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PHYSICAL PROPERTIES OF SULFUR COMPOUNDS--
A LITERATURE REVIEW OF HIGHER MOLECULAR-WEIGHT COMPOUNDS
THROUGH 1955

(C_{ref} & up)

by

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OPEN-FILE REPORT 8-70
October 1969

REPRODUCED BY:
U.S. Department of Commerce
National Technical Information Service
Springfield, Virginia 22161

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Introduction

The tables of physical properties are the result of an extensive literature search that has been continued as part of the Bureau of Mines' study of sulfur compounds in petroleum. This study, carried on cooperatively with American Petroleum Institute Research Project 48, is concerned with the types of sulfur compounds that have been found in petroleum, namely the thiols (mercaptans), sulfides (thioethers), disulfides, and thiophenes. The tables in this paper include all of these compounds from C_{14} to C_n which are composed only of carbon, hydrogen, and sulfur atoms. The values in these tables are from the literature through 1955. Two previous papers include the literature through 1955 for the compounds from C_1 through C_{13} and the literature from 1956 through 1960 for the compounds from C_1 to C_n .

The literature was searched for physical property data. Secondary sources, such as Beilstein, Chemical Abstracts, and British Abstracts, were used to locate references, and original sources were consulted except in a few instances.

Properties

The properties tabulated are boiling point, density, refractive index, and freezing point. Pressures and wavelengths of light are given wherever they were included in the source. For each compound, the properties are tabulated with the newest reference first and the oldest last. All values found have been entered; no attempt has been made to choose a best value. American Petroleum Institute Research Project 44 has published "selected values" for many of these compounds; these are included using the reference API RP 44.

At the end of the table of properties for each compound, references are given for such properties as viscosity, vapor pressure, surface tension, and thermodynamic functions. Tabulation of these properties would have required excessive space.

Structural Formula and Nomenclature

The physical property tables include, for each compound, its structural formula and preferred name. The structures are simplified by omitting the hydrogen atoms. Double bonds are indicated where applicable. Thus, benzene would be  while cyclohexane would be .

The name listed for each compound is according to the nomenclature system selected for use in these surveys. This system involves naming the structure as though it were a hydrocarbon and then indicating sulfur in place of carbon with the term "thia". This system applies to all of the compounds except the RSH compounds, which are named as thiols, and the simple thiophenes.

Arrangement of Compounds

The compounds are arranged in the tables, first, according to their type in the following order:

- Thiols
- Sulfides, including cyclic sulfides and hydrogenated thiophenes
- Disulfides
- Thiophenes

Within each type, the compounds are arranged by applying the following rules:

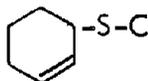
- Rule 1. Compounds within each type are arranged in ascending number of carbon atoms.
Example: C_1 , then C_2 , then C_3 , C_n .
- Rule 2. Compounds within each carbon-number group are arranged in descending hydrogen numbers.
Example: $C_5H_{12}S$, then $C_5H_{10}S$, and then C_5H_8S
- Rule 3. Within a formula group, the compounds are arranged as paraffins, olefins, cyclics, and aromatics in that order.
Example: See Figure 1.
- Rule 4. Compounds conforming to the above rules are arranged by increasing branching or complexity. Thus, straight chains precede branched chains and methyl branching precedes ethyl branching which precedes dimethyl. Large rings precede small rings.
Example: See Figure 1.

Rule 5. Of the compounds conforming to the above rules, the position number of the sulfur is arranged in ascending order.

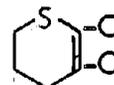
Example: See Figure 1.

Rule 6. If sulfur numbers are the same, a sulfur atom on a chain is placed before one in the ring.

Example:



before



1-(1-Thiaethyl)-2-cyclohexene

2,3-Dimethyl-1-thia-2-cyclohexene

Rule 7. Where there is more than one compound with the same sulfur position number, the compound with the lowest numbered double bond comes first.

Rule 8. When both the sulfur and the double bond position numbers are the same, the position number of the smallest substituent radical is used.

References

Each set of properties is followed by a reference giving the name of the investigators and the year of publication. Because of space limitations, "et al" is used when there are more than two authors. The complete reference is included in the alphabetical list of references at the end of the table. When the authors have published more than one article in a year, a letter following the year is used to key the table listing to the proper reference. If data were obtained from a secondary source, the secondary source is listed as part of the reference.

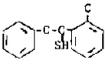
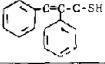
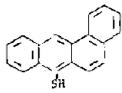
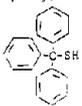
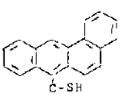
Figure 1. - Examples of arrangement of compounds in tables.

<u>C₅H₁₂S THIOLS</u>	<u>C₅H₁₀S SULFIDES</u>
1-Pentanethiol	2-Thia-4-hexene
2-Pentanethiol	3-Thia-4-hexene
3-Pentanethiol	3-Thia-5-hexene
2-Methyl-1-butanethiol	4-Methyl-2-thia-4-pentene
3-Methyl-1-butanethiol	2-Methyl-3-thia-1-pentene
2-Methyl-2-butanethiol	Thiacyclohexane
3-Methyl-2-butanethiol	2-Methylthiacyclopentane
2,2-Dimethyl-1-propanethiol	2,4-Dimethylthiacyclobutane
	2,2,3-Trimethylthiacyclopropane

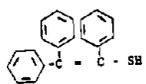
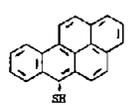
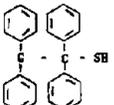
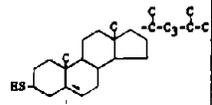
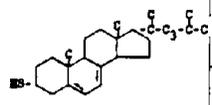
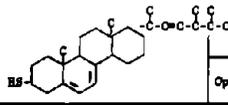
Thiols-1
 $C_{14}H_{30}S$ - $C_{14}H_{10}S$

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/g/line		
1-Tetradecanethiol $C_{14}-SH$	176-80	22	0.8484	20/20	1.46005	20/D		Noller, Gordon (1933)
4-(1-Decalyl)-1-butanethiol  - C_4-SH	124	0.5						Clemence, Leffler (1950)
4-(2-Decalyl)-1-butanethiol  - C_4-SH	124	0.5			1.5072	25/D		Clemence, Leffler (1948)
4-(2-Tetralyl)-1-butanethiol  - C_4-SH	143	1			1.5569	25/D		Clemence, Leffler (1948)
4-(6-Tetralyl)-1-butanethiol  - C_4-SH	143	0.8			1.5569	25/D		Clemence, Leffler (1950)
1,2-Diphenylethanethiol 	146-8	4					41	Teresa, Bellido (1954) Hauser et al. (1953)
Optical rotation: Levene, Mikeska (1925)								
Phenyl-2-methylphenyl-methanethiol 	149-50 145-6	4 3						Hauser et al. (1953)
Phenyl-4-methylphenyl-methanethiol 	159-62	6						Fukuda (1952)
2-Anthracenethiol 	1/							Haftler (1895)
9-Anthracenethiol 							90-1 90	Friedlander, Simon (1922) Patri, Stark (1922)
2-Phenanthrenethiol 	228	0.1					112-3	Dutta, Chadhury (1951)
3-Phenanthrenethiol 	205-10	2					112-3	Field (1915)
9-Phenanthrenethiol 							67	Dutta (1941)

1/ Decomposes over 200°.

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
8-Pentadecanethiol $C_{15}-C-C_7$ SH	159-60 158-60 158-60 173-4 173-4	10 10 10 16 16			1.4582 1.4580 1.4580	25/D 25/D 25/D	-10.5 -10.5	Farlow et al. (1950) Farlow, Signaigo (1946) B DuPont (1946) B Farlow Signaigo (1946) A Lazior et al. (1946)
2-Phenyl-1-(2-methyl-phenyl)ethanethiol 	123-7	0.3						Levene et al. (1930)
2,3-Diphenyl-2-propene-1-thiol 	105-6	0.005						Luttringhaus et al. (1947)
1-Hexadecanethiol $C_{16}-SH$	170-90 135-40 150 151-8 140-55 123-8	2 0.6 1 2 2.8 0.5			1.4632	20/D	18 18	Vejdelek et al. (1953) Baer, Carmack (1949) DuPont (1946) A Dantson, Condit (1945) Farbenindustrie (1936) A Flaschantrager, Wannschaff (1934)
2-Hexadecene-1-thiol $C_{13}-C=C-C-SH$	180-6	3						Akashi et al (1954)
7-Heptadecanethiol $C_{17}-C-C_{10}$ SH	151-3 153 153	1 1 1	0.8384 .8384 .8384	25/4 25/4 25/4	1.4594 1.4594 1.4594	25/D 25/D 25/D		Farlow et al. (1950) Farlow, Signaigo (1946) B DuPont (1946) B
9-Heptadecanethiol $C_{17}-C-C_8$ SH	196-7 196-7	18 18						Farlow, Signaigo (1946) B DuPont (1946) B
1-Octadecanethiol $C_{18}-SH$	170-5 170-1 170-1	4 1.5 1.5					32-2.5 34-5	Shirley, Zietz (1953) Urquhart et al. (1941) Farbenindustrie (1936) A Farbenindustrie (1936) B
1-Octadecene-1-thiol $C_{16}-C=C-SH$	151-65 159-61	1 1.5						Farbenindustrie (1936) A Farbenindustrie (1936) B
7-Benz[a]anthracene-thiol 							139.9-40.7 136.5-7.5	Wood, Fieser (1940)
Triphenylmethanethiol 							103-9 106-7 106-7 107 107	Morse, Tarbell (1952) Balfe et al (1950) Kharsch, Williams (1950) Iskander (1948) Vorlander, Mitzig (1913)
7-Benz[a]anthrylmethane-thiol 							172-3 172.7-4.7	Shear et al. (1940) Wood, Fieser (1940)

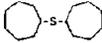
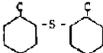
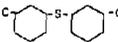
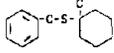
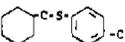
1/ Mixture of 7- and 8-isomers.

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n _D	D/line		
Triphenylethenethiol 							110-11	Koelsch, Ulliot (1933)
6-Benzo [a] pyrenethiol 							197-8.5	Wood, Fieser (1940)
1-Phenyl-1-octadecanethiol 	203-11	0.5	0.9066	25/4	1.4988	25/D		Schaffer, Stirton (1947)
1,1,2,2-Tetraphenylethanethiol 							167-8	Bergmann, Wagenberg (1930)
10,13-Dimethyl-17-(6-methyl-2-heptyl)-5-gonane-3-thiol 							96-7 95-9.5 98-100 96-9 100-2 98-9.5 98-9.5 98-9.5 88-95 97-7.5 99.5 99.5 191	O'Connor, Nace (1953) Phillips (1952) A Bernstein, Sax (1951) Strating (1951) Strating, Backer (1950) A Strating, Backer (1950) B Ralls et al. (1949) King et al. (1948) Rosenberg, Turnbull (1945) Warner-Jauregg, Lennartz (1941) Montignie (1931)
	Optical rotation: O'Connor, Nace (1953); Bernstein, Sax (1951); King et al. (1948); Warner-Jauregg, Lennartz (1941); Montignie (1931)							
10,13-Dimethyl-17-(6-methyl-2-heptyl)-5,7-gonadima-3-thiol 							134-6 134-5 135-7 135	Buisman, Westerhoff (1952) Phillips (1952) B Bernstein, Sax (1951) Strating, Backer (1950) A
	Optical rotation: Buisman, Westerhoff (1952); Phillips (1952) B; Bernstein, Sax (1951)							
10,13-Dimethyl-17-(3,6-dimethyl-3-hepten-2-yl)-5,7-gonadima-3-thiol 							135-6	Buisman, Westerhoff (1952)
	Optical rotation: Buisman, Westerhoff (1952)							
1-Triacontanethiol C ₃₀ -SH							64.5	Pfeverling (1876)

Thiols-4
Uncertain
structures

Name and empirical formula	Boiling point		Density		Refractive index		Freezing point	Reference
	^o C	mm Hg	d	^o C.	n	^o C/line	^o C.	
C ₁₄ H ₃₀ S "tert-Tetradecyl mercaptan"	400-50 ^o F		0.8821	1/				Schulze et al. (1948)
C ₁₆ H ₃₄ S "tert-Hexadecyl mercaptan"	258-301 450-500 ^o F	5	.8890	1/				Riesz et al. (1951) Schulze et al. (1948)
C ₁₈ H ₂₀ S "9,10-Dihydroretene mercaptan"							185-8	Kouppa, Folgenberg (1932)

1/ 60/60^oF.

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	°C/line	°C	
3-Thiapentadecane C ₂ -S-C ₁₂	167-71	18					-6 to -5°	Bost, Everett (1940)
8-Thiapentadecane C ₇ -S-C ₇	126 141.5	2.5 4.5	0.8416 .8277 .8147 .7968 .8402	20/4 41.5/4 60.6/4 86.7/4 20/4	1.45799 1.46055 1.46687 1.47137	20/C 20/D 20/E 20/G ¹		Signaigo (1946) Vogel, Cowan (1943) Mann, Furdie (1935) Youts, Perkins (1927) Winnainger (1887)
Surface tension: Vogel, Cowan (1943); Mann, Furdie (1935)								
4,6-Dipropyl-5-thianonane C ₃ -C-S-C ₃ C ₃ C ₃	1/114	5						Youtz, Perkins (1927)
Thiacyclopentadecane 							71 72.5	Bennet, Gudgeon (1938) Miller, Schutz (1938)
Dicycloheptylthiamethane 	174	11						Loevenich et al. (1929)
Di(2-methylcyclohexyl)-thiamethane 	62-4 2/106	0.05 0.1			1.5120	20/D		Moore, Saville (1954) Naylor (1947)
Di(3-methylcyclohexyl)-thiamethane 	165-8	11						Loevenich et al. (1929)
1-Phenyl-1-thianonane 	178.8-9.3 175	16 18	.9456	22/4	1.5247	22/D		Vicalli, Nardelli (1951) Burton, Davy (1947)
Surface tension: Vicalli, Nardelli (1951)								
2-Methyl-1-phenyl-1-thiooctane  <i>d</i> -form	178	20	.944	17/4	1.5256	18/D		Kanyon et al. (1935)
Optical rotation: Kanyon et al. (1935)								
2-Phenyl-1-(1-methylcyclohexyl)-1-thiaethane 	100-1	0.1			1.5538	20/D		Moore, Saville (1954)
2-Cyclohexyl-1-(4-methylphenyl)-1-thiaethane 	168-70	17			1.5570	17/D		Buu-Hoi et al. (1951) A

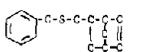
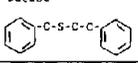
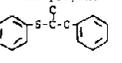
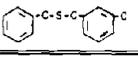
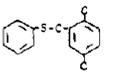
1/ Corrected.

2/ Contains disulfide.

