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PRODUCTION OF PETROLEUM JELLY

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3 Claims. (Cl. 196—149)

This invention relates to the production of petroleum jelly.

At the present time, petroleum jelly is largely obtained as the residue remaining after the distillation of substantially non-asphaltic crude oils. The principal object of the present invention is to enable satisfactory petroleum jellies to be prepared from asphaltic crude oils.

It has been found that this object may be achieved by blending together certain oil components and certain oil-wax mixtures, commonly referred to as slack waxes, that are obtained in the production of lubricating oils from petroleum.

According to the present invention, a petroleum jelly comprises a mixture in approximately equal proportions of a residual oil (bright stock) having a viscosity index of not greater than 90, and preferably between 80 and 90, and a viscosity at 140° F. greater than 150 centistokes, and a slack wax derived from a residual oil (bright stock) having a penetration unworked of 50–90 mm./10, an oil content of 0–25%, and a congealing point of 148–170° F.

According to a further feature of the invention, the residual oil may be used in admixture with a distillate oil having a viscosity index of 65–80 and a viscosity at 140° F. of 30 to 50 centistokes, the distillate oil constituting up to 70% of the mixture.

According to a still further feature of the invention, the residual oil slack wax may be used in admixture with a slack wax derived from a distillate oil boiling above 480° F., and having an oil content of 0–40% and a congealing point of 125–150° F.

The invention will now be described with reference to the following examples. Throughout the examples, the following blending components were used.

BRIGHT STOCK OIL

S. G. 60/60° F	0.9255
Kinematic viscosity @ 140° F, cs	176.1
Viscosity index	85

DISTILLATE OIL

S. G. 60/60° F	0.916
Kinematic viscosity @ 140° F, cs	39.72
Viscosity index	74

BRIGHT STOCK SLACK WAXES

Slack Wax No.	Penetration [1] at 25° C., mm./10		Congealing Point, ° F.	Oil Content, Percent wt.
	Unworked	Worked		
1	81	181	151	8.3
2	60	170	156	6.6
3	76	170	153	11.4
4	70	170	149	8.6

[1] Institute of Petroleum Test I. P. 50/48.

DISTILLATE OIL SLACK WAX

Congealing point, ° F	134
Oil content, percent wt.	23.7

Example 1

Blends containing equal proportions by weight of the bright stock oil and various bright stock slack waxes had the following properties.

TABLE 1

Slack Wax No.	Melting Point of Blend ° C.	Penetration at 25° C.		Change in Penetration on Working, mm./10
		Unworked, mm./10	Worked, mm./10	
2	73	169	255	86
1	71	190	283	93
3	71	175	247	72

Example 2

Blends containing equal proportions by weight of the bright stock oil and the distillate oil, and various proportions of bright stock slack wax, had the following properties.

TABLE 2

Slack Wax No.	Percent Weight of Slack Wax	Melting Point of Blend, ° C.	Penetration at 25° C.		Change in Penetration on Working, mm./10
			Unworked, mm./10	Worked, mm./10	
3	50	69	191	260	69
3 (Repeat Blend)	50	68	207	258	51
2	50	72	183	273	90
4	50	69	192	277	85
3	75	73	144	224	80
1	75	74	157	248	91
2	75	76	122	235	113

From a comparison of the data presented in Tables 1 and 2 it will be seen that when using bright stock slack wax No. 3, the blend comprising a mixture of bright stock oil and distillate oil gave a considerably smaller change in penetration on working than the blend comprising only the bright stock oil.

Example 3

The following table shows the effect of prolonged working on two blends according to the invention as compared with a petroleum jelly at present on the market.

TABLE 3

Composition	Initial penetration at 25° C., mm./10	Penetration at 77° F. after 10,000 Strokes in Worker, mm./10
Commercial Jelly	191	330
Slack Wax No. 2: Bright Stock Oil, Distillate Oil	183	352
Slack Wax No. 3: Bright Stock Oil, Distillate Oil	207	312

Example 4

The following table gives the properties of two jellies consisting of a blend of bright stock slack wax, distillate oil slack wax, bright stock oil, and distillate oil.

TABLE 4

Composition	Melting Point, ° C.	Unworked Penetration at 25° C., mm./10	Worked Penetration at 25° C., mm./10	Change in penetration, mm./10
Bright Stock Slack Wax No. 4, 30% Wt. Distillate Oil Slack Wax, 20% Wt. Distillate Oil, 25% Wt. Bright Stock Oil, 25% Wt.	----------	203	247	44
Bright Stock Slack Wax No. 4, 34% Wt. Distillate Oil Slack Wax, 26% Wt. Distillate Oil, 20% Wt. Bright Stock Oil, 20% Wt.	66.0	172	220	48
Distillate Oil Slack Wax, 50% Wt. Distillate Oil, 25% Wt. Bright Stock Oil, 25% Wt.	Granular composition with little resemblance to petroleum jelly.			

It will be seen from the data presented in Table 4, that blends comprising both bright stock and distillate oil slack waxes, and both bright stock and distillate oils gave the least change in penetration on working.

We claim:

1. A petroleum jelly consisting of a mixture of a residual oil (bright stock) having a viscosity index of 80 to 90 and a viscosity at 140° F. greater than 150 centistokes, a distillate oil having a viscosity index of 65 to 80 and a viscosity at 140° F. of 30 to 50 centistokes, a slack wax derived from a residual oil (bright stock) having a penetration unworked of 50 to 90 mm./10, an oil content of 0–25%, and a congealing point of 148 to 170° F., and a slack wax derived from a distillate oil boiling above 480° F., and having an oil content of 0–40% and a congealing point of 125 to 150° F., the combined amounts of said residual and distillate oils amounting to between 40 and 50% of the mixture.

2. A petroleum jelly consisting of a mixture of 25% of a residual oil (bright stock) having a viscosity index of 80 to 90 and a viscosity at 140° F. greater than 150 centistokes, 25% of a distillate oil having a viscosity index of 65 to 80 and a viscosity at 140° F. of 30 to 50 centistokes, 30% of a slack wax derived from a residual oil (bright stock) having a penetration unworked of 50 to 90 mm./10, an oil content of 0–25%, and a congealing point of 148 to 170° F., and 20% of a slack wax derived from a distillate oil boiling above 480° F., and having an oil content of 0–40% and a congealing point of 125 to 150° F.

3. A petroleum jelly consisting of a mixture of 20% of a residual oil (bright stock) having a viscosity index of 80 to 90 and a viscosity at 140° F. greater than 150 centistokes, 20% of a distillate oil having a viscosity index of 65 to 80 and a viscosity at 140° F. of 30 to 50 centistokes, 34% of a slack wax derived from a residual oil (bright stock) having a penetration unworked of 50 to 90 mm./10, an oil content of 0–25%, and a congealing point of 148 to 170° F., and 26% of a slack wax derived from a distillate oil boiling above 480° F., and having an oil content of 0–40% and a congealing point of 125 to 150° F.

References Cited in the file of this patent

UNITED STATES PATENTS

1,920,161	Rosen	July 25, 1933
2,649,384	Anderson	Aug. 18, 1953
2,661,318	MacLaren	Dec. 1, 1953