Impact Factor:					
	ISRA (India) = 6.317	SIS (USA) = 0.912	ICV (Poland) = 6.630
	ISI (Dubai, UAE) = 1.582	РИНЦ (Russia) = 3.939	PIF (India) = 1.940
	GIF (Australia) = 0.564	ESJI (KZ) = 9.035	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

SOI: 1.1/TAS DOI: 10.15863/TAS
International Scientific Journal
Theoretical & Applied Science
p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)
Year: 2021 **Issue:** 10 **Volume:** 102
Published: 22.10.2021 **http://T-Science.org**

QR – Issue QR – Article

Dursadef Nariman Jafarova
Azerbaijan State University of oil and industry
Scientist

Nargiz Arzu Omarova
Azerbaijan State University of oil and industry
Shief laboratory, master

Lamia Shahin Huseynova
Azerbaijan State University of oil and industry
Senior laboratory assistant, master
Department of «Organic substances and technology of macromolecular compounds»
chemical-technological faculty
Baku, Azerbaijan
kerem_shixaliyev@mail.ru

OBTAINING AN ECOLOGICAL PURE COMPOSITION BASED ON POLYVINYL CHLORIDE AND BENZYLNAPHTHENATE ETHER OBTAINED FROM BAKU OIL

Abstract: *Derived from polyvinyl chloride (PVC) polymeric materials have a number of valuable features and find wide practical application. For these purposes is primarily used plasticized PVC although it is known that many plasticizers improves a number of compositions properties, in particular of frost resistance.*

Key words: *plastification, polymeric materials, compositions, benzilnaftenatnyj ether, filler, shear, volumetric flow.*

Language: *English*

Citation: Jafarova, D. N., Omarova, N. A., & Huseynova, L. Sh. (2021). Obtaining an ecological pure composition based on polyvinyl chloride and benzylnaphthenate ether obtained from Baku oil. *ISJ Theoretical & Applied Science, 10 (102),* 785-788.

Soi: http://s-o-i.org/1.1/TAS-10-102-85 ***Doi***: crossref https://dx.doi.org/10.15863/TAS.2021.10.102.85

Scopus ASCC: *1500.*

Introduction

Polymeric materials obtained on the basis of polyvinyl chloride (PVC) have a number of valuable properties and find wide practical application. For these purposes, mainly plasticized PVC is used, although it is known that many plasticizers contribute to the improvement of a number of properties of the composition, in particular frost resistance [1-6].

In this work, benzylnaphthenate ether (BOE) obtained from Baku oil [7-9]) is used as a plasticizer. BNE has a number of valuable physico-chemical properties. Despite this, only 20% of the BOE is used. Therefore, the use of BNE today is very relevant. Given the large raw material base, in our work a study of the use of benzylnaphthenates in a composition based on BSC was carried out. Various plasticizers are used to modify polyvinyl chloride, but these plasticizers are generally very expensive and they damage the resulting products. Therefore, for the first time, we have used a high molecular weight non-oil plasticizer as a plasticizer[10-12].

Experimental and Discussion Materials

The composition included PVC benzylnaphthenate ether and a new mineral filler. The main indicators of BNE and the composition of the composition based on PVC are shown in Table. 1 and 2.

Table 1. Composition prepared on the basis of BSK

№	Name of components	Per 100 m.h. rubber, m.h.					
		Mixture cipher					
		K-1	K-2	K-3	K-4	K-5	K-6
1.	PVC	100	100	100	100	100	100
2.	Benzylnaphthenate ether		2	4	6	8	10
3.	Filler				4		20

Table 2. Physico-chemical and electro-physical properties of benzylnaphthenates

№	Indicators	Benzylnaphthenate fractions			
		195-205/mm	248-266/4mm	258-275/4mm	301-317/mm
1.	Refractive index	1,5020	1,5024	1,5074	1,5055
2.	Specific gravity	1,06			
3.	Kinematic viscosity				
4.	Pouring temperature, ^{0}C	-55	-55	-53	-50
5.	Flash point, ^{0}C	165	170	-	-
6.	Dielectric permeability: at comn.temp., at 90^{0}C at 90^{0}C after 48 hours.	 4,9 4,19 3,9	 4,56 4,4	 4,8 4,6	 4,93 4,3 4,3
7.	Dielectric loss angle tangent: at a comn. temp., at 90^{0}C at 90^{0}C after 48 hours.	 0,007 0,046	 0,1725 0,55	 0,25 0,551	 0,047 0,35 0,10
8.	Specific volumetric resistance, at a comn. pace.	 -	$2,64\text{-}10^{10}$	$1,76\text{-}10^{10}$	 -

