ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

Composition and Characteristics of Local High Quard Oil for Transportation

Rakhimov B.R, Adizov B.Z,Abdurakhimov S.A

Bukhara engineering and technology institute, Bukhara, Uzbekistan
Unified training center LLC "UNG training" JSC «Uzbekneftegaz», Tashkent, Uzbekistan
Institute of General and Inorganic Chemistry of the Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan

ABSTRACT. Currently, Uzbekistan is increasing the production and transportation of high-resin oils, most of which have high resins. This will negatively affect the delivery of such oils to enterprises through pipelines to solve this problem, we used the required amount of effective surfactants

KEYWORDS: transportation, oil, high viscosity, pipeline, asphalting, paraffin, resin, solvent, surfactants, fluidity, phospholipid, fatty acids, efficiency index, shear rate.

I. INTRODUCTION

Currently, Uzbekistan is increasing the production and transportation of high-viscosity oils, which are a type of high-resin type. Such oils are a solid mixture of organic and inorganic substances due to their stable composition and properties, which can be the basis for their being a non-Newtonian liquid.

According to the data in [1], the bulk of Fergana oil is a type of high-resin oil, which can be divided into two types of resin: oil (Southern Olamishik) and resin (such as Izboskant).

Today, the southern Kokaytu, Chigara and Khavzag fields of Surkhandarya region produce relatively high-viscosity oils with high sulfur, resin and paraffin content, which are distinguished from Fergana oils by their high content of aromatic and petroleum hydrocarbons [2]

Bukhara oil is also a resinous oil, containing up to 15% of oils and up to 10% of resins. [3]

Mingbulak oil (Namangan region) contains 6.8% asphalting, 15.65% silicogel resins and 16% paraffin's, which increases the viscosity of the extracted and transported oil. [4]

Amudarya (29.2%), Lalmikor (27.8%), Koshtar (23.9%), Mirshadi (38.69%), Khankiz (17.6%), North Sokh (13.5%) and silicogel resins in the oils of other deposits are found in large quantities [5]

II. SIGNIFICANCE OF THE SYSTEM

Currently, Uzbekistan is increasing the production and transportation of high-resin oils, most of which have high resins. The study of literature survey is presented in section III, methodology is explained in section IV, section V covers the experimental results of the study, and section VI discusses the future study and conclusion.

III. METHODOLOGY

It should be noted that the fluidity of oil is closely related to its viscosity, which is primarily due to the presence of oils, asphaltenes, paraffins and others. In addition, the composition of the formation water affects the kinematic viscosity of the oil, which must be determined experimentally when selecting an engine for the pump to be transported.

Experience has shown that the wrong choice of engine often leads to accidents; pump failure, pipe blockage or rupture, etc. Consequently, formation water increases the kinematic viscosity of the oil and at the same time its flow through the pipe. A third substance, an emulsifier, is formed at the boundary between two immiscible liquids (oil and gas) sprayed onto each other in the form of droplets. Resins and asphaltenes contain many heterocyclic compounds with emulsifying properties [6].

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

IV. EXPERIMENTAL RESULTS

In turn, we can say that the oils of the Jarkurgan (Amudarya, Lalmikor) and Mingbulak fields differ from the light ores of Kokdumalak, Zevarda, Jarqaq and Shurchi by their rheological properties, so mixing them before transportation we think it's not a sensible idea. It is advisable to add oils with similar composition and rheological properties.

In search of a solution to this problem, we performed a series of analyzes on the dependence of the change in the dynamic viscosity (μ) of oil in adjacent fields on the water content (Q_b) of the residual layer.

Figure 1 shows the characteristics of the oils of the Mirshodi and Northern Sokh fields, in which the content of silica gel resins differs sharply from each other.

