

**DETERMINATION OF VISCOSITY (OF SEVERAL HEAVY HYDROCARBONS)
UP TO ABOUT 350 C**

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Frames 2693-2695

Translation

INTRODUCTION

In the preceding report was given the viscosity of the branched-chain paraffin hydrocarbons 10-nonylundecane and 7,12-dimethyl-9,10-di-n-hexyloctadecane. With both compounds, the viscosity was higher at lower temperatures and lower at higher temperatures than the isomeric normal paraffin. To determine whether this is the case with other branched paraffin hydrocarbons, the viscosity of 2,2-dimethyl-n-docosane ($C_{24}H_{50}$) was determined. 2694

EXPERIMENTAL SUMMARY

The density listed below was determined with a 1-cc pycnometer with a long calibrated stem. The viscosity was determined with a falling-body viscosimeter.

Density and Viscosity (Falling Body)
of 2,2-dimethyl-n-docosane ($C_{24}H_{50}$)

<u>Temperature</u>	<u>Density</u>	<u>Dyn. Visc.</u>	<u>Kin. Visc.</u>
59.9	0.7830	8.5 cp	10.86 cs
80.2	0.7565	5.26	4.31
133.2	0.7216	1.471	2.04
183.7	0.6887	0.840	1.219
245.4	0.6473	0.499	0.771
283.2	0.6195	0.380	0.614

The viscosities agreed well with those given for 70-90 C in Report 8975 by Dr. Maze. At 80 C is reported 5.26 cp. These viscosities were determined by the capillary flow method. (See Figure 5773-2-B5).

CONCLUSIONS

In contrast to 10-nonylundecane and 7,12-dimethyl-9,10-di-n-hexyloctadecane, both of which at higher temperatures are less viscous

than the isomeric normal paraffins, 2,2-dimethyl-n-docosane remains more viscous than n-tetracosane up to 284 C.

FUTURE WORK

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The viscosity of other compounds with long hydrocarbon chains, which also contain an oxygen atom, will be determined and compared with hydrocarbons of similar structure.

GRAPH OF VISCOSITY VS. TEMPERATURE

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Temperature C

5775-2-B5

Dynamic Viscosity 10^{-5} Poises

10-nonyl undecane

7,12-dimethyl 9,10-di-n-hexyl octadecane

2,2 dimethyl-n-docosane

n-C₄₃H₈₈n-C₃₅H₇₂n-C₃₅H₇₂n-C₂₄H₅₀n-C₁₆H₃₄

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