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(54) **Jet fuel compositions**

(57) Jet fuel compositions having good low temperature operability. The jet fuel compositions comprise a jet fuel and at least one of the following additives:

- (i) a copolymer of ethylene and at least one unsaturated ester selected from: vinyl esters having at least 5 carbon atoms, alkyl (meth)acrylates, di-alkyl fumarates and di-alkyl maleates;
- (ii) a copolymer of ethylene and alkene;
- (iii) a copolymer of ethylene and less than 15 mole percent of vinyl acetate;
- (iv) a nucleator;
- (v) a wax;
- (vi) a substantially branched alkyl phenol formalde-

hyde condensate;
(vii) a comb polymer; and
(viii) a polar nitrogen compound.

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Application Number
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Place of search Munich		Date of completion of the search 21 December 2004	Examiner Keipert, O
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Place of search Munich		Date of completion of the search 21 December 2004	Examiner Keipert, 0	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 December 2004	Examiner Keipert, O
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1(part), 2, 3, 7-11, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and a vinyl ester having at least 5 carbon atoms.

2. claims: 1(part), 2, 3, 7, 8, 11, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and alkyl (meth)acrylates.

3. claims: 1(part), 2, 3, 7, 8, 11, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and di-alkyl fumarates.

4. claims: 1(part), 2, 3, 7, 8, 11, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and di-alkyl maleates.

5. claims: 1(part), 2, 3, 7, 8, 12, 13, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and alkene.

6. claims: 1(part), 2, 3, 7, 8, 14, 19-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a copolymer of ethylene and less than 15 mole percent of vinyl acetate.

7. claims: 1(part), 6-8, 15, 16, 24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a nucleator.

8. claims: 1(part), 7, 8, 17, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a wax.



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

9. claims: 1(part), 5, 7, 8, 18, 24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a substantially branched alkyl phenol formaldehyde condensate.

10. claims: 1(part), 3, 4, 7, 8, 19-22, 24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a comb polymer, wherein the comb polymer is a poly-1-alkene.

11. claims: 1(part), 3, 4, 7, 8, 19, 23, 24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a comb polymer, wherein the comb polymer is a C8-C12 dialkylfumarate-vinyl acetate copolymer.

12. claims: 1(part), 2, 4-8, 15, 16, 18-24, 25(part)

A jet fuel composition comprising a jet fuel and an additive comprising a polar nitrogen compound.

**ANNEX TO THE EUROPEAN SEARCH REPORT
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