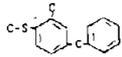
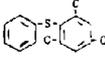
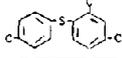
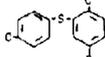
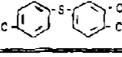
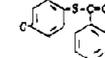
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	°C/line		
4-Methylphenyl-2-norbornylthiomethane 	175-6	11			1.5758	20/D		Christol, Brindell (1954)
4-Methylphenyl-2-norbornen-5-ylthiomethane 	175-8	11						Alder et al. (1938)
4-(1-Thiapropryl)biphenyl 							74-5	Tarbell, Harnish (1952)
1,2-Diphenyl-1-thiopropane 	167-70 163-4	15 15			1.6042	/D		Braun, Weissbach (1929) Ashworth, Burkhardt (1928)
1,3-Diphenyl-1-thiopropane 	188 188-9	16 15			1.6082	/D		Braun, Weissbach (1929) Ashworth, Burkhardt (1928)
1,1-Diphenyl-2-thiopropane 	135 108-11	1.5 1						Archer et al. (1952) Klenk et al. (1948)
1,3-Diphenyl-2-thiopropane 								Proiva et al. (1954) Krc, French (1953) Minoura (1952) B Minoura (1950) Henriques, Marguetti (1946) Rheinboldt, Glasbrecht (1946) A Teresa (1944) Teresa (1943) Shriner et al. (1930) Lewin (1928) Seythe (1922) Parkin (1896)
			1.0712 1.0698 1.0685 1.0673 1.0662 1.0653 1.0644 1.0639 1.0635 1.0634 1.0634	50/50 55/55 60/60 65/65 70/70 75/75 80/80 85/85 90/90 95/95 100/100			49	Marcker (1865)
Crystallographic data: Krc, French (1953) Eutectic point: Rheinboldt, Glasbrecht (1946) A B Magnetic rotation: Parkin (1896)								
2-Phenyl-1-(4-methylphenyl)-1-thioethane 							64 64	Gilman, King (1925) Fromm (1913)
Phenyl-2,4-dimethylphenylthiomethane 	172.5 172.5	11 11	1.0935 1.0817 1.0699	0/4 13/4 10/4				Toussaint (1943) A Bourgeois (1895)

1/ Corrected.

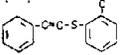
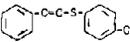
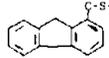
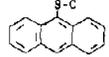
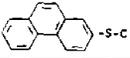
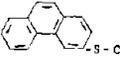
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
Phenyl-2,5-dimethyl-phenylthiomethane 	171 1/171	11 11	1.0913 1.0795 1.0677	0/4 13/4 30/4				Toussaint (1943) A Bourgeois (1895)
Phenyl-3,4-dimethyl-phenylthiomethane 	181.5 1/181.5	11 11	1.0962 1.0847 1.0734	0/4 15/4 30/4				Toussaint (1943) A Bourgeois (1895)
Di(2-methylphenyl)-thiomethane 	258 174 175 258	15 16					63 64 64 64	Rosenmund, Harms (1920) Deuss (1909) Mauthner (1906) Zelser (1895) Purgotti (1889)
Di(3-methylphenyl)-thiomethane 	175 197 200 202 174	15 23 25 28 12	1.0628	27.4/4				Fava, Illicero (1954) Shukla (1927) Bogert, Mandelbaum (1923) Mauthner (1906)
Magnetic susceptibility: Fava, Illicero (1954)								
Di(4-methylphenyl)-thiomethane 	179-81 175 179 186 175 1/179	11 16 11 16 16 11					56-7 57 56.8-7.2 57 57.5 57.3 57 5b.5-b.9 57.3 56-7 57.3 57.3 56-7 56-7	Hauptmann et al. (1952) Minoura (1952) A Rolls et al. (1952) Minoura (1950) Reinboldt, Giesbrecht (1947) A Toussaint (1943) A Toussaint (1943) B Mampson et al. (1933) Rilly et al. (1930) Rosenmund, Harms (1920) Deuss (1909) Bourgeois (1895) Purgotti (1889) Otto (1879)
Crystal data: Blackmore, Abrahams (1955); Toussaint (1943) (B) Dielectric constant: Rolls et al. (1952); Mampson et al. (1933)								
2-Methylphenyl-3-methyl-phenylthiomethane 	170	11						Mauthner (1906)
2-Methylphenyl-4-methyl-phenylthiomethane 	173 1/173	11 11	1.0889 1.0774 1.0658	0/4 15/4 30/4				Toussaint (1943) A Bourgeois (1895)
3-Methylphenyl-4-methylphenylthiomethane 	179 1/179	11 11					27.8 27.8	Toussaint (1943) A Bourgeois (1895)
1,2-Diphenyl-1-thio-2-propene 	174-5	14						Ruhemann, Stapleton (1900)
9,10-Dihydro-10-methylene-9-thiaanthracene 							45	Fellenberg (1905)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
4-Thiexadecane C ₃ -S-C ₁₂	124-5	0.25			1.4608	20/D		Gilman et al. (1952)
2-Methyl-3-thiapentadecane C-C-S-C ₁₂	109	0.5						Signaigo (1946)
1-Cyclopentyl-1-thiundecane 	158 158	2 2	0.8813 .8813	20/4 20/4	1.4786 1.4786	20/D 20/D		Tita-Skvortsova et al. (1952) Tita-Skvortsova et al. (1950)
1-Phenyl-1-thiadecane 			.924 .884	25/4 80/4			21.4-1.9	Boelhouwer et al. (1950)
Viscosity: Boelhouwer, et al. (1950)								
1-Phenyl-3-(5-norbornen-2-yl)-2-thiapropane 	40-50	1-2						Brunson (1946)
1,3-Diphenyl-2-thiabutane 	154-8	3						Brown et al. (1951)
1,4-Diphenyl-2-thiabutane 	190-5	1						Fritz et al. (1946)
2-Methyl-1,3-diphenyl-1-thiapropane 	177-8	11	1.070	19/4	1.5952	25.5/D		Kenyon et al. (1935)
Optical rotation: Kenyon et al. (1935)								
1-Phenyl-3-(3-methylphenyl)-2-thiapropane 	193-6	15						Wheeler, Johnson (1901)
1-Phenyl-2-(2,5-dimethylphenyl)-1-thiaethane 	195-200	15			1/1.6007 1/1.6073 1/1.6243 1/1.5971 1/1.6038 1/1.6203 1/1.5991 1/1.6018 1/1.6184 1/1.5951 1/1.6009 1/1.6184 1/1.5927 1/1.5994 1/1.6156 1/1.5915 1/1.5982 1/1.6146 1.5907 1.5976 1.6137 1.5886 1.5955 1.6118 1.5886 1.5950 1.6118	15/G 15/D 15/F 22.5/C 22.5/D 22.5/F 26.5/C 26.5/D 26.5/F 29/G 29/D 29/F 32/C 32/D 32/F 34.5/C 34.5/D 34.5/F 36/C 36/D 36/F 40/C 40/D 40/F 41.5/C 41.5/D 41.5/F	35	Taboury (1908)

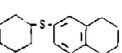
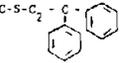
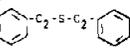
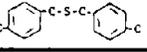
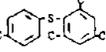
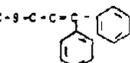
1/ Supercooled

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	°C/line		
1-Phenyl-2-(2,5-dimethylphenyl)-1-thiaethane -- Continued								Taboury (1908)
					1.5886	42.5/C		
					1.5945	42.5/D		
					1.6118	42.5/F		
					1.5835	51/C		
					1.5905	51/D		
					1.6060	51/F		
					1.5788	61/C		
					1.5856	61/D		
					1.6013	61/F		
					1.5767	66/C		
					1.5835	66/D		
					1.5990	66/F		
					1.5767	68/C		
					1.5827	68/D		
					1.5990	68/F		
					1.5741	71.5/C		
					1.5808	71.5/D		
					1.5965	71.5/F		
					1.5741	73/C		
					1.5804	73/D		
					1.5965	73/F		
					1.5737	73/C		
					1.5803	73/D		
					1.5960	73/F		
					1.5737	74/C		
					1.5800	74/D		
					1.5960	74/F		
					1.5737	83/C		
					1.5760	83/D		
					1.5960	83/F		
2-Methyl-4-phenylmethyl-1-(1-thiaethyl)benzene 	205-6	15			1.6125	23.5/D		Bau-Hol et al. (1954)
Phenyl-2,4,6-trimethylthiasmethane 	180 1/180	11	1.0817	0/4				Toussaint (1943) A Bourgeois (1895)
			1.0703	15/4				
			1.0588	30/4				
4-Methylphenyl-2,4-dimethylphenylthiasmethane 	188 1/188	11	1.0716	0/4				Toussaint (1943) A Bourgeois (1895)
			1.0614	15/4				
			1.053	30/4				
4-Methylphenyl-2,5-dimethylphenylthiasmethane 	185 1/185	11	1.0720	0/4			6	Toussaint (1943) A Bourgeois (1895)
			1.0606	15/4			6	
			1.0494	30/4				
4-Methylphenyl-3,4-dimethylphenylthiasmethane 	193.7 1/193.7	11					28.6	Toussaint (1943) A Bourgeois (1895)
		11					28.6	
1,2-Diphenyl-1-thia-2-butane 	121-5	0.8					42-2.5	Campaigne, Leal (1954)
2-Phenyl-1-(4-methylphenyl)-1-thia-2-propene 							44	Kohler, Potter (1935)

1/ Corrected

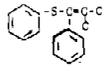
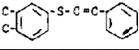
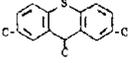
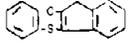
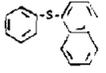
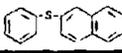
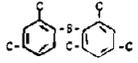
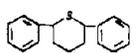
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	°C/line		
3-Phenyl-1-(2-methyl-phenyl)-1-thia-2-propene 	183-4	12						Ruhemann (1913)
3-Phenyl-1-(4-methyl-phenyl)-1-thia-2-propene 							65	Kohler, Potter (1935)
1-(2-Thia-1-propyl)-fluorene 							1/77.5	Pinck, Hilbert (1946)
9-(1-Thiaethyl)anthracene 							150 157	Friedlander, Simon (1922) Petri, Stark (1922)
2-(1-Thiaethyl)phenanthrene 							126	Dutta, Chaudhury (1951)
3-(1-Thiaethyl)phenanthrene 	240	12					100	Field (1915)
9-(1-Thiaethyl)phenanthrene 							75	Dutta (1941)
5-Thiaheptadecane C ₄ -S-C ₁₂	168-71 176-83	9 12				1.4648	20/D	Drahowzal, Klamann (1951) B Chemische Fabrik (1937)
7-Thiaheptadecane C ₆ -S-C ₁₀	144-5	1						Marvel et al. (1953)
9-Thiaheptadecane C ₈ -S-C ₈	150-3 172 150-3 166-74 161.5 184-5 180	0.85 7 2 4 4 20 10	0.8447 .8295 .8164 .7977 .8409	20/4 41.0/4 60/4 87.4/4 24/4	1.4608 1.45958 1.46215 1.46848 1.47310	25/D 20/C 20/D 20/F 20/G ¹	Cope, Farkas (1954) Kharasch, Zavitir (1951) Abramovitch (1949) Vogel, Cowan (1943) Mann, Purdie (1935) Fenton, Ingold (1928)	
Surface tension: Vogel, Cowan (1943); Mann, Purdie (1935)								
7,9-Dimethyl-8-thia-pentadecane 1-form  C ₆ -C ₂ -S-C ₆ 1-form	135	2	.8382	25/4				Phillips et al. (1935)
Optical rotation: Phillips et al. (1935)								
1-Cyclohexyl-1-thia-undecane  S-C ₁₀	164-5 164-5	2 2	.8446 .8446	20/4 20/4	1.4820 1.4820	20/D 20/D		Tita-Skvortsova et al. (1932) Tita-Skvortsova et al. (1950)

^{1/} Corrected.

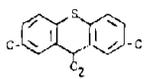
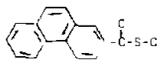
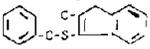
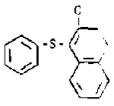
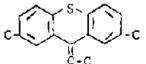
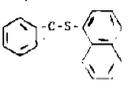
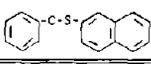
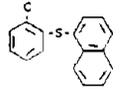
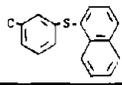
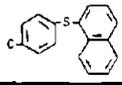
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/Line		
Thiacycloheptadecane 							61	Bennet, Gudgeon (1938)
1-Phenyl-1-thiundecane 	170-1 200.2-0.7 170-1	5 14.9 5	0.9341 .9334 .9341	24/4 22/4 24/4	1.5213 1.5173 1.5213	24/D 22/D 24/D	21 21	Tits-Skvortsova et al. (1952) Vitali, Nardelli (1951) Tits-Skvortsova et al. (1950)
Surface tension: Vitali, Nardelli (1951)								
Cyclohexyl-6-tetrahydropyridylthiomethane 	187.5-8.5 187.5-8.5 187.5-8.5	3 3 3	1.0543 1.0543 1.0543	20/4 20/4 20/4	1.5800 1.5800 1.5800	20/D 20/D 20/D		Tits-Skvortsova, Danilova (1953) Tits-Skvortsova et al. (1952) Tits-Skvortsova et al. (1950)
2-(1-Thiaheptyl)naphthalene 	160	20						Ray, Bowden (1943)
5,5-Diphenyl-2-thiapentane 	147	1						Exner et al. (1952)
1,5-Diphenyl-3-thiapentane 	174-7 150-2	2 1.5			1.5842	20/D	92	Prociwa, Exner (1953) Denison, Condit (1945) Bermejo, Herrera (1934) B
2,4-Diphenyl-3-thiapentane C-C-S-C-C 			1.203	20/20				Bermejo, Herrera (1934) A
1,3-Di(4-methylphenyl)-2-thiopropane 							76	Martynowicz (1910)
4-Methylphenyl-2,4,6-trimethylphenylthiomethane 	190 1/190	11 11					89.6 89.6	Toussaint (1943) A Bourgeois (1895)
1-(Cyclohexylthiamethyl)naphthalene 	201-2 201-2	7 7	1.0953 1.0953	20/4 20/4	1.6306 1.6306	20/D 20/D		Tits-Skvortsova et al. (1952) Tits-Skvortsova et al. (1950)
5,5-Diphenyl-2-thia-4-pentene C-9-C-C=C 	145	0.4						Prociwa, Exner (1953)
1,2-Diphenyl-3-thia-1-pentene C ₂ -S-C=C 	190-200	15						Fritsch (1903)

✓ Corrected.

