromium, molybdenum, carbon, boron and additional components, the thermal sprayed coating layer contains an amorphous phase in a proportion of equal to or greater than 90%, and

wherein the thickness of the thermal sprayed coating layer is 0.05 to 0.3 mm,

and

wherein the additional components comprise at least one component selected from the group consisting of tungsten, cobalt,

yttrium, manganese, silicon, aluminum, niobium, zirconium, phosphorus, nickel and scandium, and

each of the components is contained in an amount of equal to or less than 0.9 parts by weight per 100 parts by weight of iron.

15. The method of claim 14, wherein the thermal sprayed coating layer contains an amorphous phase in a proportion of equal to or greater than 95%.

16. The method of claim 15, wherein the thermal spraying is performed by a method selected from the group consisting of high velocity oxygen fuel (HVOF) spraying, plasma spraying, flame spraying, and twin wire arc spraying (TWAS).

17. The method of claim 14, wherein the forming the plate into the pipe shape is a cylindrical-type method or a spiral-type method.

18. The method of claim 14, wherein the seaming the opposite ends of the plate is performed by welding or forge welding.