The mixture based on PVC is prepared as follows:

Polyvinyl chloride is fed to rollers heated to a temperature of 20-30^{0}C, lead to a leaf-like state (until the matrix is obtained). PVC is plasticized for 3-5 minutes, then benzylnaphthenate is added to it drop by drop. A mixture of PVC and benzyl naphthenate is stirred for 2-3 minutes.

In order to assess the manufacturability of the PVC-based composition, its rheological properties were studied. With the help of the device IICR-3 (capillary radius g = 1.045 mm, length L = 8 mm) with various loads (6.5; 9.11; 11.75 and 15.35) the yield time of the manufactured composition based on BSK was determined. Obtained From the experimental results it follows that the same values of the PVC composition are achieved with not the same plasticizer. In order to obtain a melt composition of 5 g / 10 min (at 150^{0}C) it is necessary to enter into PVC(based on 100 m.h. PVC 4-5-6 m.h. plasticizer (BNE).

As a result of studies of the mixture of the composition, the dependence of the volumetric flow rate of the composition on the amount of benzylnaphthenate ether was studied (Fig. 1).

From the experimental results it followsthat the same values of the PVC composition are achieved with not the same plasticizer. In order to obtain a melt composition of 5 g / 10 min (at 150 0 C) it is necessary to enter into PVC (based on 100 m.h. PVC 4-5-6 m.h. plasticizer B result of the conducted researches of ether

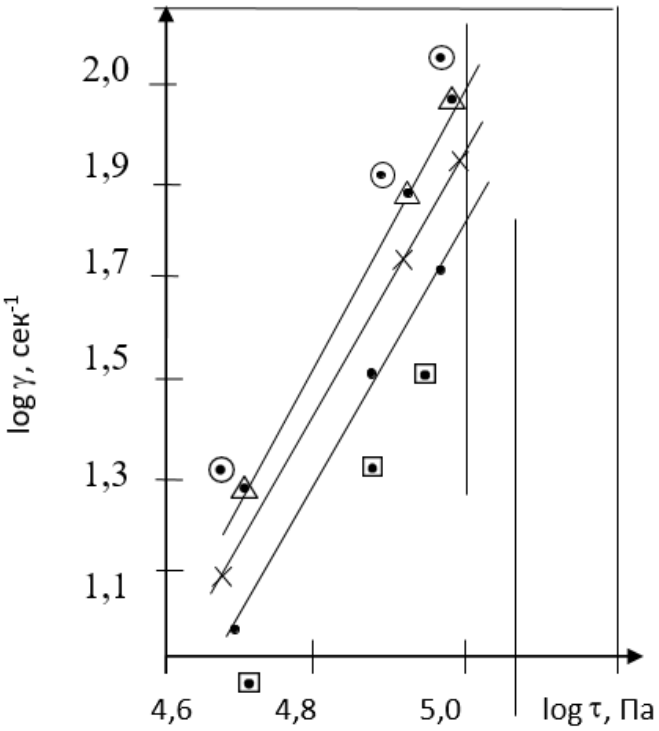


Fig. 1. Dependence of shear rate onshear stress of PVC composition:
3 – PVC+BNE – (100+4) 6 – PVC+BNE – (100+10)
4 – PVC+BNE – (100+6) 10 – PVC+BNE+filler – (100+4+6)
5 – PVC+BNE – (100+8)

As can be seen from Fig.1 with an increase inthe amount of benzylnaphthenate ether in the composition, the volumetric flow rate increases.

On the basis of the obtained data, a graph of the dependence of the shear rate was constructed (on the shear voltage and, according to the data obtained, a graphical dependence was constructed (Fig. 2).