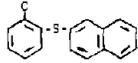
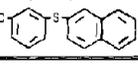
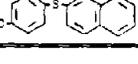
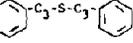
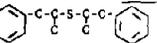
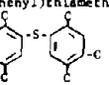
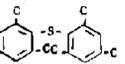
Sulfides-8
C₁₆H₁₆S-C₁₇H₁₈S

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C.	Reference
	°C.	mm Hg.	d	°C.	n	°C./line		
3-Methyl-1,2-diphenyl-1-thia-2-butene 							35-6	Campaigne, Leal (1954)
3-Phenyl-1-(3,4-dimethylphenyl)-1-thia-2-propene 	197-8	14						Ruhemann (1913)
9,10-Dihydro-3,6,10-trimethyl-9-thianthracene 							85-6	Krollpfeiffer, Wissner (1951)
2-Methyl-3-(phenylthiamethyl)indene 							79-80.5	Campaigne, Moss (1954)
6-Methyl-4-phenyl-1-thianaphthalene 	211	12	1.0941	99.7/4	1.61902 1.62734 1.64809	99.7/C 99.7/D 99.7/F	47-8	Krollpfeiffer (1925) Krollpfeiffer et al. (1925)
1-(Phenylthiamethyl)naphthalene 	220 175-6 255-6 1/220.5	11 2.5 43 11	1.167	15/4			40-1.5 41.5 41.5 41.8	Hauptmann et al. (1952) Hauptmann, Wladislaw (1950) Denison, Condit (1945) Wuyts (1906) Bourgeois (1895)
2-(Phenylthiamethyl)naphthalene 	1/226	11					50-1 51.8	Hauptmann, Wladislaw (1950) Bourgeois (1895)
2-Thiaoctadecane C-S-C ₁₆	183	20					19.5-20.5	Jerchel et al. (1954) Kuhn, Dann (1940)
1-Phenyl-1-thiadodecane 							33.8	Jones, Reid (1938)
2-(1-Thiaoctyl)naphthalene C ₇ -S- 							34	Ray, Bowden (1943)
2,4-Dimethylphenyl-2,4,6-trimethylphenylthiamethane 	173-4	4					58-9	Truce, Norman (1953)
2,6-Diphenylthiacyclohexane 							98	Arndt, Schauder (1930)

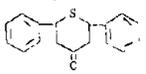
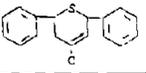
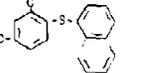
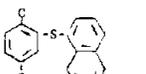
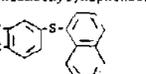
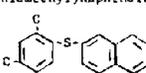
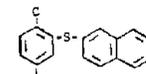
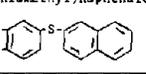
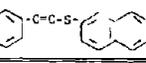
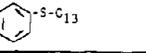
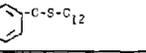
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Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	°C./line	°C.	
9,10-Dihydro-3,6-dimethyl-10-ethyl-9-thiaanthracene 							76.5-7.5	Krollpfeiffer, Wissner (1951)
2-(2-Thia-3-butyl)-phenanthrene 							60-78	Price, Halpern (1951)
2-Methyl-3-(2-phenyl-1-thiaethyl)indene 	165-70	1.5					73-4	Campaigne, Leal (1954)
1,2-Dihydro-3-methyl-4-(phenylthiamethyl)naphthalene 							49-50	Campaigne, Moss (1954)
9,10-Dihydro-3,6-dimethyl-10-ethylidene-9-thiaanthracene 							96-7	Krollpfeiffer, Wissner (1951)
1-(2-Phenyl-1-thiaethyl)naphthalene 							78-80 78-80	Taboury (1908) Taboury (1904)
2-(2-Phenyl-1-thiaethyl)naphthalene 							88.5-9 90.7	Tarbell, Harnish (1952) Rheinboldt, et al. (1951)
1-(2-Methylphenylthiomethyl)naphthalene 	1/227.5 231	11 12	1.1504	15/4				Bourgeois (1895) Bourgeois (1891)
1-(3-Methylphenylthiomethyl)naphthalene 	1/229 229.5-30	11 12	1.1445	15/4				Bourgeois (1895) Bourgeois (1891)
1-(4-Methylphenylthiomethyl)naphthalene 	1/232.5 233	11 12					40.5 40.5	Bourgeois (1895) Bourgeois (1891)

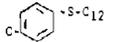
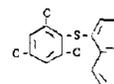
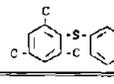
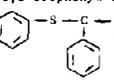
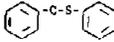
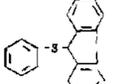
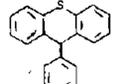
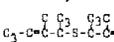
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Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	°C/line		
2-(2-Methylphenylthio- methyl)naphthalene 	1/229.5 232	11 12	1.1420	15/4				Bourgeois (1895) Bourgeois (1891)
2-(3-Methylphenylthio- methyl)naphthalene 	1/235 236	11 12					60 60	Bourgeois (1895) Bourgeois (1891)
2-(4-Methylphenylthio- methyl)naphthalene 	1/237 237.5	11 12					70.5 70.5	Bourgeois (1895) Bourgeois (1891)
3-Thianonadecane C ₂ -S-C ₁₆	201-5	12					18 18 19	Hoefelman, Berkenbosch (1944) Barasfische (1941) Bost, Everett (1940)
10-Thianonadecane C ₉ -S-C ₉	185-6	5	0.8455	20/4	1.4640	20/D		Tita-Skvortsova et al. (1951)
Thiacyclononadecane 	186	16					74	Bennet, Gudgeon (1938)
1-Phenyl-1-thiatridecane 	206.5-7.5	10						Vitali, Nardelli (1951)
1-(4-Methylphenyl)-1- thiadodecane 							29.8	Jones, Reid (1938)
4-(1-Thiaheptyl)biphenyl 							75.1-5.7 75.4-6.0	Lester et al. (1944)
1,7-Diphenyl-4-thia- heptane 	172-4	2			1.5687	20/D	73	Denison, Condit (1945) Bermejo, Jimenez (1934) B
2,4-Dimethyl-1,5-diphenyl- 3-thiapentane <i>d-form</i>  <i>d-form</i>	209	16	1.072	20/4	1.5794	24.5/C		Kanyon et al. (1935)
Optical rotation: Kanyon et al. (1935)								
Di(2,4,5-trimethyl- phenyl)thiamethane 							110-11	Cohen, Skirrow (1899)
Di(2,4,6-trimethyl- phenyl)thiamethane 	173-4	3					91-2	Truce, Norman (1952)

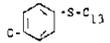
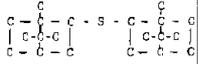
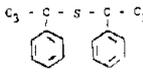
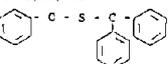
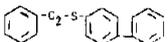
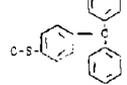
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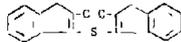
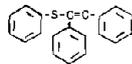
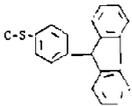
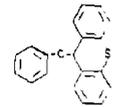
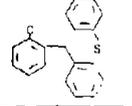
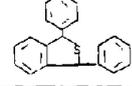
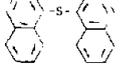
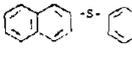
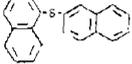
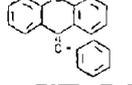
Name and skeleton	Boiling point		Density		Refractive index		Freezing point C	Reference
	C	mm Hg	d	C	n _D	C/line		
4-Methylene-2,6-diphenyl-1-thiacyclohexane 							74-5	Arndt, Schauder (1930)
4-Methyl-2,6-diphenyl-1-thiacyclo-3-hexene 							83-4	Arndt, Schauder (1930)
1-(2,4-Dimethylphenylthiamethyl)naphthalene 	1/239.5	11	1.1355	15/4				Bourgeois (1895)
1-(2,5-Dimethylphenylthiamethyl)naphthalene 	1/235	11					36.2	Bourgeois (1895)
1-(3,4-Dimethylphenylthiamethyl)naphthalene 	1/246	11	1.1346	15/4				Bourgeois (1895)
2-(2,4-Dimethylphenylthiamethyl)naphthalene 	1/243.5	11					39.6	Bourgeois (1895)
2-(2,5-Dimethylphenylthiamethyl)naphthalene 	1/240	11					36.7	Bourgeois (1895)
2-(3,4-Dimethylphenylthiamethyl)naphthalene 	1/251.5	11					68	Bourgeois (1895)
3-Phenyl-1-(2-naphthyl)-1-thia-2-propene 	238-9	12					84-5	Ruhemann (1914)
2-Thiaicosane C-S-C ₁₈	210-15	13						Chemische Fabrik (1937)
1-Phenyl-1-thiatetradecane 							43.8	Jones, Reid (1938)
1-Phenyl-2-thiatetradecane 	222-5	13					16	Henkel, Cie (1939) Chemische Fabrik (1937)

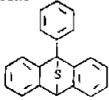
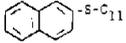
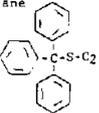
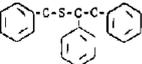
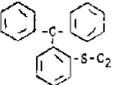
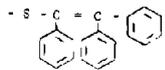
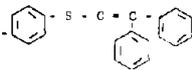
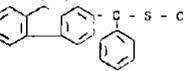
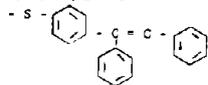
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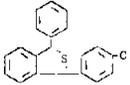
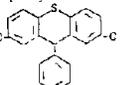
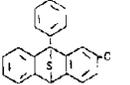
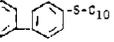
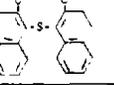
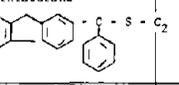
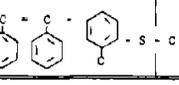
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	°C/line		
1-(4-Methylphenyl)-1-thiatridecane 							31-1.5 29.6	Drahowzal, Klamann (1951) B Henkel, Cie (1939)
6-(1-Thiadecyl)tetralin 	218.9-9.5		0.9671	20/4	1.5370	20/D		Tits-Skvortsova, Danilova (1953)
4-(1-Thiooctyl)biphenyl 							83.2-3.9 82.5-3.5	Lester et al. (1944)
1-(2,4,6-Trimethylphenylthiomethyl)-naphthalene 	1/245	11					120.6	Bourgeois (1895)
2-(2,4,6-Trimethylphenylthiomethyl)-naphthalene 	1/245	11					87.5	Bourgeois (1895)
1,2,2-Triphenyl-1-thiaethane 							78 78 82 78.5	Pinzi, Bellavita (1932) Schonberg et al. (1929) B Knoll (1926) Bistrzycki, Risi (1925)
4-(2-Phenyl-1-thiaethyl)-biphenyl 							127.5-8.5	Tarbell, Harnish (1952)
9-(Phenylthiomethyl)-fluorene 							215	Schonberg et al. (1924) B
9,10-Dihydro-10-phenyl-9-thiaanthracene 							96	Schonberg, Mustafa (1945)
3-Thiaheicosane C ₂ -S-C ₁₈	154-235	11						Chemische Fabric (1937)
11-Thiaheicosane C ₁₀ -S-C ₁₀	216-17	8					27-7.5 25-6	Kharasch, Zevist (1951) Tits-Skvortsova et al. (1951)
5,9-Dimethyl-6,8-dipropyl-7-thia-4,9-tridecadiene 					1.482	20/D		Armstrong (1948)

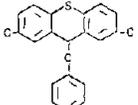
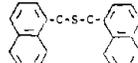
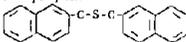
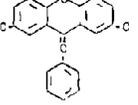
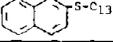
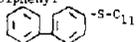
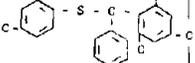
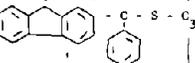
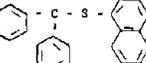
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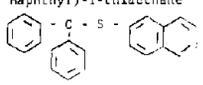
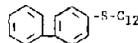
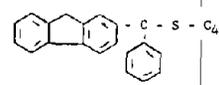
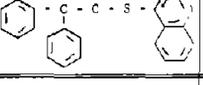
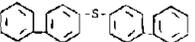
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	°C/1mg		
1-(4-Methylphenyl)-1-thiatetradecane 							40.2	Jones, Reid (1938)
Di(1,7,7-trimethyl-2-norbornyl)thiamethane 							168	Houben, Doescher (1906)
1-(1-Thiaundecyl)-naphthalene 	234-5 234-5	7-8 7-8	0.9893 .9893	20/4 20/4	1.5714 1.5714	20/D 20/D		Tits-Skvortsova et al. (1952) Tits-Skvortsova et al. (1950)
4-(1-Thianonyl)biphenyl 							81.8-2.4 82.3-2.9	Lester et al. (1944)
4,6-Diphenyl-5-chlanonane 			1.026	20/			96	Fernandez, Martinez (1942) Evans et al. (1927)
1,1,1-Triphenyl-2-thiopropane 							105-6 105	Vorlander, Mircog (1913) Meyer, Fischer (1910)
1,1,3-Triphenyl-2-thiopropane 							71 70.5	Protiva et al. (1953) Schonberg et al. (1929) B
4-(3-Phenyl-1-thiapropryl)biphenyl 							78.1-80.2 77.8-80.0	Lester et al. (1944)
1-(1-Thiaethyl)-2-diphenylmethylbenzene 							111	Brand, Stallman, 1924
1-(1-Thiaethyl)-3-diphenylmethylbenzene 			1.0753	90/4	1.60679 1.61352 1.63146	90/C 90/D 90/F	49.5	Brand et al. (1937)
1-(1-Thiaethyl)-4-diphenylmethylbenzene 							68-9	Bistrzycki, Kuba (1921)

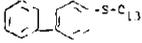
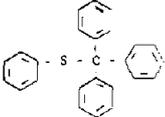
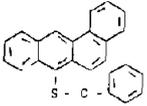
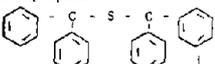
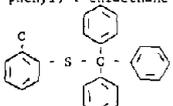
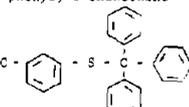
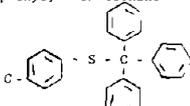
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
Di(2-Methyl-3-Indenyl)- thianthane 							130-1.5	Campaigne, Moss (1954)
1,2,3-Triphenyl-1-thia- 2-propene 							49-50	Campaigne, Leal (1954)
1-(1-Thiaethyl)-4-(9-fluorenyl)benzene 							126-8	Bistrzycki, Kuba (1921)
9,10-Dihydro-10-phenyl- methyl-9-thiaanthracene 							127	Fellenberg (1905)
9,10-Dihydro-10-(2-methyl- phenyl)-9-thiaanthracene 							135	Schonberg, Mustafa (1945)
1,3-Diphenyl-2-thiaindan 							106.5-7.5	Bistrzycki, Brenken (1922)
Di(1-naphthyl)thia- methane 	289-90	15					108.5-10 108-9 109-10 106 106-7 110 107 110	Hauptmann et al. (1952) Hauptmann, Wladislaw (1950) Rosenmund, Herzog (1920) Hinsberg (1910) A Bourgeois (1895) Leuckart (1890) Krafft, Schonherr (1889)
Di(2-naphthyl)thia- methane 	295-6	15					150-1 149-51 150-1 149-50.5 151 151	Hauptmann et al. (1952) Hauptmann, Wladislaw (1950) Courrot, Pavier (1941) Lange, Haupt (1929) Krafft, Schonherr (1889)
2-(1-Naphthylthia- methyl)naphthalene 	290-1	15					61 60-1	Bourgeois (1895) Krafft (1890)
9,10-Dihydro-10-phenyl- methylene-9-thia- anthracene 							121-2 114-5	Bergmann et al. (1952) Fellenberg (1905)

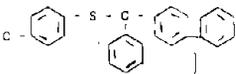
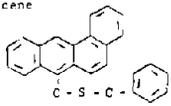
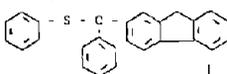
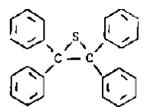
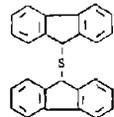
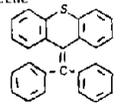
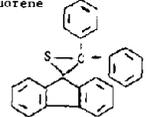
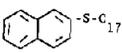
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	°C/line		
9,10-Dihydro-9-phenyl-9,10-thiomethanoanthracene 							117-18	Bistrzycki, Brenken (1922)
1-Phenyl-1-thiahexadecane 							51.0	Jones, Reid (1938)
1-(2-Naphthyl)-1-thiadodecane 							46.8	Jones, Reid (1938)
4-(1-Thiadecyl)biphenyl 							88.4-89 88.2-87	Lester et al. (1944)
1,1,1-Triphenyl-2-thiabutane 							125	Meyer, Fischer (1910)
1,3,4-Triphenyl-2-thiabutane 							64 64	Teresa, Bellido (1954) Hänsberg (1931)
1-(1-Thiopropyl)-2-(diphenylmethyl)benzene 							52	Brand, Stein (1924)
3,4,4-Triphenyl-2-thi-3-butene 							109.5-10	Koelsch, Ullmer (1933)
3,3-Diphenyl-1-(4-methylphenyl)-1-thia-2-propene 							84	Potter (1954)
1-Phenyl-1-(2-fluorenyl)-2-thiopropane 							109.5	Ray, Levine (1937)
1,2-Diphenyl-1-[4-(1-thiaethyl)phenyl]ethylene 	272-4	17					100	Buu-Hoi, Hoan (1952)

