

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. :	11/615,539	Confirmation No.	1057
Applicant(s):	Stuart N. Milligan et al.	Examiner :	Boyle, Robert C.
Filed :	12/22/2006	TC/A.U. :	1796
Docket No. :	34249US		
For:	Drag Reduction of Asphaltenic Crude Oils		

REQUEST FOR RECONSIDERATION TO OFFICE ACTION

Date: April 8, 2010

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated October 21, 2009, please reconsider the above-identified application based on the following claims, remarks, three month extension of time and request for continued examination:

Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-96. (Cancelled)

97. (New) A composition comprising:

a drag reducing polymer and a liquid hydrocarbon,

wherein the solubility parameter of the drag reducing polymer is within $4 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

98. (New) The composition of claim 97, wherein the solubility parameter of the liquid hydrocarbon is at least $17 \text{ MPa}^{1/2}$.

99. (New) The composition of claim 97, wherein the drag reducing polymer comprises at least about 25,000 repeating units.

100. (New) The composition of claim 99, wherein a plurality of the repeating units comprise a heteroatom.

101. (New) The composition of claim 100, wherein the heteroatom is selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom and/or a phosphorus atom.

102. (New) The composition of claim 97, wherein the drag reducing polymer has a weight average molecular weight of at least $1 \times 10^6 \text{ g/mol}$.

103. (New) The composition of claim 97, wherein the drag reducing polymer has a solubility parameter within $2.5 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

104. (New) The composition of claim 97, wherein the solubility parameter of the liquid hydrocarbon is determined by the following equation:

$$\delta_2 = [(\Delta H_v - RT)/V]^{1/2}$$

where ΔH_v is the energy of vaporization, R is the universal gas constant, T is the temperature in Kelvin, V is the molar volume and δ_2 is the solubility parameter.

105. (New) The composition of claim 97, wherein the solubility parameter of the drag reducing polymer is determined by the following equation:

$$\delta = (\delta_d^2 + \delta_p^2 + \delta_h^2)^{1/2}$$

where δ is the solubility parameter, $\delta_d = \sum F_{di}/V$, $\delta_h = (\sum F_{hi}/V)^{1/2}$, $\delta_p = (\sum F_{pi}^2)^{1/2}/V$.

106. (New) A composition comprising:

a drag reducing polymer and a liquid hydrocarbon,

wherein the solubility parameter of the drag reducing polymer is within $4 \text{ MPa}^{1/2}$ of the liquid hydrocarbon and the solubility parameter of the liquid hydrocarbon is at least $17 \text{ MPa}^{1/2}$.

107. (New) A method comprising:

calculating the solubility parameter of a liquid hydrocarbon; and

selecting a drag reducing polymer that is within $4 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

108. (New) The method of claim 107, wherein the solubility parameter of the liquid hydrocarbon is at least $17 \text{ MPa}^{1/2}$.

109. (New) The method of claim 107, wherein the drag reducing polymer has a solubility parameter within $2.5 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

110. (New) The method of claim 107, wherein the solubility parameter of the liquid hydrocarbon is determined by the following equation:

$$\delta_2 = [(\Delta H_v - RT)/V]^{1/2}$$

where ΔH_v is the energy of vaporization, R is the universal gas constant, T is the temperature in Kelvin, V is the molar volume and δ_2 is the solubility parameter.

111. (New) The composition of claim 107, wherein the solubility parameter of the drag reducing polymer is determined by the following equation:

$$\delta = (\delta_d^2 + \delta_p^2 + \delta_h^2)^{1/2}$$

where δ is the solubility parameter, $\delta_d = \sum F_{di}/V$, $\delta_h = (\sum F_{hi}/V)^{1/2}$, $\delta_p = (\sum F_{pi}^2)^{1/2}/V$.

112. (New) A method comprising:

calculating the solubility parameter of a liquid hydrocarbon; and

selecting a drag reducing polymer that is within $4 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

wherein the solubility parameter of the liquid hydrocarbon is determined by the following equation:

$$\delta_2 = [(\Delta H_v - RT)/V]^{1/2}$$

where ΔH_v is the energy of vaporization, R is the universal gas constant, T is the temperature in Kelvin, V is the molar volume and δ_2 is the solubility parameter and

wherein the solubility parameter of the drag reducing polymer is determined by the following equation:

$$\delta = (\delta_d^2 + \delta_p^2 + \delta_h^2)^{1/2}$$

where δ is the solubility parameter, $\delta_d = \sum F_{di}/V$, $\delta_h = (\sum F_{hi}/V)^{1/2}$, $\delta_p = (\sum F_{pi}^2)^{1/2}/V$.

113. (New) A method comprising:

introducing a drag reducing polymer into a liquid hydrocarbon;

wherein the drag reducing polymer has a solubility parameter within $4 \text{ MPa}^{1/2}$ of the solubility parameter of the liquid hydrocarbon.

114. (New) The method of claim 113, wherein the solubility parameter of the drag reducing parameter is at least about $17 \text{ MPa}^{1/2}$.

115. (New) The method of claim 113, wherein the drag reducing polymer comprises at least about 25,000 repeating units.

116. (New) The method of claim 113, wherein a plurality of the repeating units comprise a heteroatom.

117. (New) The method of claim 116, wherein the heteroatom is selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom and/or a phosphorus atom.

118. (New) The method of claim 113, wherein the drag reducing polymer has a weight average molecular weight of at least $1 \times 10^6 \text{ g/mol}$.

