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(54) **Fuel briquettes.**

(57) The briquette comprises carbonaceous fuel particles (such as anthracite duff) bonded together by means of a binder comprising molasses in an amount of at least 5%, based on the weight of the briquette, and a minor amount of an inorganic hardening agent for the molasses, the hardening agent comprising an alkali metal phosphate and/or an alkaline earth metal sulphate.

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FUEL BRIQUETTES

The present invention is concerned with fuel briquettes and, in particular, briquettes made from carbonaceous fuel particles, such as powdered fine coal.

Coal briquettes are conventionally formed by bonding together coal particles using an organic binder; many such binders have been proposed, including molasses, which is known for use in a low temperature briquetting process. Various inorganic hardening agents have been proposed for the molasses binder, such as lime (GB 2161449), phosphoric acid (GB 230306), and calcium phosphate, ferric oxide, calcium carbonate and/or aluminium oxide (GB 2187754).

We have now devised alternative inorganic hardening agents for a molasses-based binder for use in making coal briquettes.

According to the present invention, therefore, there is provided a fuel briquette comprising carbonaceous fuel particles bonded together by means of a binder comprising molasses in an amount of at least 5% by weight, based on the weight of the briquette, and a minor amount of an inorganic hardening agent for the molasses, the hardening agent comprising an alkali metal phosphate and/or an alkaline earth metal sulphate.

The alkali metal phosphate is preferably pentasodium triphosphate (sodium orthophosphate) and the alkaline earth metal sulphate is preferably magnesium sulphate.

The inorganic hardening agent is preferably present in an amount of 0.02 to 5% by weight, based on the weight of the briquette. The molasses is preferably present in an amount of 2 to 20% by weight (such as about 5 to 15%) based on the weight of the briquette. Phosphoric acid and/or sulphuric acid may additionally be incorporated, generally in amounts not exceeding 2% by weight of the briquette.

It is preferred that the binder should be substantially free of synthetic polymer binders; the molasses used as the binder may be cane or beet molasses.

The carbonaceous fuel used in the briquettes according to the present invention may be charcoal, coke, or coal. The preferred fuel is a high rank non-caking coal, typically of the low smoke type, such as anthracite. The fuel generally has a particle size below 3mm; anthracite dust is particularly preferred. Other coals which may be used are steam coals, and heat-treated coals.

The briquettes according to the invention may be formed as agglomerates by extrusion, ringroll or roll pressing, die pressing, rotary table pressing, pelletising or the like.

The green briquettes may be allowed to harden, for example, at room temperature over one to three days, or cured at elevated temperature (e.g. at 200 to 300 °C for up to one hour). This hot curing may be carried out in an oven containing an inert or partially inert atmosphere.

In order that the present invention may be more fully understood, the following Examples (in which all percentages are by weight) are given by way of illustration only.

Example 1

Anthracite dust was dried, crushed and screened to approximately 3 mm, and then mixed with 8% molasses, 1% phosphoric acid and 0.3% magnesium sulphate. The mixture was then formed into briquettes and cured at 260 °C for one hour in an oxygen-controlled atmosphere.

The resulting briquettes were substantially non friable and had satisfactory water-resistance.

Example 2

Example 1 was repeated, except that the magnesium sulphate was replaced by the same quantity of sodium orthophosphate. Similar results were obtained.

Example 3

Example 1 was repeated, except that 0.2% of the magnesium sulphate was replaced by the same quantity of sodium orthophosphate. Similar results were obtained.

Claims

1. A fuel briquette comprising carbonaceous fuel particles bonded together by means of a binder comprising molasses in an amount of at least 5%, based on the weight of the briquette, and a minor amount of an inorganic hardening agent for the molasses, the hardening agent comprising an alkali metal phosphate and/or an alkaline earth metal sulphate.

2. A fuel briquette according to claim 1, wherein the inorganic hardening agent is present in an amount of 0.02 to 5%, based on the weight of the briquette.

3. A fuel briquette according to claim 1 or 2,

wherein the molasses is present in an amount of 2 to 20%, based on the weight of the briquette.

4. A fuel briquette according to any of claims 1 to 3, which contains phosphoric acid and/or sulphuric acid.

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5. A fuel briquette according to any of claims 1 to 4, which is substantially free of synthetic polymer binders.

6. A fuel briquette according to any of claims 1 to 5, in which the carbonaceous fuel comprises charcoal, coke, or coal.

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7. A fuel briquette according to claim 6, in which the coal is a high rank, low-smoke non-caking coal.

8. A fuel briquette according to claim 7, in which the coal comprises anthracite.

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9. A fuel briquette according to any of claims 1 to 8, in which the fuel has a particle size below 3mm.

10. A fuel briquette according to any of claims 1 to 9, which is formed by extrusion, ringroll or roll pressing, die pressing, rotary table pressing or pelletising.

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EUROPEAN SEARCH REPORT

Application Number

EP 90 30 7561

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A- 326 283 (SIMONS) * Abstract points 1,2 * ---	1-3,5-10	C 10 L 5/10
A	GB-A- 222 449 (HENRI DU BOISTESSELIN) * Claims 1,3 * ---	1-10	
A,D	GB-A- 230 306 (NAGEL) * Claims 1,3 * ---	1-10	
A,D	GB-A-2 187 754 (COAL INDUSTRY) ---		
A,D	GB-A-2 181 449 (BOBRITE) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C 10 L
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10-10-1990	Examiner MEERTENS J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			