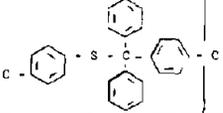
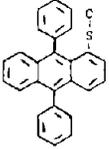
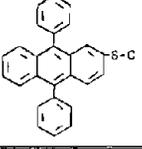
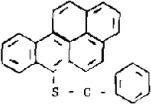
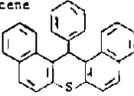
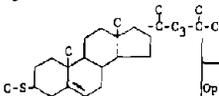
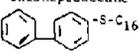
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm. Hg	d	°C	n	°C/1mm		
1-Phenyl-3-(4-methylphenyl)-2-thiatindan 							103-4	Biscozycki, Traub (1924)
9,10-Dihydro-3,6-dimethyl-10-phenyl-9-thiaanthracene 							156-7 156	Krollpfeiffer, Wissner (1951) Reilly et al. (1930)
9,10-Dihydro-2-methyl-9-phenyl-9,10-thiamethanoanthracene 							99.5-100.5	Bistrzycki, Traub (1924)
5-Thiatricosane C ₄ -S-C ₁₈							29-30	Shirley, Reedy (1951)
1-Cyclohexyl-1-thiaheptadecane 	192-8	1.5			1.4793	20/D		Denison, Cordic (1945)
1-Phenyl-1-thiaheptadecane 			0.889 .869 .834 .801 .758	50/4 80/4 130/4 180/4 240/4			47 49.0-9.4	Jerchel et al. (1954) Boelhouwer et al. (1950)
	201-12	2			1.4937	50/D	46	Denison, Cordic (1945)
Viscosity: Boelhouwer, et al.								
1-(4-Methylphenyl)-1-thiahexadecane 							48.0	Jones, Reid (1926)
4-(1-Thia-1-undecyl)biphenyl 							87.2-7.5 86.5-7.2	Lester et al. (1944)
Di(1,2-dihydro-3-methyl-4-naphthyl)thiamethane 							114.5-15	Campaigne, Moss (1954)
1-Phenyl-1-(2-fluorenyl)-2-thiaburane 							68-70	Ray, Levine (1937)
1,2-Diphenyl-1-[3-methyl-4-(1-thiaethyl)phenyl]ethylene 	280	17						Buu-Hoi, Hoan (1952)

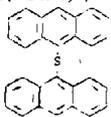
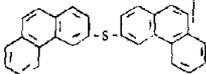
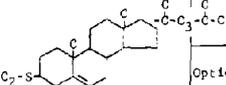
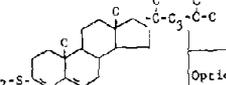
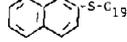
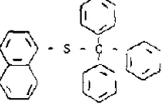
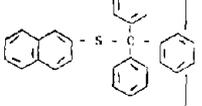
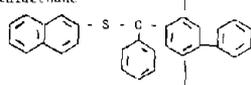
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
9,10-Dihydro-3,6-dimethyl-10-phenylmethyl-9-thiaanthracene 							121-2	Krollpfeiffer, Wissner (1951)
1,3-Di(1-naphthyl)-2-thiopropane 							118.5-19	Overberger et al. (1950)
1,3-Di(2-naphthyl)-2-thiopropane 							125.5-7	Overberger et al. (1950)
9,10-Dihydro-3,6-dimethyl-10-phenylmethylene-9-thiaanthracene 							109-10.5	Krollpfeiffer, Wissner (1951)
12-Thiatetracosane C ₁₁ -S-C ₁₂							37.2	Jones, Reid (1938)
1-Phenyl-1-thiooctadecane 							57.6	Jones, Reid (1938)
1-(2-Naphthyl)-1-thiatetradecane 							54.6	Jones, Reid (1938)
4-(1-Thia-1-dodecyl)-biphenyl 							92.1-3 91.8-2.8	Lester et al. (1944)
2-Phenyl-1-(4-methylphenyl)-2-(2,4,6-trimethylphenyl)-1-thiaethane 							93-4	Davies et al. (1954)
1-Phenyl-1-(2-fluorenyl)-2-thiapentane 							51	Ray, Levine (1937)
2,2-Diphenyl-1-(1-naphthyl)-1-thiaethane 							77.5 77-8 77	Finzi, Bellavita (1932) Schonberg et al. (1929) B Knoll (1926)

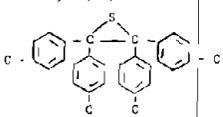
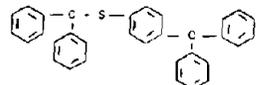
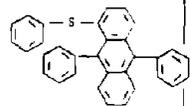
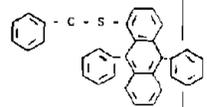
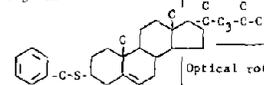
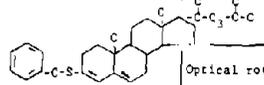
Name and skeleton	Boiling point		Density		Refractive index		Freezing point C	Reference
	C	mm Hg	d	C	n	D/line		
2,2-Diphenyl-1-(2-naphthyl)-1-thioethane 							123	Finzi, Bellavita (1932)
13-Thiapentacosane C ₁₂ -S-C ₁₂							41 40-1 40 40-0.5 40-1 40-2	Drahouzal, Klamann (1951) A Drahouzal, Klamann (1951) B Bezzi, Lanza (1950) Hunter (1941) Chemische Fabric (1937) Salzberg (1937)
1-Phenyl-1-thianona-decane 							55.5-6.5	Shirley, Reedy (1951)
1-(4-Methylphenyl)-1-thiaoctadecane 							56.0	Jones, Reid (1932)
4-(1-Thia-1-tridecyl)-biphenyl 							91.1-1.6 91.2-1.7	Lester et al. (1944)
1-Phenyl-1-(2-fluorenyl)-2-thiahexane 							81	Ray, Levine (1937)
3,3-Diphenyl-1-(1-naphthyl)-1-thiopropane 							157-8	Bistrzycki, Kuba (1921)
D1(4-biphenyl)thia-methane 							171-2	Gabriel, Deutsch (1880)
13-Thiahexacosane C ₁₂ -S-C ₁₃							39.2	Jones, Reid (1938)
1-Phenyl-1-thiaicosane 							62.4	Jones, Reid (1938)
1-(2-Methylphenyl)-1-thianonadecane 							38-9	Shirley, Reedy (1951)
1-(4-Methylphenyl)-1-thianonadecane 							52.2-3	Shirley, Reedy (1951)
1-(2-Naphthyl)-1-thia-hexadecane 							61.0	Jones, Reid (1938)

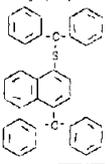
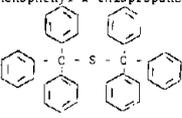
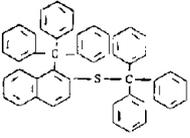
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
4-Biphenyl-1-1-thia- tetradecane 							95.6-0.3 94.5-5.5	Lester et al. (1944)
Tetraphenylthiaethane 							104-6 106 106.5 105-6 105	Gregg et al. (1951) Finzi, Bellavita (1932) Billmann, Due (1924) Lecher (1915) Meyer, Fischer (1910)
7-(2-Phenyl-1-thiaethyl)- benz[a]anthracene 							128.2-9.4	Wood, Fietzer (1940)
1-(4-Methylphenyl)-1- thiaicosane 							61.0	Jones, Reid (1938)
1-(2-Naphthyl)-1-thia- heptadecane 							56	Denison, Condit (1945)
4-Biphenyl-1-1-thia- pentadecane 							94.2-4.6 94.5-5.2	Lester et al. (1944)
1,1,3,3-Tetraphenyl-2- thiopropane 	220-7		0.4				65-6.5 66.5	Protiva et al. (1953) Schonberg et al. (1928)
Triphenyl-1-(2-methyl- phenyl)-1-thiaethane 							97-9 145	Gregg et al. (1951) Finzi, Bellavita (1932)
Triphenyl-1-(3-methyl- phenyl)-1-thiaethane 							90-2	Gregg et al. (1951)
Triphenyl-1-(4-methyl- phenyl)-1-thiaethane 							145-6 149 147	Gregg et al. (1951) Balfe et al. (1950) Finzi, Bellavita (1932)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
2-Phenyl-1-(4-methylphenyl)-2-(4-biphenyl)-1-thiaethane 							130-1	Balfe et al. (1950)
7-(3-Phenyl-2-thia-1-propyl)benz[a]anthracene 							150.1-50.5 150.2-50.6	Wood, Fieser (1940)
1,2-Diphenyl-2-(2-fluorenyl)-1-thiaethane 							149	Ray, Levine (1937)
Tetraphenylthiacyclopropane 							178-9 1/200	Schonberg, Barakat (1939) Staudinger, Siegart (1920) B
Di(9-fluorenyl)thiomethane 							250	Bergmann, Hervey (1929)
9,10-Dihydro-10-diphenylmethylene-9-thiaanthracene 							243	Bergmann, Corte (1933)
3,3-Diphenyl-2-thiaspirocyclopropane-1,9'-fluorene 							225	Staudinger, Siegart (1920) B
13-Thioctacosane C ₁₂ -S-C ₁₅							49.2	Jones, Reid (1938)
1-(2-Naphthyl)-1-thioctadecane 							66.2	Jones, Reid (1938)
1-(4-Biphenyl)-1-thiahexadecane 							98.4-8.8 98.0-8.7	Lester et al. (1944)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
2,2-Diphenyl-1,2-di-(4-methylphenyl)-1-thiaethane 							87-8	Schonberg et al. (1929) A
1-(1-Thiaethyl)-9,10-diphenylanthracene 							189	Panico (1951)
2-(1-Thiaethyl)-9,10-diphenylanthracene 							170-1	Dufraisse, Panico (1949)
6-(2-Phenyl-1-thiaethyl)-benzo[<i>a</i>]pyrene 							170.2-2.2	Wood, Fieser (1940)
7,14-Dihydro-14-phenyl-7-thiadibenz[<i>a</i> , <i>j</i>]anthracene 							230-1	Dilthey et al. (1939)
11-Thianonacosane $C_{10}-S-C_{18}$							44-5	Shirley, Reedy (1951)
15-Thianonacosane $C_{14}-S-C_{14}$							49-50	Hunter (1941)
10,13-Dimethyl-3-(1-thiaethyl)-17-(6-methyl-2-heptyl)-5-gonene 							141	Jones et al. (1948)
								Optical rotation: Jones et al. (1948)
1-(4-Biphenyl)-1-thiaheptadecane 							97.0-7.7 96.7-7.4	Lester et al. (1944)

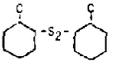
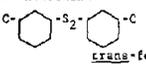
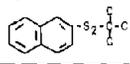
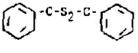
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n _D	D/line		
Di(9-anthryl)thiomethane 							174-6	Heilbron, Heaton (1923)
Di(3-phenanthryl)-thiomethane 	360	2					225	Field (1915)
13-Thiatriacontane C ₁₂ -S-C ₁₇							53.6	Jones, Reid (1938)
10,13-Dimethyl-3-(1-thia- propyl)-17-(6-methyl-2- heptyl)-5-gonene 							131.6-2.6	Ralls et al. (1949)
								Optical rotation: Ralls et al. (1949)
10,13-Dimethyl-3-(1-thia- propyl)-17-(6-methyl-2- heptyl)-3,5-gonadiene 							97.4-8.2 98-9.5	Ralls et al. (1949) Bernstein, Dorfman (1946)
								Optical rotation: Ralls et al. (1949)
1-(2-Naphthyl)-1-thia- eicosane 							71-2	Jones, Reid (1938)
1-(4-Biphenyl)-1-thia- octadecane 							99.7-100.6 100.1-0.9	Lester et al. (1944)
Triphenyl-1-(1-naphthyl)- 1-thiaethane 							121	Finzi, Bellavita (1932)
Triphenyl-1-(2-naphthyl)- 1-thiaethane 							134	Finzi, Bellavita (1932)
2-Phenyl-1-(2-naphthyl)- 2-(4-biphenyl)-1- thiaethane 							155	Ray, Bowden (1943)

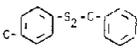
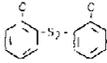
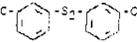
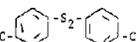
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	D/line		
13-Hentriacontane C ₁₂ -S-C ₁₈							50.5-1.5	Shirley, Reedy (1955)
Tetra (4-methylphenyl)- thiascyclopropane 							194	Schonberg, Barakat (1939)
13-Thiadotriacontane C ₁₂ -S-C ₁₉							53.2	Jones, Reid (1938)
17-Thiatritriacontane C ₁₆ -S-C ₁₆							57 58.2-8.5 57.5 61.8 61.8 57-8 57.5	Bezzi, Lanza (1950) Baer, Carwick (1949) Dentson, Condit (1945) Hoeffelmann, Berkenbosch (1944) Bataafsche (1941) Hunter (1941) Fridau (1852)
	Dielectric constant: Woodrow et al. (1951) Magnetic susceptibility: Crosatto et al. (1949)							
2,2-Diphenyl-1-(4-diphenyl- methylphenyl)-1-thiaethane 							121	Finzi, Belleavita (1932)
9,10-Diphenyl-1-(phenyl- thiamethyl)anthracene 							226	Fanico (1951)
9,10-Diphenyl-1-(2-phenyl-1- thiaethyl)anthracene 							182	Fanico (1951)
10,13-Dimethyl-17-(6- methyl-2-heptyl)-3- (2-phenyl-1-thiaethyl)- 5-gonene 							98.5	Wagner-Jauregg, Lennartz (1941)
	Optical rotation: Wagner-Jauregg, Lennartz (1941)							
10,13-Dimethyl-17-(6- methyl-2-heptyl)-3- (2-phenyl-1-thiaethyl)- 3,5-gonadiene 							118-20 120-1 121.5-2	Campos, Hauptmann (1952) Romo et al. (1951) Rosenkranz et al. (1949)
	Optical rotation: Rosenkranz et al. (1949)							
19-Thiaheptatriacontane C ₁₈ -S-C ₁₈							70-1 63.5-4.5 68-9	Shirley, Zicz (1953) Shirley, Reedy (1951) Hunter (1941)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	$^{\circ}C$	mm Hg	d	$^{\circ}C$	n	$^{\circ}C$		
4-(Diphenylmethyl)-1-(2,2-diphenyl-1-thiaethyl)naphthalene 							148	Finzi, Bellavita (1932)
Hexaphenyl-2-thiopropane 							182	Vorlander, Mittag (1919)
1-Triphenylmethyl-2-(triphenyl-1-thiaethyl)naphthalene 							82	Finzi, Bellavita (1932)

Name and empirical formula	Boiling point		Density		Refractive index		Freezing point	Reference
	$^{\circ}\text{C}$	mm Hg	d_4^{20}	$^{\circ}\text{C}$	n_D^{20}	D		
"Quatdecylthiophane" $\text{C}_{14}\text{H}_{28}\text{S}$	266-8 168-70	750 50	0.9208	20/	1.4892	/D		Mabery, Quayle (1906)
"Methylcyclohexenyl methylcyclohexyl sulfide" $\text{C}_{14}\text{H}_{24}\text{S}$	>145	0.1						Farmer, Shipley (1947)
"Isooctyl phenyl sulfide" $\text{C}_{14}\text{H}_{22}\text{S}$	149-51	15						Chemische Fabric (1937)
$\text{C}_{14}\text{H}_{18}\text{S}$	156	6			1.5790	20/D		Nazarov et al. (1950)
"Isoamyl dihydromyrcyl sulfide" $\text{C}_{15}\text{H}_{30}\text{S}$	158	10						Cunneen (1947)
"3-(Amylmercapto)tetrahydro-1,3(1)-ethanopentalene" $\text{C}_{15}\text{H}_{24}\text{S}$	135-40	3						Bruson, Riener (1945)
"Dimethylsulfonium fluorénylidide" $\text{C}_{15}\text{H}_{14}\text{S}$							170-5	Ingold, Jessop (1930)
"Dlisoctyl thioether" "Isooctyl sulfide" $\text{C}_{16}\text{H}_{34}\text{S}$	166-8 125.5-7	14 1.5	.8332	20/4	1.46100	20/D		Chemische Fabric (1937) Bezzi (1935)
"Sedecylthiophane" $\text{C}_{16}\text{H}_{32}\text{S}$	1/283-5 184-6	750 50	.9222	20/	1.4903	/D		Mabery, Quayle (1906)
"Phenyl dihydromyrcyl sulfide" $\text{C}_{16}\text{H}_{24}\text{S}$	135	0.05						Cunneen (1947)
"3-(Phenylmercapto)tetrahydro-1,3(1)-ethanopentalene" $\text{C}_{16}\text{H}_{18}\text{S}$	157	2						Bruson, Riener (1945)
$\text{C}_{16}\text{H}_{14}\text{S}$ (or $\text{C}_{16}\text{H}_{16}\text{S}$)							150-1	Nagai (1882)
"3-(Benzylmercapto)tetrahydro-1,3(1)-ethanopentalene" $\text{C}_{17}\text{H}_{20}\text{S}$	185-90	3						Bruson, Riener (1945)
"Octadecylthiophane" $\text{C}_{18}\text{H}_{36}\text{S}$	1/290-5 198-202	760 50	.9235	20/	1.4977	/D		Mabery, Quayle (1906)
$\text{C}_{18}\text{H}_{16}\text{S}$							225.5-6	Schultze (1908)
$\text{C}_{18}\text{H}_{12}\text{S}$ (?)	332-3						97	Graebe (1874)
"Bis-p-menthenyl sulfide" $\text{C}_{20}\text{H}_{34}\text{S}$	213 217	28 33					50 50.5	Fromm (1908) Speranski (1907)

1/ Decomposition.