119. (New) The method of claim 113, wherein the drag reducing polymer has a solubility parameter within $2.5 \text{ MPa}^{1/2}$ of the liquid hydrocarbon.

120. (New) The method of claim 113, wherein the solubility parameter of the liquid hydrocarbon is determined by the following equation:

$$\delta_2 = [(\Delta H_v - RT)/V]^{1/2}$$

where ΔH_v is the energy of vaporization, R is the universal gas constant, T is the temperature in Kelvin, V is the molar volume and δ_2 is the solubility parameter.

121. (New) The method of claim 113, wherein the solubility parameter of the drag reducing polymer is determined by the following equation:

$$\delta = (\delta_d^2 + \delta_p^2 + \delta_h^2)^{1/2}$$

where δ is the solubility parameter, $\delta_d = \sum F_{di}/V$, $\delta_h = (\sum F_{hi}/V)^{1/2}$, $\delta_p = (\sum F_{pi}^2)^{1/2}/V$.

122. (New) The method of claim 113, wherein the drag reducing polymer is added to the liquid hydrocarbon in the range from about 0.1 to about 500 ppmw.

123. (New) The method of claim 113, wherein the drag reducing polymer is added to the liquid hydrocarbon in the range from about 2 to about 50 ppmw.

124. (New) A method comprising:

introducing a drag reducing polymers into a liquid hydrocarbon having a solubility parameter of at least about $17 \text{ MPa}^{1/2}$;

wherein the drag reducing polymer has a solubility parameter within $4 \text{ MPa}^{1/2}$ of the solubility parameter of the liquid hydrocarbon and the drag reducing polymer comprises at least about 25,000 repeating units, and wherein a plurality of the repeating units comprise a heteroatom, wherein the heteroatom is selected from the group consisting of an oxygen atom, a nitrogen atom, a sulfur atom and/or a phosphorus atom and wherein the drag reducing polymer has a weight average molecular weight of at least $1 \times 10^6 \text{ g/mol}$.

125. (New) A method comprising:

introducing a drag reducing polymer into a liquid hydrocarbon;

wherein the drag reducing polymer has a solubility parameter within $4 \text{ MPa}^{1/2}$ of the solubility parameter of the liquid hydrocarbon;

wherein the solubility parameter of the liquid hydrocarbon is determined by the following equation:

$$\delta_2 = [(\Delta H_v - RT)/V]^{1/2}$$

where ΔH_v is the energy of vaporization, R is the universal gas constant, T is the temperature in Kelvin, V is the molar volume and δ_2 is the solubility parameter; and

wherein the solubility parameter of the drag reducing polymer is determined by the following equation:

$$\delta = (\delta_d^2 + \delta_p^2 + \delta_h^2)^{1/2}$$

where δ is the solubility parameter, $\delta_d = \sum F_{di}/V$, $\delta_h = (\sum F_{hi}/V)^{1/2}$, $\delta_p = (\sum F_{pi}^2)^{1/2}/V$.

Remarks

Claims 1- 96 are cancelled. Claims 97-109 are new. No new matter has been added.

Applicants are submitting an additional Information Disclosure Statement. In light of the newly submitted Information Disclosure Statement, applicants have cancelled claims 1-96 and present new claims 97-109 with a Request for Continued Examination.

Claims Rejections 35 USC § 102

Claims 1-9, 11, 13-15, 17-36, 38-42, 51-75 and 83-96 are rejected under 35 USC § 102(b) as being anticipated by Castner (US 4,736,005).

Applicants have cancelled claims 1-96 and present newly submitted claims 97-109.

Reconsideration of this rejection is respectfully requested.

Claims 1-9, 11, 13-15, 20-38, 40-42, 51-75, 93-96 are rejected under 35 USC § 102(b) as being anticipated by Inaoka (EP 0882739) as evidenced by Schievelbein (US 6,007,702).

Applicants have cancelled claims 1-96 and present newly submitted claims 97-109.

Reconsideration of this rejection is respectfully requested.

Claims Rejections 35 USC § 103

Claims 20 and 40 are rejected under 35 USC § 103(a) as being unpatentable over Castner (US 4,736,005).

Applicants have cancelled claims 1-96 and present newly submitted claims 97-109.

Reconsideration of this rejection is respectfully requested.

Claims 19 and 39 are rejected under 35 USC § 103(a) as being unpatentable over Inaoka (EP 0882739) in view of Schievelbein (US 6,007,702).

Applicants have cancelled claims 1-96 and present newly submitted claims 97-109.

Reconsideration of this rejection is respectfully requested.

Claims 83-92 are rejected under 35 USC § 103(a) as being unpatentable over Inaoka (EP 0882739) in view of Milligan (US 6,576,732) in view of Schievelbein (US 6,007,702).

Applicants have cancelled claims 1-96 and present newly submitted claims 97-109.

Reconsideration of this rejection is respectfully requested.


If any additional fees are necessary in order for this submission to be considered timely filed and accepted, the Commissioner is authorized to please appropriately charge or credit those fees to **Deposit Account Number 16-1575 of ConocoPhillips Company** and consider this a petition for any necessary extension of time.

If resolution of any remaining issues pertaining to restriction groups and election may be facilitated by a telephone conference, or if the Examiner has any questions or comments or otherwise feels it would be advantageous, the Examiner is encouraged to telephone the undersigned at (281) 293-3454.

Respectfully submitted,

Dated: April 8, 2010

By



Richard Yuen, Counsel
Reg. No. 65,287