CLAIMS

1. A process for upgrading of a coal product comprising the steps of:

(i) providing a purified coal composition, in which the composition is in the form of solid particles, and in which at least about 90% by volume (%vol) of the solid particles are no greater than about 500 μm in diameter; and

(ii) combining the purified coal composition with a solid coal feedstock, in order to create a combined solid-solid blend upgraded coal product.

2. A process according to Claim 1, in which the purified coal composition is formed into pellets comprised of the solid particles.

3. A process according to Claim 1 or 2, in which the purified coal composition is comprised within purified coal pellets, and in which the pellets comprise in per cent mass of the total product (%m) at most about 12%m ash, optionally less than 8%m ash, suitably less than 5%m ash.

4. A process according to Claim 1, 2 or 3, in which the pellets comprise at most about 25%m water, optionally less than 20%m of water, suitably less than 10%m of water.

5. A process according to any preceding claim, in which the pellets comprise total sulphur contents amounting to at most the native organic sulphur content plus no more than 0.5 %m of the total product of additional mineral sulphur.

6. A process according to any preceding claim, in which the pellets comprise at most about 0.05%m chlorine.

7. A process according to any preceding claim, in which the solid coal feedstock is selected from one or more of the group consisting of: coking coal; pulverised coal injection coal (PCI); thermal coal; inferior coal; and coal pulverised feed.

8. A process according to any preceding claim, in which the combined solid-solid blend comprises at most about any one of: 1%m, 5%m, 10%m, 20%m, 30%m, 40%m, 50%, 60%m, 70%m, 80%m, 90%m, 95%m and 99%m of the purified coal composition based on the total mass of the combined solid-solid blend, with the balance comprised of solid coal feedstock from single or multiple sources.

9. A process according to any preceding claim, in which the combined solid-solid blend comprises at least about 0.01%m and at most about 99%m of the purified coal composition, with the balance comprised of solid coal feedstock from a single source based on the total mass of the combined solid-solid blend.

10. A process of according to any of Claims 1 to 7, in which the combined solid-solid blend comprises at least about 0.01%m and at most about 99%m of the purified coal composition, with the balance comprised of solid coal feedstock from multiple sources based on the total mass of the combined solid-solid blend.

11. A process for upgrading of a coal product comprising the steps of:

(a) providing a first purified coal composition from a first source of coal fines, in which the composition is in the form of solid particles that are compacted into pellets, and in which at least about 90% by volume (%vol) of the solid particles are no greater than about 500 μm in diameter;

(b) providing a second purified coal composition from a second source of coal fines different from the first source, in which the second composition is in the form of solid particles that are compacted into pellets, and in which at least about 90% by volume (%vol) of the solid particles are no greater than about 500 μm in diameter; and

(c) combining the first and second compositions in order to create a combined solid-solid pelletized blended upgraded coal product.

12. A process according to any preceding claim, in which the combined solid-solid blend upgraded coal product comprises one or more of:

at least about 1%m, 2%m, 3%m or 4%m; and at most about 6%m, 7%m, 8%m or 10%m ash;

at least about 0.1%m, or 0.2%m; and at most about 0.5%m;1.5%m, 3%m, or 5%m of additional mineral sulphur above the native organic sulphur content; and

at least about 2%m, 3%m or 4%m; and at most about 9%m, 12%m, 15%m, 20% or 25%m water;

based on the total mass of the product.

13. A coal product comprising a purified coal composition in combination with a solid coal feedstock, in which the purified coal composition is in the form of particles and is further characterised in that at least 95% by volume (%v) of the purified coal composition particles are no greater than about 500 μm in diameter, and in which the coal product comprises at most about 80% by mass (%m) of purified coal composition, based on the total weight of the blended coal product.

14. A coal product according to Claim 13, in which the blended coal product comprises a purified coal composition in which typically at least 95%v, optionally at least 98%v, and suitably at least 99%v of the particles are no greater than about 250 μm in diameter.

15. A coal product according to Claim 13, in which the blended coal product comprises a purified coal composition in which typically at least 95%v, optionally at least 98%v, and suitably at least 99%v of the particles are no greater than about 100 μm in diameter.

16. A process for upgrading of a coal product comprising the steps of:

(i) providing a purified coal composition, in which the composition is in the form of solid particles, and in which at least about 95% by volume (%vol) of the solid particles are no greater than about 100 μm in diameter, and in which the composition comprises less than 5%m ash and less than 10%m of water; and

(ii) combining the purified coal composition with a solid coal feedstock, in order to create a combined solid-solid blend upgraded coal product.

17. A process according to Claim 16, in which the purified coal composition is formed into pellets comprised of the solid particles.

18. A process according to Claim 16, in which the solid coal feedstock is selected from one or more of the group consisting of: coking coal; pulverised coal injection coal (PCI); thermal coal; inferior coal; and coal pulverised feed.

19. A process according to Claim 16, in which the combined solid-solid blend comprises at most about 90%m of the purified coal composition based on the total mass of the combined solid-solid blend, with the balance comprised of solid coal feedstock from single or multiple sources.

20. A process according to Claim 16, in which the combined solid-solid blend comprises at least about 1%m of the purified coal composition, with the balance comprised of solid coal feedstock from a single source based on the total mass of the combined solid-solid blend.

CLAIMS

1. A process for upgrading of a coal product comprising the steps of:

(i) providing a purified coal composition, in which the composition is in the form of solid particles, and in which at least 95% by volume (%vol) of the solid particles are no greater than 100 µm in diameter, and in which the composition comprises less than 5%m ash and less than 10%m of water, and in which the purified coal composition is formed into pellets comprised of the solid particles; and

(ii) combining the purified coal composition with a solid coal feedstock, in order to create a combined solid-solid blend upgraded coal product.

2. A process according to Claim 1, in which the solid coal feedstock is selected from one or more of the group consisting of: coking coal; pulverised coal injection coal (PCI); thermal coal; inferior coal; and coal pulverised feed.

3. A process according to Claim 1, in which the combined solid-solid blend comprises at most 90%m of the purified coal composition based on the total mass of the combined solid-solid blend, with the balance comprised of solid coal feedstock from single or multiple sources.

4. A process according to Claim 1, in which the combined solid-solid blend comprises at least 1%m of the purified coal composition and at most 60%m of the purified coal composition, with the balance comprised of solid coal feedstock from a single source based on the total mass of the combined solid-solid blend.

5. A process according to any preceding claim, in which the pellets comprise total sulphur contents amounting to at most the native organic sulphur content plus no more than 0.5 %m of the total product of additional mineral sulphur.

6. A process according to any preceding claim, in which the pellets comprise at most 0.05%m chlorine.