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	°C/line		
8,9-Dithiahexadecane C ₇ -S ₂ -C ₇	143-7	5						Westlake, Dougherty (1942)
5,8-Diethyl-6,7-dithia- dodecane C ₂ -C ₂ -S ₂ -C ₂ -C ₄	130-1	3	0.9033	20/4	1.4865	20/D		Mel'nikov, Vol'fson (1950)
2,9-Dimethyl-4,7-diethyl- 5,6-dithiadecane C-C-C-C-S ₂ -C-C-C-C	136-42	8	.9027	20/4	1.4873	20/D		Mel'nikov, Vol'fson (1950)
2,7-Dimethyl-3,6-di- propyl-4,5-dithiaoctane C-C-C-S ₂ -C-C-C	125	1	.9172	20/4	1.4853	20/D		Mel'nikov, Vol'fson (1950)
8,9-Dithia-6-hexadecene C ₅ -C=C-S ₂ -C ₇					1.5084 1.5084	20/D 20/D		Farmer et al. (1955) Farmer et al. (1954)
Di(2-methylcyclohexyl)- dithiaethane 	123-5 106	0.3 .1						Bruin et al. (1952) Naylor (1947)
Di(3-methylcyclohexyl)- dithiaethane 	100-10 198	15 20	.9480	25/4	1.5050	25/D		Yukawa, Kishi (1951) Mousseron et al. (1948)
	198	20	.948	25/4	1.5050	25/D		Mousseron (1942)
Optical rotation: Mousseron et al. (1948); Mousseron (1942)								
3,3-Dimethyl-1-(2-naph- thyl)-1,2-dithiobutane 							52.8-3.3 53	Rheinboldt, Matzka (1939) Rheinboldt (1937)
1,4-Diphenyl-2,3-dithia- butane 							69-71 71 71-2 69-70 69 68-70 71 71 71 71 69-70 66.5-8 71 70-1 70.5 69-70 69.8 69.5-70 70-1.5 70 71 70-1 70-2 67.5 71-2 67-9 71 70-2 71.0	Boune et al. (1954) Gur'yanova, Usail'eva (1954) Leandri (1954) Moore, Saville (1954) Nakazaki (1954) Soper et al. (1954) Takiura, Takiura (1954) Iwatsu (1953) Kern (1953) Zahn, Wilhelm (1953) Bruin et al. (1952) Cairns et al. (1952) Minoura (1952) B Bonner (1951) Minoura (1950) Koch (1949) Boeseken (1948) Dodson (1948) McMillea, King (1948) Hauptmann (1947) Hogatch, Sexton (1947) Tandager (1947) Holmberg (1945) Olin, Deger (1944) Wojcik (1939) Moran, Crandall (1938) Windus, Turley (1938) Farbenindustrie (1936) Bhatnagar, Singh (1930)
			1.105 1.094 1.085 1.075	75.2/4 88.0/4 100.2/4 112.5/4			74	Bergman, Hervey (1924)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	C	mm Hg	d	C	n	Giline		
1,4-Diphenyl-2,3-dithiabutane -- Continued							71 71-2 1709-70 271-2 69-70 71-2 66-7	Smythe (1922) Stetelucka (1910) Hinsbery (1908) Fromm, Schauldt (1907) Hofman (1837) Marcker (1865)
	X-ray data Egardet et al. (1932) Surface tension Bhacnagar, Singh (1930)							
3-Phenyl-1-(4-methylphenyl)-1,2-dithiopropane 							73-3.8	Nakazaki (1954)
Di-(2-methylphenyl)-dithioethane 							17 35 36-8 38 38 37-8 38-9 38	Charronat, Lalezari (1954) Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Colichman, Love (1953) Cymerman, Willis (1951) Takagi et al. (1951) Taboury (1908) Troeger, Voightlander-Tetzner (1896)
Di(3-methylphenyl)-dithioethane 							-21 < -22	Colichman, Love (1953) Hubner, Post (1873)
Di(4-methylphenyl)-dithioethane 	178-80	5					46 46-7 45 46 46-7 44.6-5 47 44-6 48 45-b 35-7 46 45-6 46 45-6 45-6.5 45.5-7.5 47-6 45-5.5 43-5 45.8 46 46-7 47 46-7 45-6 45-6 46.0	Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Wiley, Davis (1954) Colichman, Love (1953) Kurzar (1953) Tito-Skvortsova et al. (1953) Weisblat et al. (1953) Burmistrov, Glaskov (1952) Field (1957) Grisham et al. (1952) Klamann, Haufbauer (1952) Kloosterzell, Backer (1952) Minoura (1952) A Nikoljenko (1952) Snyder, Celler (1952) Cymerman, Willis (1951) Field, Grunwald (1951) Oregg, Blood (1951) Gur'yanova (1950) Minoura (1950) Strating, Backer (1950) B Dawson et al. (1948) Belov, Finkelstein (1947) Hoggarth (1947) Hoggarth, Sexton (1947) Ziegler, Connor (1940) Bhatnagar, Singh (1930)
	133-5	0.1					45-6 45-6.5 45.5-7.5 47-6 45-5.5 43-5 45.8 46 46-7 47 46-7 45-6 45-6 46.0	Minoura (1952) A Nikoljenko (1952) Snyder, Celler (1952) Cymerman, Willis (1951) Field, Grunwald (1951) Oregg, Blood (1951) Gur'yanova (1950) Minoura (1950) Strating, Backer (1950) B Dawson et al. (1948) Belov, Finkelstein (1947) Hoggarth (1947) Hoggarth, Sexton (1947) Ziegler, Connor (1940) Bhatnagar, Singh (1930)
	230-8	40	1.144 1.100 1.084 1.078	51.274 69.374 89.274 111.074			45.6 46.0	Hoggarth (1947) Hoggarth, Sexton (1947) Ziegler, Connor (1940) Bhatnagar, Singh (1930)
	210-15	20					45.6 47 47-8 46 45-6 45.2 45.5 46 46 41 41	Reilly et al. (1930) Schonberg et al. (1930) Slotta, Franke (1930) Nekrassov, Melnikow (1929) Schonberg et al. (1929) A Hove (1927) Gillman, King (1925) Rosenmund, Harms (1920) Leukart (1890) Otto, Rosling (1886) Marcker (1865)
	Dielectric constant Gur'yanova (1950) X-ray data Dawson et al. (1948) Surface tension: Bhacnagar, Singh (1930)							
9,10-Dichlaocadecane C ₈ -S ₂ -C ₈	175-6 178-83	1 5						Bruin et al. (1952) Westlake, Dougherty (1942)

1/ α -form.
2/ β -form.

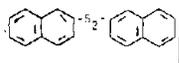
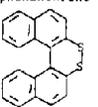
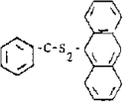
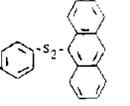
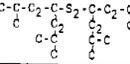
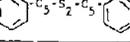
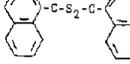
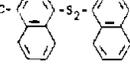
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n _D	D/line		
7,10-Dimethyl-8,9-dithiahexadecane 	126-7 169-71	0.4 5	0.9010	20/4	1.4871	20/D		Bruin et al. (1952) Mel'nikov, Vol'fson (1950)
5,8-Diisopropyl-7,7-dithiandecane 	137-8	1	.9147	20/4	1.4850	20/D		Mel'nikov, Vol'fson (1950)
1,6-Diphenyl-3,4-dithiahexane 	172-5	0.8						McMillan, King (1948)
2,5-Diphenyl-3,4-dithiahexane 							58-9 57-8 57-8	Holmberg (1939) Holmberg (1937) Baumann, Fromm (1895) A
								Optical rotation: Holmberg (1939) Optical rotation: Holmberg (1939)
1,4-Bis(2-methylphenyl)-2,3-dithiabutane 							83-5	Strzelecka (1910)
1,4-Bis(4-methylphenyl)-2,3-dithiabutane 							43	Strzelecka (1910)
Di(2,5-dimethylphenyl)-dithiaethane 							46-7	Taboury (1908)
1,6-Diphenyl-3,4-dithia-1,5-hexadiene 							40-2	Holmberg (1950)
2-(Phenyl)dithiaethyl-naphthalene 							67-5 74-5 75-6	Ende (1951) Smiles, Gibson (1924) Lecher, Wittwer (1922)
10,11-Dithiaicosane C ₉ -S ₂ -C ₉	211-2 185-93	6 7	.8922 .8772	20/4 20/4	1.4832 1.4775	20/D 20/D		Tits-Skwortsova et al. (1951) Mel'nikov, Vol'fson (1950)
7,10-Diethyl-8,9-dithiahexadecane 	155	2	.8933	20/4	1.4819	20/D		Mel'nikov, Vol'fson (1950)
2,2,4,11,13,13-Hexamethyl-7,8-dithiatetradecane 	128-9	0.7	.901	25/4	1.4803	25/D		Cairns et al. (1952)
5,8-Dibutyl-6,7-dithiadodecane 	175-85	6	.8936	20/4	1.4641	20/D		Mel'nikov, Vol'fson (1950)

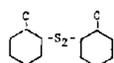
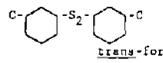
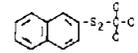
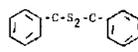
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/lins		
5,8-Di(2-methylpropyl)-6,7-dithiadodecane 	143-51	1	0.9040	20/4	1.4820	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-di-propyl-6,7-dithiadodecane 	165-7	7	.8925	20/4	1.4819	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-diiso-propyl-6,7-dithiadodecane 	148-56	1	.9128	20/4	1.4923	20/D		Mel'nikov, Vol'fson (1950)
2,9-Dimethyl-4,7-di(2-methylpropyl)-5,6-dithiadecane 	150	1	.8870	20/4	1.4795	20/D		Mel'nikov, Vol'fson (1950)
1,8-Diphenyl-4,5-dithiaoctane 	194-5 165-6	1.5 0.03-0.04			1.5877	20/D		Truce, Millonis (1952)
2,5-Dimethyl-1,6-diphenyl-3,4-dithiahexane 1-form 	144	0.1	1.072	20/4	1.5794	24.5/D		Kenyon et al. (1935)
								Optical rotation: Kenyon et al. (1935)
Di(2,4,5-trimethylphenyl)dithiaethane 							115	Radloff (1878)
Di(2,4,6-trimethylphenyl)dithiaethane 							125 125	Backer, Westerhuis (1952) Holtmeyer (1867)
1,8-Diphenyl-4,5-dithia-1,7-octadiene 							90.5 89	Luttringhaus et al. (1947) Billeter (1925)
11,12-Dithiadocosane C ₁₀ -S ₂ -C ₁₀	210-2 206-7	7 2	0.8894 .8907	20/4 20/4	1.4818 1.4813	20/D 20/D		Tits-Skvortsova et al. (1951) Mel'nikov, Vol'fson (1950)
7,10-Dipropyl-8,9-dithiahexadecane C ₆ -C ₃ -S ₂ -C ₃ -C ₆	1/137-9	1	1/.9003 .8946	20/4 20/4	1/1.4857 1.4815	20/D 20/D		Mel'nikov, Vol'fson (1950)

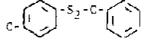
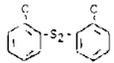
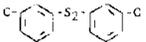
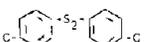
1/ These values may be for 6,9-dipropyl-7,8-dithiatetradecane - see original article.

Name and skeleton	Boiling point		Density		Refractive index		Freezing pt. °C	Reference
	°C	mm Hg	d	°C	n	D		
5,8-Dimethyl-5,8-di(1-butyl-6,7-dithiadodecane) 			0.9135	20/4	1.4870	20/D		Mel'nikov, Val'fson (1950)
2,11-Dimethyl-5,8-di(7-methylpropyl)-6,7-dithiadodecane 	145-50	3	.8908	20/4	1.4765	20/D		Mel'nikov, Val'fson (1950)
5,10-Dimethyl-6,9-dipropyl-7,8-dithia-4,10-tetradecadiene 					1.502	20/D		Armstrong (1948)
Di(2,2,6,6-tetramethyl-cyclohexyl)dithiaethane 							59-9.5	Laakso (1940)
Di(1,7,7-trimethyl-2-norbornyl)dithiaethane 							195 196 121 178 175-6	Haraszi (1937) Sen (1935) Borsche, Lange (1906) Houben, Doescher (1905) Wuyts (1903)
Steroisomer							227-8	Subluskey, King (1951)
Di(2-decalyl)dithiaethane 	230 230	20 20	1.0218 1.022	25/4 25/4	1.5437 1.5437	25/D 25/D		Mousseron et al. (1948) Mousseron (1942)
Di(1,7,7-trimethyl-2-norbornen-2-yl)dithiaethane 	160	10						Sen (1938)
1,10-Diphenyl-5,6-dithiadecane 	195	0.2			1.5750	20/D		Truce, Millionis (1952)
Di(4- <i>t</i> -butylphenyl)dithiaethane 							88.5-9	Backer, Westerhuis (1952)
Di(5-methyl-2-isopropylphenyl)dithiaethane 							63	Schonberg et al. (1930)
Di(2-terphenyl)dithiaethane 							66	Braun et al. (1923)
Di(1-naphthyl)dithiaethane 							85 85-6 88.5 1/72 85-6 91 85	Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Rheinboldt et al. (1952) Taboury (1908) Leuckart (1890) Schartel (1864)

1/ Metastable form.

