Claims

[Claim 1] A method of manufacturing an yttria thermal spray coating, the method comprising:

arranging a spray unit at a distance of 50 to 130 mm from a base material;

subjecting Y_2O_3 thermal spray powder to atmospheric plasma spraying to form an yttria thermal spray coating on the base material; and

supplying water at a rate of 50 to 400 ml/min together with the Y_2O_3 thermal spray powder, wherein

a water supply location corresponds to a distance of 2:8 to 8:2 between a plasma forming nozzle and the base material.

[Claim 2] The method of claim 1, wherein

in the atmospheric plasma spraying, the spray unit is arranged at a distance of 80 to 120 mm with respect to the base material.

[Claim 3] The method of claim 1, wherein

water is supplied at a rate of 200 to 350 ml/min together with the Y_2O_3 thermal spray powder.

[Claim 4] The method of claim 1, wherein

the water supply location corresponds to a distance of 3:7 to 5:5 between the plasma forming nozzle and the base material.

[Claim 5] The method of claim 1, wherein

a water supply location corresponds to 25 to 50 mm from a plasma forming nozzle.

[Claim 6] The method of claim 1, wherein

four water supply nozzles through which water is supplied are arranged at 90° intervals from each other and thus water is supplied from four directions.

[Claim 7] The method of claim 1, wherein

eight water supply nozzles through which water is supplied are arranged at 45° intervals from each other and thus water is supplied from eight directions.

[Claim 8] The method of claim 1, wherein

an orifice used in a water supply nozzle is circular in shape, and

a size of the orifice is 0.007 to 0.011 inches.

[Claim 9] The method of claim 1, wherein

an average particle size of the Y_2O_3 thermal spray powder is 5 to 60 μm.

[Claim 10] The method of claim 1, wherein

a thickness of the yttria thermal spray coating is 100 to 300 μm.

[Claim 11] An yttria thermal spray coating formed by the method of manufacturing an yttria thermal spray coating according to one of claims 1 to 10.

[Claim 12] The yttria thermal spray coating of claim 11, wherein

a colorimetric measurement value L of the yttria thermal spray coating is 85 or more.

[Claim 13] The yttria thermal spray coating of claim 11, wherein

a porosity of the yttria thermal spray coating is less than 2.6%.

[Claim 14] The yttria thermal spray coating of claim 11, wherein

a porosity of the yttria thermal spray coating is less than 1.0%.