CLAIMS

1. A process for the preparation of aggregates, the process comprising the steps of:

    a. blending a first carbonatable waste with a second carbonatable waste to form a blended carbonatable waste;

    b. mixing the blended carbonatable waste with water to form a damp blended carbonatable waste mixture; and

    c. carbonating the damp blended carbonatable waste in the presence of carbon dioxide;

    wherein the process further comprises mixing the blended carbonatable waste with a carbonatable binder; and wherein the first carbonatable waste is steel slag or pulverised fuel ash and/or the second carbonatable waste is steel slag or pulverised fuel ash.

2. A process according to claim 1, wherein the first carbonatable waste is air pollution control residue, cement bypass dust or biomass ash and/or wherein the second carbonatable waste is air pollution control residue, cement bypass dust or biomass ash.

3. A process according to claim 1 or 2, further comprising the step of initially sieving the first carbonatable waste and/or the second carbonatable waste before blending and optionally wherein the first carbonatable waste and/or the second carbonatable waste are initially sieved to obtain an average particle size of less than around 0.1mm before blending.

4. A process according to claim 1, wherein the carbonatable binder is cement kiln dust or ordinary portland cement.

5. A process according to claim 3 or 4, further comprising the step of initially sieving the carbonatable binder before blending with the first and second carbonatable wastes.

6. A process according to any one of claims 1 to 5, wherein the weight ratio between the first carbonatable waste and the second carbonatable waste is approximately 1:2 to approximately 2:1.

7. A process according to any one of claims 1 to 4, wherein the weight ratio between the first carbonatable waste, second carbonatable waste and carbonatable binder is approximately 1:2:2 to approximately 2:1:2.

8. A process according to any one of claims 1 to 7, wherein the blended carbonatable waste is mixed with around 15 – 30% w/w of water to form the damp blended carbonatable waste and optionally further comprising the step of mixing the damp blended carbonatable waste mixture.

9. A process according to any one of claims 1 to 8, further comprising the step of sieving the damp blended carbonatable waste mixture and optionally wherein the damp blended carbonatable waste is sieved to obtain an average particle size of less than around 0.1mm.

10. A process according to any one of claims 1 to 9, wherein the process further comprises a step of mixing the blended carbonatable waste with a third carbonatable waste and optionally wherein the third carbonatable waste is pulverised fuel ash or steel slag.

11. A process according to claim 10, wherein the blended carbonatable waste comprises any number of additional carbonatable wastes blended into the mixture.

12. A process for the preparation of aggregates, the process comprising the steps of:

    a. blending air pollution control residue with a carbonatable substance;

b. mixing the blended air pollution control residue and carbonatable substance with water to form a damp blended air pollution control residue and carbonatable substance mixture; and

c. carbonating the damp blended air pollution control residue and carbonatable substance mixture in the presence of carbon dioxide.

13. A process according to claim 12, wherein the carbonatable substance is cement bypass dust, biomass ash or ordinary portland cement.

14. A process according to claim 12 or 13, further comprising the step of initially sieving the air pollution control residue and/or the carbonatable substance before blending and optionally wherein the air pollution control residue and/or the carbonatable substance are initially sieved to obtain a particle size of less than around 0.1mm before blending.

15. A process according to any one of claims 12 to 14, wherein the weight ratio between the air pollution control residue and the carbonatable substance is approximately 1:2 to approximately 2:1.

16. A process according to any one of claims 12 to 15, wherein the blended air pollution control residue and carbonatable substance is mixed with around 15 – 30% w/w of water to form the damp blended air pollution control residue and carbonatable substance mixture and optionally the process further comprising the step of mixing the damp blended air pollution control residue and carbonatable substance mixture and/or further comprising the step of sieving the damp blended air pollution control residue and carbonatable substance mixture.

17. A process for the preparation of aggregates, the process comprising the steps of:

a. blending portland cement with a carbonatable substance;

b. mixing the blended portland cement and carbonatable substance with water to form a damp blended cement and carbonatable substance mixture; and

c. carbonating the damp blended portland cement and carbonatable substance mixture in the presence of carbon dioxide,

wherein the carbonatable substance is air pollution control residue, cement bypass dust or biomass ash.

18. A process according to claim 17, further comprising the step of initially sieving the portland cement and/or the carbonatable substance before blending and optionally wherein the portland cement and/or the carbonatable substance are initially sieved to obtain a particle size of less than around 0.1mm before blending.

19. A process according to claim 17 or 18, wherein the weight ratio between the portland cement and the carbonatable substance is approximately 1:2 to approximately 2:1.

20. A process according to any one of claims 17 to 19, wherein the blended portland cement and carbonatable substance is mixed with around 15 – 30% w/w of water to form the damp blended portland cement and carbonatable substance mixture and optionally the process further comprising the step of mixing the damp blended portland cement and carbonatable substance mixture and/or further comprising the step of sieving the damp blended portland cement and carbonatable substance mixture.