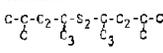
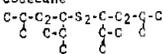
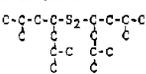
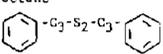
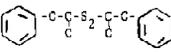
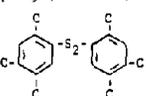
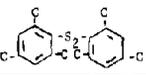
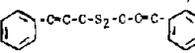
Name and Skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/Line		
Di(2-naphthyl)dithioethane 					1.144 1.138 1.128	144.074 155.074 169.074	139 138-9 136-9 139 139	Wiley, Davis (1954) Belov, Finkel'stein (1947) Reinbold, Morczkus (1939) Spec (1933) Bhatnagar, Singh (1930)
Surface tension: Bhatnagar, Singh (1890)								
3,4-Dithiadibenzo[<i>a,g</i>]-phenanthrene 							214	Barber, Smiles (1928)
9-(1-Phenyl-1,2-dithiapropryl)anthracene 							128	Foornet, Smiles (1925)
9-(4-Methylphenyldithioethyl)anthracene 							98-9	Smiles, Gibson (1924)
7,10-Dibutyl-8,9-dithiahexadecane C ₆ -C ₄ -S ₂ -C ₄ -C ₆ 	190-2	1	0.8840	20/4	1.4811	20/D		Mel'nikov, Vol'fson (1950)
7,10-Di(2-methylpropyl)-8,9-dithiahexadecane C ₆ -C ₄ -S ₂ -C ₄ -C ₆ 	175-80	1	.8905	20/4	1.4810	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-didimethylbutyl)-6,7-dithiadodecane C-C-C ₂ -C-S ₂ -C-C ₂ -C-C 			.8873	20/4	1.4821	20/D		Mel'nikov, Vol'fson (1950)
1,12-Diphenyl-6,7-dithiadodecane 							23-4	Truce, Millionis (1952)
1,4-Di(1-naphthyl)-2,3-dithiabutane 							108.5-9	Windus, Turley (1938)
Di(4-methyl-1-naphthyl)-dithioethane 							114	Elbs, Christ (1923)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	C/line		
8,9-Dithiahexadecane C ₇ -S ₂ -C ₇	143-7	5						Westlake, Dougherty (1942)
5,8-Diethyl-6,7-dithia- dodecane C ₄ -C ₂ -S ₂ -C ₂ -C ₄	130-1	3	0.9033	20/4	1.4865	20/D		Mel'nikov, Vol'fson (1950)
2,9-Dimethyl-4,7-diethyl- 5,6-dithiadecane C-C-C-C-S ₂ -C-C-C-C	136-42	8	.9027	20/4	1.4873	20/D		Mel'nikov, Vol'fson (1950)
2,7-Dimethyl-3,6-di- propyl-4,5-dithiooctane C-C-C ₃ -S ₂ -C-C ₃ -C	125	1	.9172	20/4	1.4853	20/D		Mel'nikov, Vol'fson (1950)
8,9-Dithia-6-hexadecane C ₅ -C=C-S ₂ -C ₇					1.5084 1.5084	20/D 20/D		Farmer et al. (1955) Farmer et al. (1954)
Di(2-methylcyclohexyl)- dithiaethane 	123-5 106	0.3 .1						Bruin et al. (1952) Naylor (1947)
Di(3-methylcyclohexyl)- dithiaethane trans-form 	100-10 198	15 20	.9480	25/4	1.5050	25/D		Yukawa, Kishi (1951) Mousseron et al. (1948)
	198	20	.948	25/4	1.5050	25/D		Mousseron (1942)
Optical rotation: Mousseron et al. (1948); Mousseron (1942)								
3,3-Dimethyl-1-(2-naph- thyl)-1,2-dithiabutane 							52.8-3.3 53	Rheinboldt, Motzkus (1939) Rheinboldt (1937)
1,4-Diphenyl-2,3-dithia- butane 			1.105 1.094 1.085 1.075	75.2/4 88.0/4 100.2/4 112.5/4			69-71 71 71-2 69-70 69 68-70 71 71 71 71 69-70 66.5-8 71 70-1 70.5 69-70 69.8 69.5-70 70-1.5 70 71 70-1 70-2 67.5 71-2 67-9 71 70-2 71.0	Boune et al. (1954) Gur'yasova, Vasil'eva (1954) Leandri (1954) Moore, Saville (1954) Nakazaki (1954) Soper et al. (1954) Takiura, Takino (1954) Iwatsu (1953) Kern (1953) Zahn, Wilhelm (1953) Bruin et al. (1952) Cairns et al. (1952) Minoura (1952) B Bonner (1951) Minoura (1950) Koch (1949) Boeseken (1948) Dodson (1948) McMillan, King (1948) Hauptmann (1947) Hogarth, Sexton (1947) Tananger (1947) Holmberg (1945) Olin, Deger (1944) Wojcik (1939) Moran, Crandall (1938) Windus, Turley (1938) Farbenindustrie (1934) Bhacraejar, Singh (1930)
							74	Bergmann, Hervey (1924)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	C	n	D/line		
1,4-Diphenyl-2,3-dithiabutane -- Continued							74 71-2 1/69-70 2/71-2 69-70 71-2 66-7	Smythe (1921) Srnolucka (1910) Hinsbury (1965) Fromm, Schmolz (1907) Hofman (1887) Marcker (1865)
	X-ray data: Carter et al. (1932) Surface tension: Bhatnagar, Singh (1930)							
3-Phenyl-1-(4-methylphenyl)-1,2-dithiopropane 							73-3.8	Nakazaki (1954)
Di-(2-methylphenyl)-dithiaethane 							37 35 36-8 38 38 37-8 38-9 38	Charronat, Leluzari (1954) Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Colichman, Love (1953) Cymerman, Willis (1951) Takagi et al. (1951) Taboury (1908) Troeger, Voightlander-Tetzner (1896)
Di-(3-methylphenyl)-dithiaethane 							-21 < -22	Colichman, Love (1953) Hubner, Post (1873)
Di-(4-methylphenyl)-dithiaethane 	178-80	5					46 46-7 45 46 46-7 44, 6-5 47 44-6 48 45-4 35-7 46 45-6 46 45-6 45-6.5 45.5-7.5 47-8 45-5.5 43-5 45 8 46 46-7 47 46-7 45-6 45-6 46.0	Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Wiley, Davis (1954) Colichman, Love (1953) Kurtor (1953) Tito-Skvorcova et al. (1953) Weisblat et al. (1953) Burmistrov, Glaskov (1952) Field (1952) Gresham et al. (1952) Klanann, Haufbauer (1952) Kloosterzoll, Backer (1952) Minoura (1952) A Mikolenko (1952) Snyder, Keller (1952) Cymerman, Willis (1951) Field, Grunwald (1951) Clegg, Blood (1951) Gur'yanova (1950) Minoura (1950) Strating, Barker (1950) B Daxson et al. (1948) Holov, Finkelstein (1947) Hoggarth (1947) Hoggarth, Sexton (1947) Ziegler, Connor (1940) Bhatnagar, Singh (1930)
	131-5	0.1					45-6 45-6.5 45.5-7.5 47-8 45-5.5 43-5 45 8 46 46-7 47 46-7 45-6 45-6 46.0	Reilly et al. (1930) Schonberg et al. (1930) Slotta, Franke (1930) Nukrassov, Melnikov (1929) Schonberg et al. (1929) A Hove (1927) Gillman, King (1925) Rosenmund, Harms (1920) Leukert (1890) Otto, Rossing (1886) Marcker (1865)
	230-8	40					45-6 45-6 46.0	Dielectric constant: Gur'yanova (1950) X-ray data: Dawson et al. (1948) Surface tension: Bhatnagar, Singh (1930)
	210-15	20			1.144 1.100 1.084 1.068	51.2/4 60.3/4 89.2/4 111.0/4	45-6 47 47-8 46 45-6 45.2 45.5 46 41 41	
9,10-Dithiaundecane $C_8-S_2-C_8$	175-6 178-83	1 5						Bruin et al. (1952) Westlake, Dougherty (1942)

1/ α -form.
2/ β -form.

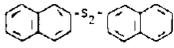
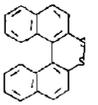
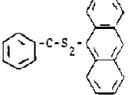
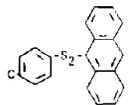
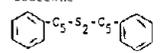
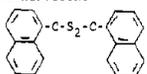
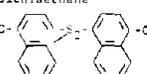
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference	
	C	mm Hg	d	C	n	C/gne			
7,10-Dimethyl-8,9-dithiahexadecane 	126-7 169-71	0.4 6	0.9010	20/4	1.4871	20/D		Bruin et al. (1952) Mel'nikov, Vol'fson (1950)	
5,8-Diisopropyl-6,7-dithiadodecane 	137-8	1	.9147	20/4	1.4880	20/D		Mel'nikov, Vol'fson (1950)	
1,6-Diphenyl-3,4-dithiahexane 	172-5	0.8						McMillan, King (1948)	
2,5-Diphenyl-3,4-dithiahexane 							58-9 57-8 57-8	Holmberg (1939) Holmberg (1937) Baumman, Fromm (1895) A	
1,4-Di(2-methylphenyl)-2,3-dithiabutane 								Optical rotation: Holmberg (1939) Optical rotation: Holmberg (1939)	
1,4-Di(4-methylphenyl)-2,3-dithiabutane 								83-5 43	Szrezelecka (1910) Szrezelecka (1910)
Di(2,5-dimethylphenyl)-dithiaethane 								46-7	Taboury (1908)
1,6-Diphenyl-3,4-dithia-1,5-hexadiene 								40-2	Holmberg (1950)
2-(Phenyldithiaethyl)-naphthalene 								67.5 74-5 75-6	Eade (1951) Smiles, Gibson (1924) Lecher, Wittwer (1922)
10,11-Dithiaicosane 	211-2 185-91	6 7	.8922 .8772	20/4 20/4	1.4832 1.4775	20/D 20/D		Tita-Skvortsova et al. (1951) Mel'nikov, Vol'fson (1950)	
7,10-Diethyl-8,9-dithiahexadecane 	155	2	.8933	20/4	1.4819	20/D		Mel'nikov, Vol'fson (1950)	
2,2,4,11,13,13-Hexamethyl-7,8-dithiatetradecane 	128-9	0.7	.901	25/4	1.4803	25/D		Caftus et al. (1952)	
5,8-Dibutyl-6,7-dithiadodecane 	175-85	6	.8936	20/4	1.4841	20/D		Mel'nikov, Vol'fson (1950)	

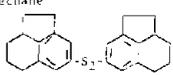
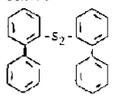
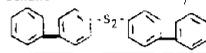
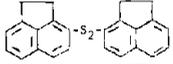
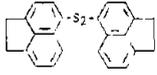
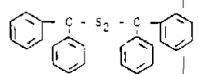
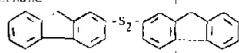
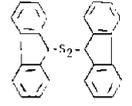
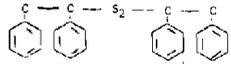
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
5,8-Di(2-methylpropyl)-6,7-dithiadodecane 	143-51	1	0.9040	20/4	1.4820	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-di-propyl-6,7-dithiadodecane 	165-7	7	.8925	20/4	1.4819	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-diisopropyl-6,7-dithiadodecane 	148-56	1	.9128	20/4	1.4923	20/D		Mel'nikov, Vol'fson (1950)
2,9-Dimethyl-4,7-di(2-methylpropyl)-5,6-dithiadecane 	150	1	.8870	20/4	1.4795	20/D		Mel'nikov, Vol'fson (1950)
1,8-Diphenyl-4,5-dithia-octane 	194-5 165-6	1.5 0.03-0.04			1.5877	20/D		Truce, Miltonis (1952)
2,5-Dimethyl-1,6-diphenyl-3,4-dithiahexane 1-form 	144	0.1	1.072	20/4	1.5794	24.5/D		Kenyon et al. (1935)
	1-form	Optical rotation: Kenyon et al. (1935)						
Di(2,4,5-trimethylphenyl)dithiaethane 							115	Radloff (1878)
Di(2,4,6-trimethylphenyl)dithiaethane 							125 125	Backer, Westerhuis (1952) Holtmeyer (1867)
1,8-Diphenyl-4,5-dithia-1,7-octadiene 							90.5 89	Luttringhaus et al. (1947) Billster (1925)
11,12-Dithiadocosane C ₁₀ -S ₂ -C ₁₀	210-2 206-7	7 2	0.8894 .8907	20/4 20/4	1.4818 1.4813	20/D 20/D		Tita-Skvortsova et al. (1951) Mel'nikov, Vol'fson (1950)
7,10-Dipropyl-8,9-dithiahexadecane 	1/137-9	1	1/.9003 .8946	20/4 20/4	1/1.4857 1.4815	20/D 20/D		Mel'nikov, Vol'fson (1950)

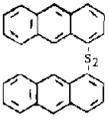
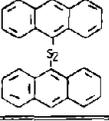
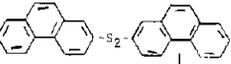
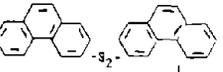
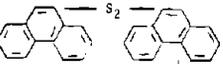
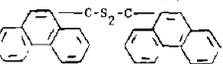
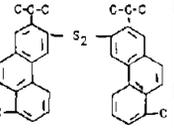
1/ These values may be for 6,9-dipropyl-7,8-dithiatetradecane - see original article.

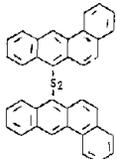
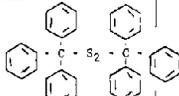
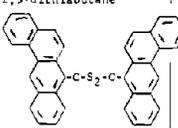
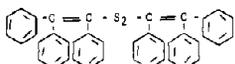
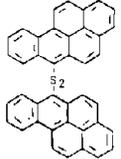
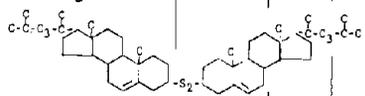
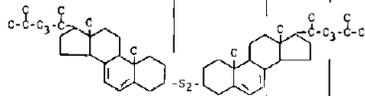
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D		
5,8-Dimethyl-5,8-dibutyl-6,7-dithiadodecane 			0.9135	20/4	1.4870	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-di(2-methylpropyl)-6,7-dithiadodecane 	145-50	3	.8908	20/4	1.4765	20/D		Mel'nikov, Vol'fson (1950)
5,10-Dimethyl-6,9-dipropyl-7,8-dithia-4,10-tetradecadiene 					1.502	20/D		Armstrong (1948)
Di(2,2,6,6-tetramethyl-cyclohexyl)dithiaethane 							59-9.5	Leakso (1940)
Di(1,7,7-trimethyl-2-norbornyl)dithiaethane 							195 198 121 178 175-6	Havaszi (1937) Sen (1935) Horscher, Lange (1906) Houben, Doescher (1906) Wuyts (1903)
Stereoisomer							227-8	Subluskey, King (1951)
Di(2-decalyl)dithiaethane 	230 230	20 20	1.0218 1.022	25/4 25/4	1.5437 1.5437	25/D 25/D		Mousseron et al. (1948) Mousseron (1942)
Di(1,7,7-trimethyl-2-norbornen-2-yl)dithiaethane 	160	10						Sen (1938)
1,10-Diphenyl-5,6-dithiadecane 	195	0.2			1.5750	20/D		Truce, Milonik (1952)
Di(4-tert-butylphenyl)dithiaethane 							88.5-9	Backer, Westerhuis (1952)
Di(5-methyl-2-isopropylphenyl)dithiaethane 							63	Schonberg et al. (1930)
Di(2-tertryl)dithiaethane 							66	Braun et al. (1923)
Di(1-naphthyl)dithiaethane 							85 85-8 88-5 172 85-6 91 85	Vinkler, Klivenyi (1954) A Vinkler, Klivenyi (1954) B Rheinboldt et al. (1952) Taboury (1908) Leuckart (1890) Schertel (1864)

1/ Metastable form.