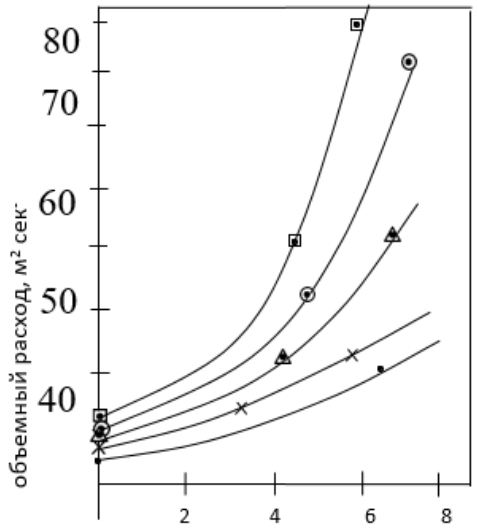
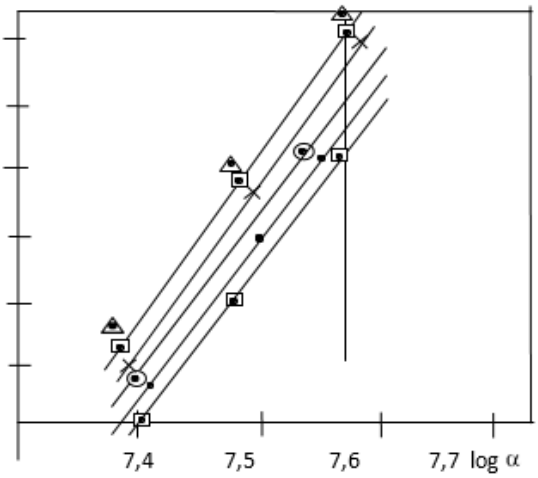


Fig.2. Dependence of volumetric flow rate onether content under the action of shear stress in the mixture of the composition:
1 – PVC+BNE – (100+2) 5 – PVC+BOE – (100+8)
2 – PVC+BNE – (100+3) 7 – PVC
4 – PVC+BNE – (100+6)



Rig. 3. Dependence of the compositionspeed on the shear stress:
1 – PVC +BNE – (100+2) 4 – PVC+BNE – (100+6)
2 – PVC+BNE – (100+3) 5 – PVC+BOE – (100+8)
3 – PVC+BNE – (100+4) 6 – PVC+BNE – (100+10)

Conclusions

Polymeric materials obtained on the basis of polyvinyl chloride (PVC) have a number of valuable properties and find wide practical application. For these purposes, mainly plasticized PVC is used, although it is known that many plasticizers contribute to the improvement of a number of properties of the composition, in particular frost resistance.

References:

1. Amirov, F.A., Shikhaliyev, K.S., & Ahmadova, U.T. (2018). *International Journal of Development Research*, 2018, **8**, 21902.
2. Shikaliyev, K.S. (2017). *Monomers for the synthesis of polymers* (TRAINING MANUAL) Lambet, Academic Publishing. Saorbrucken, 46.
3. Shikaliyev, K.S. (2017). International Scientific and Practical Conference «WORLD SCIENCE» Dubai, UAE, 1, 46.
4. Shikhaliyev, K.S. (2017). *The European science review*, Vienna, №5-6, 89.
5. Shikhaliyev, K.S. (2017). *The European science review*, Vienna, №3-4, 41.
6. Forrest, M. (2015). *Progress in Rubber Plastics Recycling Technology*, 31, 219.
7. Simonov – Yemelyanov, D., & Kuznetsov, V.W. (1987). *Principles of compositional materials creation.* Text-book. M. MICT, 85p.
8. (2004). *Base of technology processing of plastic mass.* Text-book for high schools/S.V.Vlasov, (p.600). Moscow: “Chemistry”.
9. Vakhidov, V.F., Karimov, O.M., & Eyvazova, Z.E. (2008). *Technics of oil-gas production*. (p.440). Baku: Azerneshr.
10. Krijanovsky, V.K., Kerber, M.A., & Burlov, V.V. (2008). *Production of products from polymer materials*. (p.450). Sankt-Petersburg.
11. Shixaliyev, K. (2020). Propeties of the Composition Based on modified Polyethylenes. *International journal of Innovative Technology and Exploring Engineering*, Volume-9 issue-Januaru 2020, pp.2484-2493.
12. (n.d.). ISSN-2278-3075, SCOPUS. pp. 2484-2293. Retrieved from https://www.ijitee.org/download/volume-9-issue-7/
13. Shixaliyev, K. (2020). Modification of Polymer Wastes and Obtaining Com Composites Based on Them Annotation. *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, Volume-9 Issue-5, March 2020.