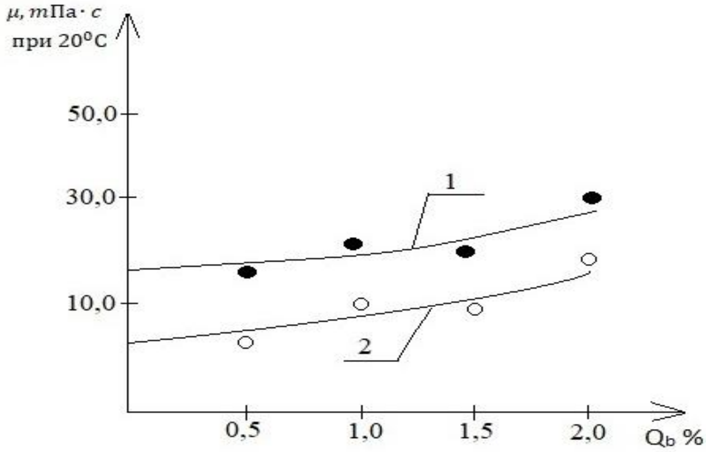

Figure 1. Changes in the dynamic viscosity (μ) of the Mirshadi field (curve 1) and North Sokh (curve 2) depending on the formation water (Q_b)

As can be seen from Figure 1, an increase in the residual water content of the Mirshodi and North Sokh oil fields by 2.0% led to a 2.5-fold increase in the dynamic viscosity of the former and a 2.3-fold increase in the latter. It follows that the rate of increase in the dynamic viscosity of oil depends on the amount of fatty substances in the residual water.

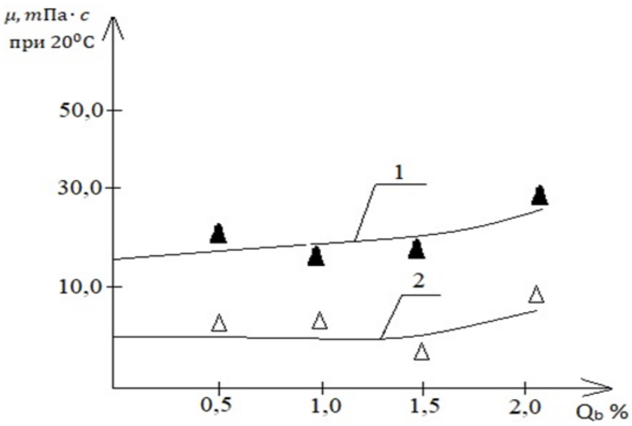

Figure 2. Changes in the dynamic viscosity (μ) of the Amudarya (curve 1) and Khankiz (curve 2) depending on the formation water (Q_b)

Selikogel in the composition of oils from the Amudarya and Khankizi fields.In addition to the high content of resins, they also contain a large amount of asphaltenes, which are close in nature to resins, and their presence significantly affects the dynamic viscosity (μ) of oil With this in mind, the results we studied are reflected in Figure 2,

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

which is related to the residual layer water (Q_b) in the dynamic viscosity (μ) of the Amudarya (curve 1) and Khankiz (curve 2) oil fields. shown as a variable As can be seen from Figure 2, an increase in the residual water content of the Amudarya oil field by 2.0% led to a 2.7-fold increase in the dynamic viscosity and a 1.7-fold increase in the Khankizi field. It follows that the low dynamic viscosity of the silica gel resin in the Khankiz oil field is lower than that of the Amudarya oil due to the low content of asphaltenes.

In order to fully evaluate the rheological characteristics of oils, it is necessary to study the dependence of the dynamic shear stress (τ_0) on their temperature.

Figure 3, shows the temperature dependence of the dynamic shear stress (τ_0) of the oil in the Mirshadi field (curve 1) and the North Sokh field (curve 2). as shown in

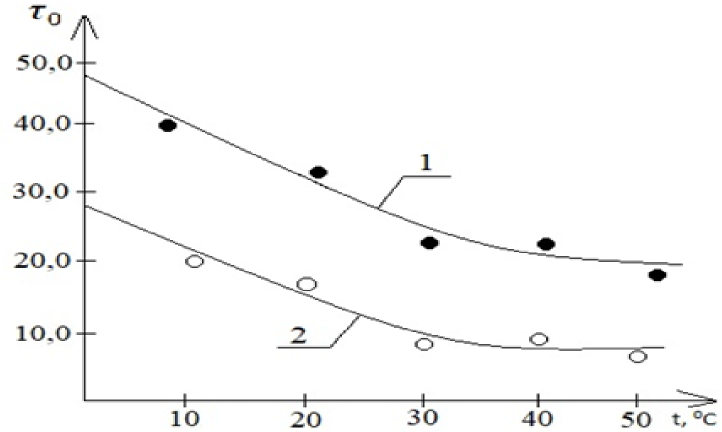

Figure 3. Temperature dependence of dynamic shear stress (τ_0) of Mirshadi field (curve 1) and North Sokh (curve 2) fields