Name and Skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
Di(2-naphthyl)dithiaethane 					1.144 1.138 1.128	144.0/4 155.0/4 169.0/4	139 138-9 138-9 139 139	Wiley, Davis (1954) Belov, Finkel'stein (1947) Rheinholdt, Matzkus (1939) Smet (1933) Rhetnagar, Singh (1930)
Surface tension: Bhattacharya, Singh (1890)								
3,4-Dithiadibenzo [c,g]-phenanthrene 							214	Barber, Smiles (1928)
9-(3-Phenyl-1,2-dithiapropryl)anthracene 							128	Foorner, Smiles (1925)
9-(4-Methylphenyldithiaethyl)anthracene 							98-9	Smiles, Gibson (1924)
7,10-Dibutyl-8,9-dithiahexadecane C ₅ -C ^{C₄} -S ₂ -C ^{C₄} -C ₅	190-2	1	0.8840	20/4	1.4811	20/D		Mel'nikov, Vol'fson (1950)
7,10-Di(2-methylpropyl)-8,9-dithiahexadecane C ₆ -C ^{C₂} -S ₂ -C ^{C₂} -C ₆ C-C ^C -C ^C	175-80	1	.8905	20/4	1.4810	20/D		Mel'nikov, Vol'fson (1950)
2,11-Dimethyl-5,8-di(3-methylbutyl)-6,7-dithiadodecane C-C-C ₂ -C-S ₂ -C-C ₂ -C-C C-C ^{C₂} -C ^{C₂} -C ^{C₂} -C ^{C₂} -C			.8873	20/4	1.4821	20/D		Mel'nikov, Vol'fson (1950)
1,12-Diphenyl-6,7-dithiadodecane 							23-4	Truce, Millionis (1952)
1,4-Di(1-naphthyl)-2,3-dithiabutane 							108.5-9	Windus, Turley (1938)
Di(4-methyl-1-naphthyl)-dithiaethane 							114	Elbs, Christ (1923)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n _D	D/Liue		
13,14-Dithiahexacosane C ₁₂ -S ₂ -C ₁₂	228-30	1.0					30-1 33 35- 33-4 39.5-4	Bezzi, Lanza (1950) Boggarth, Sutor (1947) Larley, Sigraige (1945) Wasthko, Deugharty (1942) Fore, Bost (1937)
Di(2a,3,4,5-catechahydro-7-acenaphthyl)dithiaethane 							129	Braun, Kirschbaum (1922)
Di(2-biphenyl)dithiaethane 							116	Sehonberg et al. (1930)
Di(4-biphenyl)dithiaethane 							148-50 148-50	Taboury (1908) Gabriel, Deutsch (1880)
Di(3-acenaphthyl)dithiaethane 							141-2	Dziewonski et al. (1930)
Di(5-acenaphthyl)dithiaethane 							168-9	Dziewonski et al. (1931)
14,15-Dithiaoctacosane C ₁₃ -S ₂ -C ₁₃							43-5	Fore, Bost (1937)
1,1,4,4-Tetraphenyl-2,3-dithiabutane 							151-2 153 152 152 151 152-3	Stancik (1951) Abe (1934) Bilimann (1907) Japp, Raschen (1886) Engler (1878) Buhz (1873)
Di(2-fluorenyl)dithiaethane 							179-80	Ray et al. (1947)
Di(9-fluorenyl)dithiaethane 							169-70	Bergmann, Hervey (1929)
15,16-Dithiatriacontane C ₁₄ -S ₂ -C ₁₄							45.5-6	Fore, Bost (1937)
1,2,5,6-Tetraphenyl-3,4-dithiahexane 							135	Teresu, Bullido (1956)

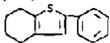
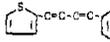
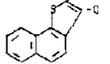
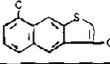
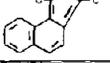
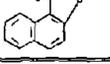
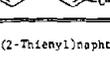
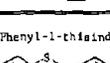
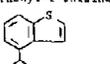
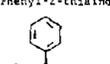
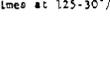
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
Di(1-anthryl)dithiaethane 							191-3	Boylard, Levi (1936)
Di(9-anthryl)dithiaethane 							223 233	Cooke et al. (1925) Friedlander, Simon (1922)
Di(2-phenanthryl)dithiaethane 							177	Dutta, Ghadhury (1951)
Di(3-phenanthryl)dithiaethane 							165	Field (1915)
Di(9-phenanthryl)dithiaethane 							149	Dutta (1941)
1,4-Di(9-phenanthryl)-2,3-dithiabutane 							249	Bergmann, Israelashwilli (1945)
17,18-Dithiatetradecane $C_{16}-S_2-C_{16}$							50-2 55-5.5 47-8 53.5-4 50	Bezzi, Lanza (1950) Baer, Carmack (1949) Denison, Condit (1945) Fore, Bost (1937) Flaschentrauer, Wannschaff (1934)
	Dielectric constant: Woodrow et al. (1951) Magnetic susceptibility: Cratto et al. (1949)							
18,19-Dithiahexadecane $C_{17}-S_2-C_{17}$							59.5-60	Fore, Bost (1937)
19,20-Dithiooctadecane $C_{18}-S_2-C_{18}$							54-5 62-2.5	Westlake, Dougherty (1942) Fore, Bost (1937)
Di(8-methyl-2-isopropyl-3-phenanthryl)dithiaethane 							226.5-7.5	Hasselstrom, Hogert (1935)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
Di(7-benz[<i>a</i>]anthryl)-dithiaethane 							208.2-9.7	Wood, Fieser (1940)
20,21-Dithiatetracontane $C_{19}S_2 \cdot C_{19}$							68.5-9	Fore, Bost (1917)
Hexaphenyl-2,3-dithia-butane 							1/155	Vorlander, Mittag (1913)
1,4-Di(7-benz[<i>a</i>]anthryl)-2,3-dithiabutane 							1/244.5-5 243-4	Wood, Fieser (1940)
Hexaphenyl-3,4-dithia-1,5-hexadecene 							179.5-80.5	Koelsch, Ullyor (1933)
Di(6-benzo[<i>a</i>]pyrenyl)-dithiaethane 							271-2	Wood, Fieser (1940)
Di[10,13-dimethyl-17-(6-methyl-2-heptyl)-5-gonen-3-yl]dithiaethane 							144-5 141-3 144-6 142-5 144.5	Bernstein, Sax (1951) King et al. (1948) Rosenberg, Turnbull (1945) Batyka (1941) Warner-Jauregg, Lennartz (1941)
Optical rotation: Bernstein, Sax (1951); Batyka (1941); Warner-Jauregg, Lennartz (1941)								
Di[10,13-dimethyl-17-(6-methyl-2-heptyl)-5,7-gonadien-3-yl]dithiaethane 							161-3 161-3 161-3	Phillips (1952) A Strating (1951) Strating, Backer (1950) A
Optical rotation: Strating, Backer (1950) A								

1/ Decomposition.

Name and empirical formula	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	°C/line	°C	
$C_{14}H_{20}S_2$	78-81	14						Brintzinger, Schmahl (1954)
$C_{18}H_{34}S_2$ "Isooctyl disulfide"			0.8645	20/4	1.48150	20/D		Bezzi (1935)
$C_{22}H_{34}S_2$							332	Friedmann (1916) B
$C_{22}H_{34}S_2$							350	Friedmann (1916) B

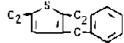
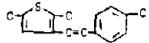
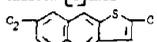
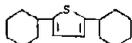
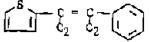
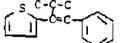
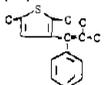
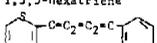
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D _c /line		
2-(5-Ethylcetyl)thiophene 	78-9	0.05						Bedger et al. (1954)
2,5-Di(2-methyl-2-butyl)thiophene 	256-7	760	0.9135	25/4	1.4954	20/D		Caesar (1946)
2,5-Diethyl-3-hexylthiophene 	140.5-1	9	.932	20/4	1.4989	20/D		Cagniant, Cagniant (1953) A
2-Ethyl-3,5-di- <i>t</i> -butylthiophene 	114-5	9	.9255	20/4	1.5009	20/D		Gold'farb, Korsakova (1954) B
4a,5,8,8a-Tetrahydro-6-(2-thienyl)terralin 	135	0.1					53-5	Szmuskowicz, Modest (1950)
3-(2-Hexyl)-1-thiaindene 	128-9	2			1.5710	20/D		Conary, McCleary (1953)
2-(4-Phenylbutyl)thiophene 	183-4	13.5			1.5719	25.2/D		Cagniant, Cagniant (1953) B
2,5-Dimethyl-3-(2-phenylethyl)thiophene 	175-9	13						Buu-Hoi et al. (1951) B
1,2,3,4-Tetrahydro-6-ethyl-9-thiafluorene 	161	1			1.6129	16.6/D	32.5	Cagniant, Cagniant (1952)
2-(4-Ethylphenyl)-1-(2-thienyl)ethylene 	190-5	13						Buu-Hoi et al. (1950)
2-Phenyl-1-(5-ethyl-2-thienyl)ethylene 	154-6	0.6					50	Nam et al. (1954)
2-(4-Methylphenyl)-1-(5-methyl-2-thienyl)ethylene 	185-95	13					94	Buu-Hoi et al. (1950)
2-Phenyl-1-(2,5-dimethyl-3-thienyl)ethylene 	195-205	13					55	Buu-Hoi et al. (1950)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
4,5,6,7-Tetrahydro-2-phenyl-1-thiaindene 							1/82.5-3.5	Horton (1949)
3-(1-Cyclohexenyl)-1-thiaindene 	135	0.1						Szuszkoicz, Madec (1950)
4-Phenyl-1-(2-thienyl)-1,3-butadiene 							141.5-2	Miller, Nord (1951)
2,3-Dimethyl-1-thiabenz[e]indene 	200	0.03					108.5-9	Werner (1949) B
3,8-Dimethyl-1-thiabenz[f]indene 							209	Buu-Hoi, Koen (1948)
1,3-Dimethyl-2-thiabenz[e]indene 							82.5-3	Dann, Dierler (1954)
1,2-Dimethyl-3-thiabenz[e]indene 	200	0.03					106-7	Werner (1949) B
3-Ethynyl-9-fluorene 							45.0-5.5 45.0-5.5 45.0-5.5 45.0-5.5	British Thompson-Houston (1952) British Thompson-Houston (1951) Flowers, Flowers (1950) Flowers, Flowers (1949)
1-(2-Thienyl)naphthalene 	165	1						Szuszkoicz, Madec (1950)
2-Phenyl-1-thiaindene 	220-50	22					1/174.2-5.2 2/175.5-6	Geertner (1952) A Horton (1949)
4-Phenyl-1-thiaindene 							46-7	Kloetzl et al. (1953)
1-Phenyl-2-thiaindene 							236-7	Brochts, Lowy (1939)

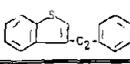
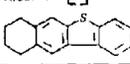
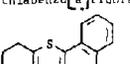
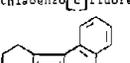
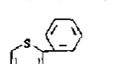
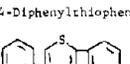
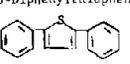
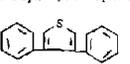
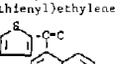
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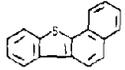
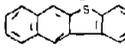
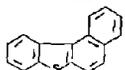
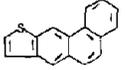
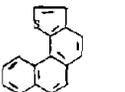
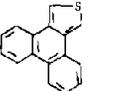
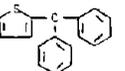
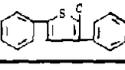
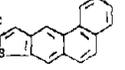
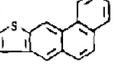
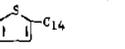
2/ Sublimes at 125-30°/0.1 mm Hg.

Thiophenes-3
C₁₅H₂₆S-C₁₆H₁₄S

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	°C/line		
2-Undecylthiophene 	104 181-3	0.06 18			1.4918	26/D		Budger et al. (1954) Buu-Hoi et al. (1953)
2,5-Diethyl-3-heptylthiophene 	153.5-4	8.5	0.923	21/4	1.4985	19.8/D		Cagniant, Cagniant (1953) A
2,5-Diethyl-3-phenylmethylthiophene 	139.5-40 167	3.5 10	1.032	19/4	1.5650	18/D		Cagniant, Cagniant (1953) A
2-(4-Methylphenyl)-1-(2,5-dimethyl-3-thienyl)ethylene 	200-10	13					101	Buu-Hoi et al. (1950)
2-Methyl-7-ethyl-1-thiabenz[e]indene 							1/165	Buu-Hoi, Hoan (1948)
1-(4-Methylphenyl)-2-thioindene 							217	Brochte, Levy (1939)
2-Dodecylthiophene 	184-8 75-143	18 2			1.4783	25/D		Buu-Hoi et al. (1953) Weinmyr (1950)
2,5-Diethyl-3-octylthiophene 	165-6	9	0.917	20/4	1.4931	19.8/D		Cagniant, Cagniant (1953) A
2,5-Dicyclohexylthiophene 	147	2	1.0294	20/4	1.5433	20/D		Pines et al. (1950)
4-Phenyl-3-(2-thienyl)-3-hexene 	154 136 210-2	10 1 18			1.5870	24.5/D		Robson et al. (1950) Buu-Hoi, Hlong-Ki-Wei (1945)
3,3-Dimethyl-1-phenyl-2-(2-thienyl)-1-butene 	169-70	14			1.5856	24/D		Buu-Hoi, Hlong-Ki-Wei (1945)
2-Methyl-1-phenyl-1-(2,5-dimethyl-3-thienyl)-1-propene 	165-72	13						Buu-Hoi, Hoan (1948)
6-Phenyl-1-(2-thienyl)-1,3,5-hexatriene 							174-5	Miller, Nord (1951)

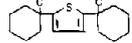
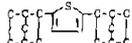
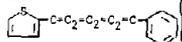
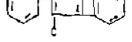
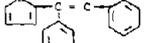
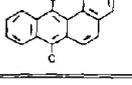
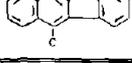
1/ Sublimes at 140°.

Name and skeleton	Boiling point		Density		Refractive index		Freezing Point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
3-(2-Phenylethyl)-1-thiaindene 	215-19	15						Truce et al. (1953)
6,7,8,9-Tetrahydro-11-thiabenzob[<i>b</i>]fluorene 							110.5-11	Werner (1949) A
7,8,9,10-Tetrahydro-11-thiabenzob[<i>a</i>]fluorene 	160-80	10					99-100 97-8	McCall (1953) Rabindran, Tilak (1953) A
8,9,10,11-Tetrahydro-7-thiabenzob[<i>c</i>]fluorene 	190-220	5					83-5 81.5-2	McCall (1953) Rabindran, Tilak (1953) A
2,3-Diphenylthiophene 							82.5-3	Melles, Backer (1953)
2,4-Diphenylthiophene 	360-400 260-5	 36					120.7-1.7 120-1 120-2 120-1.5 123 120.6-1.5 119-24 122.5 122 124 119-20	Melles, Backer (1953) Botcher, Bauer (1951) Drake (1951) Behringer (1949) Rankov, Popov (1948-9) Campaigne (1944) Fromm et al. (1927) Bogert, Herrera (1923) Willgerodt, Scholtz (1910) Willgerodt, Merk (1909) Baumann, Fromm (1895) B
2,5-Diphenylthiophene 							156 153-4 149-50 150-1 151-2.5 153-4 152 155-6 153 150 150.5 152-3 152-3	Demersman et al. (1954) B Melles, Backer (1953) Campaigne, Foye (1952) Melles (1952) Botcher, Bauer (1951) Rankov, Popov (1948-9) Bonae et al. (1942) Fromm et al. (1927) Willgerodt, Scholtz (1910) Willgerodt, Merk (1909) Baumann, Fromm (1895) B Kopf, Paal (1888)
3,4-Diphenylthiophene 							114 116-6.5	Backer, Stevens (1940) B Steinkopf (1921)
1-(1-Naphthyl)-1-(2-thienyl)ethylene 	142-5	0.025						Beatty (1950)
5,6-Dihydro-7-thiabenzob[<i>c</i>]fluorene 	190-5	.6						Rabindran, Tilak (1953) C

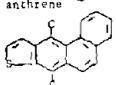
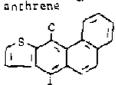
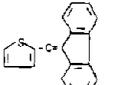
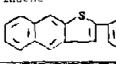
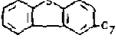
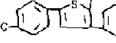
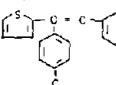
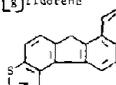
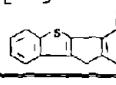
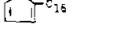
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	C/Line		
11-Thiabenzo[<i>a</i>]fluorene 							184-6 184-5 186-7	McCall (1953) Rabindran, Tilak (1953) A Rabindran, Tilak (1953) B
11-Thiabenzo[<i>b</i>]fluorene 	300-400	15					159.5-60 159-9.5 154-5	Werner (1949) A Kruber, Rappen (1940) Kempka (1936) Mayer et al. (1931)
7-Thiabenzo[<i>c</i>]fluorene 	280	15					100-2.5 102-2.5 102 103.5 103.5 102-2.5	McCall (1953) Rabindran, Tilak (1953) A Rabindran, Tilak (1953) C Davies et al. (1952) A Davies et al. (1952) B Bordwell et al. (1951)
10-Thiacyclopenta[<i>b</i>]-phenanthrene 	190-200	0.012					81-2	Tilak (1951)
1-Thiacyclopenta[<i>c</i>]-phenanthrene 							91.5-2.5	Szmuszkowicz, Modest (1950)
2-Thiacyclopenta[<i>i</i>]-phenanthrene 							163	Rinberg (1910) B
2-Diphenylmethylthiophene 	330-40						63-4 66 63	Ancizar-Sordo, Bistrzycki (1931) Stadnikov, Gol'dfarb (1928) Levi (1886)
2-Methyl-3,5-diphenylthiophene 							132	Demerseman et al. (1954) A
9-Methyl-8-thiacyclopenta[<i>b</i>]phenanthrene 							1/196	Buu-Hoi, Hoan (1948)
9-Methyl-10-thiacyclopenta[<i>b</i>]phenanthrene 							189	Buu-Hoi, Hoan (1948)
2-Tetradecylthiophene 	212-4	15			1.4863	23/D		Buu-Hoi et al. (1953)

1/ Sublimes at 184°.

