ANALYTICAL REPORT No: 0876-LQ-14

Client SIBUR International GmbH
S-Peterburg № 7652-0488-14/7
Date of report 11.09.2014
Object Production Plant Sibur-Kstovo
Location Kstovo

Product : Heavy pyrolysis resin [1] **Received On:** 02.09.2014
Sample Drawn : Sample is selected and provided customer representative.
Sample Description : Dark-colored product which is liquid at room temperature
Testing Performed By: Intertek S-Petersburg Laboratory **Date:** 04÷11.09.2014

Tests	Units	Method[2]	Specification limits	Result	Result Within Specification?
Density at 15 deg C	kg/l	ASTM D 4052	unknown	1.0656	_
Density at 20 deg C	kg/l	ASTM D 4052	unknown	1.0621	_
Kinematic Viscosity at 50ºC	mm^2/s	ASTM D 445	unknown	15.73	_
Viscosity assumed (Engler) at 50ºC	º E	conversion	unknown	2.40	_
Kinematic Viscosity at 100ºC	mm^2/s	ASTM D 445	unknown	3.886	_
Viscosity assumed (Engler) at 100ºC	º E	conversion	unknown	1.30	_
Sulphur content	%mass	ASTM D 4294	unknown	0.1095	_
Flash Point, closed Cup	º C	ISO 2719(A)	unknown	23.0	_
Water content	%mass	ASTM D 95	unknown	0.10	_
Pour Point (upper)	º C	ASTM D 97	unknown	minus 24	_
Total Nitrogen	%mass	ASTM D 3228	unknown	0.022	_
Aniline Point (mixed)	º C	ASTM D 611 (A)	unknown	[3] 23.5	_
Conradson carbon Residue (CCR)	%mass	ASTM D 189	unknown	10.9	_
Vacuum Distillation (50 - 30 mm Hg):		ASTM D 1160 mod.			
Initial bolling point	º C		unknown	192	_
5% vol recovered	º C		unknown	220	_
10% vol recovered	º C		unknown	226	_
20% vol recovered	º C		unknown	233	_
30% vol recovered	º C		unknown	243	_
40% vol recovered	º C		unknown	256	_
50% vol recovered	º C		unknown	279	_
60% vol recovered	º C		unknown	313	_
70% vol recovered	º C		unknown	356	_
80% vol recovered	º C		unknown	423	_
90% vol recovered	º C		unknown	465	_
95% vol recovered	º C		unknown	486	_
Final Boiling Point /cracking	º C		unknown	486	_
Loss	%vol		unknown	0.0	_
Residue	%vol		unknown	5.0	_
Recovered at 360 ºC	% vol	ASTM D 1160 mod.	unknown	72	_
Bromine number(cut 360 ºC)	gBr/100g	ASTM D 1159	unknown	52.7	_
Saturated, aromatic and polar compounds		IP 469			
Saturated hydrocarbons	%mass			Less 5.0	_
Aromatics hydrocarbons	%mass			38.4	_
Polar compounds I	%mass			more 29.0 ([4]54.3)	_
Polar compounds II[5]	%mass			7.3	_

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Tests	Units	Method[2]	Specification limits	Result	Result Within Specification?
Toluene equivalent	% vol	EXXON 79-004	unknown	100 (not passes)	_
Toluene equivalent	% vol	EXXON 79-004 (paragraph 6.2)	unknown	63	_
Toluene Insolubles	%mass		unknown	0.08	_
Xylene equivalent		BP 230	unknown	100 (not passes)	_
P-value		SMS 1600	unknown	1.7	_
Hot Filtration potential	% (m/m)	IP 390(A)/IP 375	unknown	0.07	_
Metals:					
Vanadium	mg/kg	IP 470	unknown	2	_
Sodium	mg/kg	IP 470	unknown	5	_
Nickel	mg/kg	IP 470	unknown	1	_
Aluminium	mg/kg	IP 470	unknown	less 5 ([4]0.4)	_
Silicon	mg/kg	IP 470	unknown	less 10 ([4]6)	_
Iron	mg/kg	IP 470	unknown	5	_
Zinc	mg/kg	IP 470	unknown	less 1([4]0.2)	_
Calcium	mg/kg	IP 470	unknown	3	_
Colour ASTM (dilution)		ASTM D 1500	unknown	D 8 ASTM Color	_
Asphaltenes	%mass	IP 143	unknown	6.3	_

Note 1 This product is not included in the Scope of accreditation laboratory.

Note 2. All these methods are intended to record for analysis of residual oil. Sample testing is proposed for petrochemicals. Thus, the results can not be interpreted as the results obtained in the framework of the above methods. Terms perform some tests had to pick from the properties of the product.

Note 3. The result is difficult to accurately fix. This value is taken as the average value between 22.5 - 24.5 degrees C..

Note 4. Actual values

Note 5. This class of compounds is similar but not identical to, asphaltenes insoluble in heptane as defined in IP 143.

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