CLAIMS

1 A spray nozzle for a laser deposition apparatus, comprising:

an elongate nozzle aperture;

a powder supply chamber in fluid communication with the elongate nozzle aperture and arranged in use to supply powder to the nozzle aperture under pressure so as to cause a wide powder stream to be ejected from the nozzle aperture; and

upper and lower elongate gas apertures located above and below the elongate nozzle aperture respectively and extending substantially parallel to the elongate nozzle aperture, wherein the upper and lower elongate apertures are arranged to eject a wide gas stream above and below the wide powder stream to thereby entrain the powder.

2 A spray nozzle according to claim 1, wherein the width of the elongate nozzle aperture is substantially constant along its length.

3 A spray nozzle according to claim 1, wherein the elongate nozzle aperture comprises first and second end portions located either side of a central portion, wherein the heights of the first and second end portions are greater than that of the central portion.

4 A spray nozzle according to any preceding claim, further comprising an upper guide plate located above the upper elongate gas aperture and extending in the general direction of the flow of powder ejected from the spray nozzle when in use.

5 A spray nozzle according to any preceding claim, further comprising a lower guide plate located below the lower elongate gas aperture and extending in the general direction of the flow of powder ejected from the spray nozzle when in use.

6 A spray nozzle according to any preceding claim, wherein a wall of the powder supply chamber is provided with ribs which extend generally in the direction of flow through the powder supply chamber in use.

7 A spray nozzle according to any preceding claim, wherein the elongate nozzle aperture and upper and lower elongate gas apertures are formed in a nozzle body.

8 A laser deposition apparatus comprising a laser arranged to generate a wide laser beam and a spray nozzle in accordance with any of claims 1-7.

CLAIMS

1 A laser deposition apparatus comprising a laser (102) arranged to generate a wide laser beam (104) and a spray nozzle (10), the spray nozzle (10) comprising:

an elongate nozzle aperture (16);

a powder supply chamber (18) in fluid communication with the elongate nozzle aperture (16) and arranged in use to supply powder to the nozzle aperture (16) under pressure so as to cause a wide powder stream to be ejected from the nozzle aperture (16);

upper (26) and lower (28) elongate gas apertures located above and below the elongate nozzle aperture (16) respectively and extending substantially parallel to the elongate nozzle aperture (16), wherein the upper (26) and lower (28) elongate apertures are arranged to eject a wide gas stream above and below the wide powder stream to thereby entrain the powder; and

the elongate nozzle aperture (16) comprises first and second end portions located either side of a central portion (16b), wherein the heights of the first (16a) and second (16c) end portions are greater than that of the central portion (16b).

2 A laser deposition apparatus according to any preceding claim, further comprising an upper guide plate (34) located above the upper elongate gas aperture (26) and extending in the general direction of the flow of powder ejected from the spray nozzle (10) when in use.

3 A laser deposition apparatus according to any preceding claim, further comprising a lower guide plate (36) located below the lower elongate gas aperture (28) and extending in the general direction of the flow of powder ejected from the spray nozzle (10) when in use.

4 A laser deposition apparatus according to any preceding claim, wherein a wall of the powder supply chamber is provided with ribs which extend generally in the direction of flow through the powder supply chamber (18) in use.

5 A laser deposition apparatus according to any preceding claim, wherein the elongate nozzle aperture (16) and upper (26) and lower (28) elongate gas apertures are formed in a nozzle body (14).