Figure 3, an increase in temperature from 0^0C to 50^0C leads to a 1.5-fold decrease in the dynamic shear stress of the Amudarya oil field and a 1.6-fold decrease in the Khankiz field oil flow.

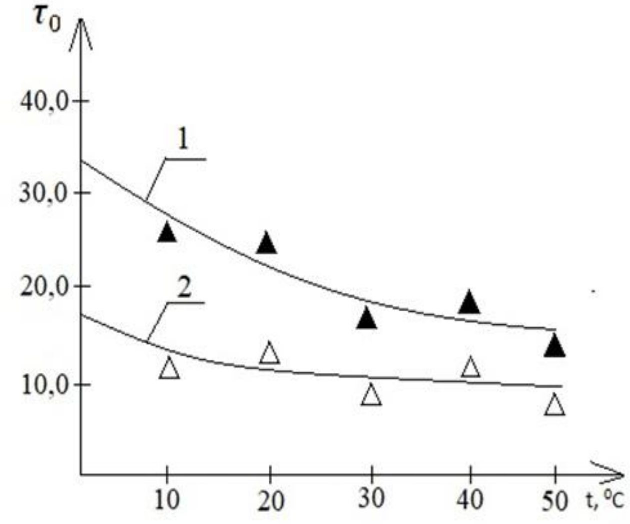

Figure 4. Temperature dependence of dynamic shear stress (τ_0) of oil of Amudarya (curve 1) and Khankiz (curve 2) fields

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 11 , November 2020

VI. CONCLUSION AND FUTURE WORK

This once again confirms the importance of composition in determining the rheological properties of oils. Thus, research shows that the majority of oil extracted and refined in Uzbekistan is high-resin oil. Bukhara, Fergana and Surkhandarya oils are also included and are non-Newtonian fluids, the dynamic viscosity and temperature dependence of the dynamic shear stress can be objectively assessed, ie the rheological parameters determines readability more accurately. Consequently, the graphs (curves) of the results obtained for high-resin oils are close in nature, but differ in meaning. Therefore, in order to achieve an effective solution to the problem of local oil transportation, it is advisable to study the rheological parameters of each oil separately, which will allow to carry the required amount of surfactants through the pipelines with the required accuracy.

The results of experimental experiments show that the more intense decrease in viscosity with the increase of silicogel resins in local oils can be explained by their surfactant properties.

REFERENCES

[1]. Adizov. B.Z., Abdurakhimov S.A., Sultanov A.S., Eshmetov I.D. Combined thermochemical and electrophysical technologies for demulsifying stable water-in-oil emulsions. T.: Publishing house of AS Uzmain library, 2019, 236 p.

[2]. Shafiev R.U, Maxmudov N. N, Amirkulov N.S, Tursunov M.A, Bozorov J.T, Technology collection and preparation of oil, gas and water for promislax. Textbook. - T.: Science and Technology, 2016, 312p.

[3]. Ataullaev F.Sh, Abdurakhimov SA, Study of physical and chemical indicators of oil // Bulletin of TashTTU, Tashkent, 2016, No. 1, pp. 107-109.

[4]. Amirkulov NS, Azizov Kh.Kh., Shafiev R.U. Methodological guidance on the specific rheological properties of oil and water-oil emulsion // TashTTU, Tashkent, 2000-46 p.

[5]. Khamidov B.N., Narmetova T.R., Azimova M.I., Khabilaev S. B, Oil research of the Mirshady field of the Surkhandarya region // Dokl. AN Uzbekistan, 1994, N 11, p. 23

[6]. Kapustin V.M, Rudin M.G, Chemistry and technology of oil refining. -M. : Chemistry, 2013-495 p.