【CLAIMS】

【Claim 1】 A method of manufacturing an yttrium-based thermal spray coating, the method comprising:

forming an yttrium-based thermal spray coating on a substrate by atmospheric plasma spraying an yttrium-based granulated powder comprising a mixture of an yttrium compound powder and silica (SiO_2) powder,

wherein the yttrium compound is any one selected from Y_2O_3, YOF, YF_3, $Y_4Al_2O_9$, $Y_3Al_5O_{12}$ and $YAlO_3$, the silica (SiO_2) is included in an amount of 0.1 to 30 wt%, a plasma generation output of the atmospheric plasma spraying is 20 to 130 kW, and the yttrium-based thermal spray coating has an L value of at least 80.0, the L value being a colorimetric measurement value obtained under plasma exposure conditions.

【Claim 2】 The method of claim 1, wherein the yttrium-based granulated powder is produced by mixing yttrium compound powder having an average diameter of 0.1 to 10 ㎛ and silica powder having an average diameter of 0.1 to 10 ㎛.

【Claim 3】 The method of claim 1, wherein the atmospheric plasma spraying uses a plasma gas comprising an inert gas flow rate of 30 to 70 NLPM.

【Claim 4】 The method of claim 1, wherein the atmospheric plasma spraying is performed with a spray unit disposed at a distance of 50 to 400 mm from the substrate, and a feed rate of a feeder is 10 to 50 g/min.

【Claim 5】 An yttrium-based thermal spray coating formed by the method of manufacturing an yttrium-based thermal spray coating according to any one of claims 1 to 4.

【Claim 6】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium-based thermal spray coating comprises a silicon (Si) element in an amount of 0.01 to 5 at%.

【Claim 7】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium compound is yttrium oxide (Y_2O_3), and the yttrium-based thermal spray coating comprises 1 to 50 wt% of a monoclinic form as a crystal structure of the yttrium oxide.

【Claim 8】 The yttrium-based thermal spray coating of claim 5, wherein a porosity of the yttrium-based thermal spray coating is less than 2%.

【Claim 9】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium-based thermal spray coating comprises

a silicon (Si) element in an amount of at least 0 at% but less than 0.1 at%, and the yttrium-based thermal spray coating has an *a* value of 1 or less and a *b* value of 1 or less as colorimetric measurement values under plasma exposure conditions, and exhibits white.

【Claim 10】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium-based thermal spray coating comprises a silicon (Si) element in an amount of 0.1 to 1.0 at%, and the yttrium-based thermal spray coating has an *a* value of 5 or less and a *b* value of 5 or less as colorimetric measurement values under plasma exposure conditions, and exhibits red.

【Claim 11】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium-based thermal spray coating comprises a silicon (Si) element in an amount of 1.0 to 5.0 at%, and the yttrium-based thermal spray coating has an *a* value of 1 or less and a *b* value of 10 or less as colorimetric measurement values under plasma exposure conditions, and exhibits yellow.

【Claim 12】 The yttrium-based thermal spray coating of claim 5, wherein the yttrium-based thermal spray coating has a main peak at an angle of at least 29.1° obtained by X-ray diffraction (XRD) analysis.