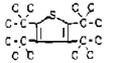
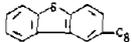
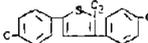
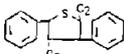
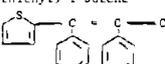
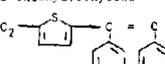
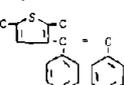
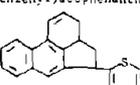
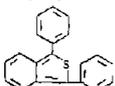
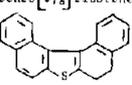
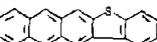
Thiophenes-6
C₁₈H₁₂S-C₁₈H₁₄S

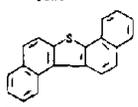
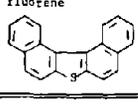
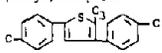
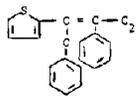
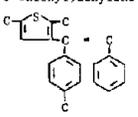
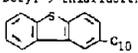
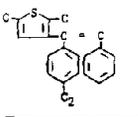
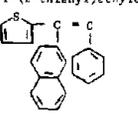
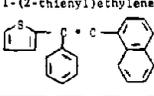
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	n	mm Hg	d	°C	n	D/line		
2,5-Diethyl-3-decylthiophene 	168	3.5	0.922	18.8/4	1.4988	18.2/D		Cagniant, Cagniant (1953) A
2,5-Di(1-methylcyclohexyl)thiophene 	160	1			1.5393	20/D		Pines et al. (1950)
2,5-Di(2-norbornyl)thiophene 	181 178-81	2 2			1.5670 1.5670	20/D 20/D		Pines, Kvetinska (1951) Pines et al. (1950)
8-Phenyl-1-(2-thienyl)-1,3,5,7-octatetraene 							206-7	Miller, Nord (1951)
2,5-Di(phenylmethyl)thiophene 	220-2	12						Steinkopf, Hanake (1939)
2,4-Di(4-methylphenyl)thiophene 							145 145	Dumresnan et al. (1954) B Willgerodt, Scholtz (1910)
2,5-Di(4-methylphenyl)thiophene 	225-60	13					171 177 166 171	Demersman et al. (1954) B Buu-Hoi, Hoan (1950) Willgerodt, Scholtz (1910) Holloman (1887)
3,4-Di(4-methylphenyl)thiophene 							1/79-80 86-7.5	Backer, Stevens (1940) A
2-Ethyl-3,5-diphenylthiophene 							144	Demersman et al. (1954) A
2,4-Dimethyl-3,5-diphenylthiophene 							163.8	Bogert, Anderden (1926)
1,2-Diphenyl-1-(2-thienyl)ethylene 	165-70 195	0.7 1.5					72 68	Robson et al. (1950) Buu-Hoi, Hong-Ki-Wei (1945)
6,11-Dimethyl-11-thia-cyclopenta[<i>a</i>]anthracene 							123.6-4.2	Herahberg, Fieser (1941)
5,10-Dimethyl-11-thia-benzo[<i>b</i>]fluorene 							154.5-5.5	Tilak (1951)

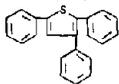
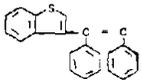
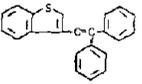
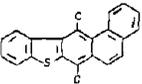
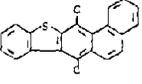
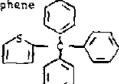
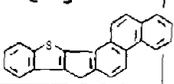
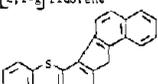
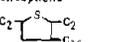
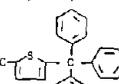
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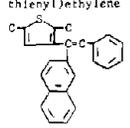
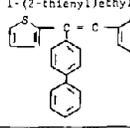
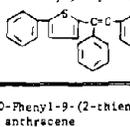
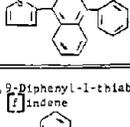
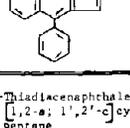
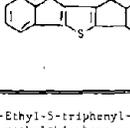
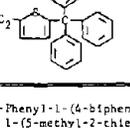
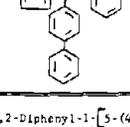
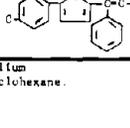
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
7,11-Dimethyl-8-thia-cyclopenta[<i>b</i>]phenanthrene 							158-9 158-9	Sandin, Klichen (1945) Sandin, Fieser (1940)
7,11-Dimethyl-10-thia-cyclopenta[<i>b</i>]phenanthrene 							99-100	Sandin, Klichen (1945)
9-(2-Thienylmethyl)-fluorene 							72	Nam et al. (1954)
2-Phenyl-1-thiabenz[<i>d</i>]-indene 							297	Demaree et al. (1954) A
3-Hexyl-9-thiafluorene 	258	18						Buu-Hoi, Royer (1950)
2-Propyl-3,5-diphenylthiophene 							115	Demaree et al. (1954) A
2-Methyl-3,5-di(4-methylphenyl)thiophene 							167	Demaree et al. (1954) A
2-Phenyl-1-(4-methylphenyl)-1-(2-thienyl)ethylene 							61	Nam et al. (1954)
9-Thiabenzo[<i>a</i>]cyclopenta[<i>b</i>]fluorene 							L/	Cagniant (1948)
12-Thiabenzo[<i>a</i>]indeno[1,2- <i>b</i>]indene 	290-300	74					147	Cagniant (1949)
2-Hexadecylthiophene 	199-204	3						Denison, Guadic (1945)

L/ Sublimes at 220°

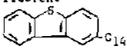
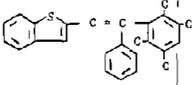
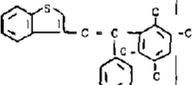
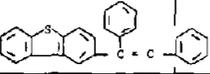
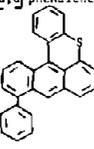
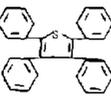
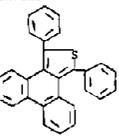
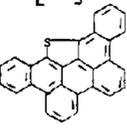
Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n _D	D/Line		
Tetra- <i>t</i> -butylthiophene 	125	2					28.4	Weinmayr (1950)
3-Octyl-9-thiafluorene 	280-5	20						Buu-Hoi, Royer (1950)
2-Ethyl-3,5-di(4-methylphenyl)thiophene 							165	Demerseman et al. (1954) A
2,4-Diethyl-3,5-diphenylthiophene 							286	Bogert, Anderden (1926)
1,2-Diphenyl-1-(2-thienyl)-1-butene 	200	9						Buu-Hoi, Hlong-Ki-Wei (1945)
1,2-Diphenyl-1-(5-ethyl-2-thienyl)ethylene 	187-8	0.5			1.6667	26/D		Nam et al. (1954)
1,2-Diphenyl-1-(2,5-dimethyl-3-thienyl)ethylene 	223-6	15						Buu-Hoi, Hoan (1948)
3,3a-Dihydro-5-(2-thienyl)acphenanthrene 	196	0.02					103.2-4.6	Szmurzkowicz, Modest (1950)
1,3-Diphenyl-2-thiaindene 							118-19	Dufraisse, Daniel (1937)
5,6-Dihydro-7-thiaindeno[<i>c</i> , <i>g</i>]fluorene 							186-7	Rabindran, Tilak (1953) C
13-Thiaindeno[1,2- <i>b</i>]anthracene 							278-9	Mayer et al. (1931)

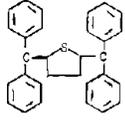
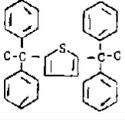
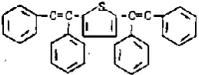
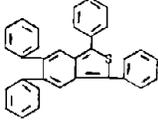
Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
1,3-Thiadibenzo[<i>s,s'</i>]-fluorene 							122-3	Rabindran, Tilak (1953) C
7-Thiadibenzo[<i>c,s'</i>]-fluorene 							206-7 209-10 202	Rabindran, Tilak (1953) C Tilak (1951) Barber, Smiles (1928)
2-Propyl-3,5-di(4-methylphenyl)thiophene 							170	Demerseman et al. (1954) A
1,3-Diphenyl-2-(2-thienyl)-2-pentene 	210	9						Buu-Hoi, Hiong-Ki-Wei (1945)
2-Phenyl-1-(4-methylphenyl)-1-(2,5-dimethyl-3-thienyl)ethylene 	235	14					74	Buu-Hoi, Hoan (1948)
3-Decyl-9-thiafluorene 	289-90	16						Buu-Hoi, Royer (1950)
2,5-Di(2-phenyl-2-propyl)thiophene 	180-200 181	3 1.5	1.0733	20/4	1.5934	20/D	37 37	Goldfarb, Korsakova (1954) A Pines et al. (1950)
2-Phenyl-1-(4-ethylphenyl)-1-(2,5-dimethyl-3-thienyl)ethylene 	225-32	13					56	Buu-Hoi, Hoan (1948)
2-Phenyl-1-(2-naphthyl)-1-(2-thienyl)ethylene 							95	Nam et al. (1954)
1-Phenyl-2-(1-naphthyl)-1-(2-thienyl)ethylene 	265	11					162	Buu-Hoi, Hiong-Ki-Wei (1945)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	D/20°		
2,3,5-Triphenylthiophene 							157 127	Mitra (1938) Smith (1890)
1,2-Diphenyl-1-(1-thia-3-indenyl)ethylene 	267-70	13						Buu-Hoi et al. (1948)
2,2-Diphenyl-1-(1-thia-3-indenyl)ethylene 							234-5	Gaertner (1952) B
7,11-Dimethyl-8-thiaindeno[2,1-b]phenanthrene 							150-50.5	Tilak (1951)
7,13-Dimethyl-12-thiaindeno[1,2-b]phenanthrene 							175	Tilak (1951)
2-Triphenylmethylthiophene 							237 239	Weisse (1896) Weisse (1895)
12-Thiabenz[a]phenanthro[1,2-b]pentalene 							227	Cagniant (1949)
12-Thiabenz[a]indeno[2,1-g]fluorene 							204-5	Cagniant (1949)
2,5-Diethyl-3-hexadecylthiophene 	209.5-11	3.5	0.898	20.8/4	1.4896	19.8/D		Cagniant, Cagniant (1953) A
2-Methyl-5-triphenylmethylthiophene 							181-2	Weisse (1896)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n _D	D/Line		
2-Phenyl-1-(2-naphthyl)-1-(2,5-dimethyl-2-thienyl)ethylene 	275-6	15						Buu-Hoi, Hoan (1948)
2-Phenyl-1-(4-biphenyl)-1-(2-thienyl)ethylene 	290-5	15					113	Buu-Hoi, Hoan (1949) B
1,2-Diphenyl-1-(5-phenyl-2-thienyl)ethylene 	310-20	12					90	Buu-Hoi, Hoan (1949) A
10-Phenyl-9-(2-thienyl)-anthracene 							209	Etienne (1947)
4,9-Diphenyl-1-thiabenzindene 							216	Etienne (1947)
7-Thiadacenaphthaleno[1,2-a:1',2'-c]cyclopentane 					1/ 1.413-33 2/ 1.442		276-8 285.5-6 278 275-6	Schuyler et al. (1953) Charles, Freissner (1950) Clapp (1939) Delewonski (1903) A Rehlander (1903)
Dielectric constant: Charles, Freissner (1950)								
2-Ethyl-5-triphenyl-methylchlorophene 							111	Weiss (1896)
2-Phenyl-1-(4-biphenyl)-1-(5-methyl-2-thienyl)ethylene 	>300	13					90	Buu-Hoi, Hoan (1949) B
1,2-Diphenyl-1-[5-(4-methylphenyl)-2-thienyl]ethylene 	265-72	1					115	Buu-Hoi, Hoan (1950)

1/ Helium
2/ Cyclohexane.

Name and skeleton	Boiling point		Density		Refractive index		Freezing point	Reference
	°C	mm Hg	d	°C	n	D/line		
3-Tetradecyl-9-thiafluorene 	305-10	12					52-3	Buu-Hoi, Royer (1950)
2-Phenyl-2-(2,3,5,6-tetramethylphenyl)-1-(1-thia-2-indanyl)ethylene 							163.8-4.6	Gaertner (1952) C
2-Phenyl-2-(2,3,5,6-tetramethylphenyl)-1-(1-thia-3-indenyl)ethylene 							206-7	Gaertner (1952) B
1,2-Diphenyl-1-(9-thia-3-fluorenyl)ethylene 	320	17					150	Buu-Hoi, Royer (1948)
10-Phenyl-5-thiadibenzoc[6,3]phenylene 							177-9	Panico (1952)
Tetraphenylthiophene 							186-5 188-8.5 188.5 184 184 185 184-5 184-5 184-5 188-9 184 184 183-4 181-2 184	Malles (1952) Charles, Freiser (1950) Bulmer, Hann (1945) Smith, Hoen (1941) Mitra (1938) Bergmann (1936) Dilthey (1936) Dilthey et al. (1935) Chapman (1928) Swientoslawski et al. (1924) Fromm, Schmolde (1907) Fromm, Achert (1903) Baumann, Klett (1891) Ziegler (1890) Forst (1875)
	460							Dielectric constant: Charles, Freiser (1950)
1,3-Diphenyl-2-thia-cyclopenta[1]phenanthrene 							204 204 260	Dilthey et al. (1938) A Dilthey et al. (1938) B Steinkopf (1935)
15-Thiadibenzoc[6,3]cyclopenta[6,3]ptylene 							391-2	Steinkopf (1935)

Name and skeleton	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	D/line		
2,5-Di(diphenylmethyl)-thiophene 							85-5.5 85-5.5	Gol'dfarb (1930) Stadnikov, Gol'dfarb (1928)
2,5-Di(1,1-diphenylethyl)-thiophene 							148-9	Gol'dfarb, Korsakov (1954) A
2,5-Di(1,2-diphenylethyl)thiophene 	290-2	0.8					142	Nam et al. (1954)
1,3,5-Tetraphenyl-2-thiaindene 							227-8	Allen, Gares (1943)

Thiophenes-14
 Uncertain
 Structures

Name and empirical formula	Boiling point		Density		Refractive index		Freezing point °C	Reference
	°C	mm Hg	d	°C	n	C/line		
C ₁₄ H ₂₄ S "Diamylthiophene" "Dipentylthiophene"	250-62 265-70	760	0.917	20/20	1.4950	20/D		Caesar, Sachanan (1948) Caesar (1946)
C ₁₄ H ₂₀ S "4-Pentylthiophene"	142-4	8	1.0056	1/	1.5340	20/D		Johnson (1953)
	Viscosity: Johnson (1953)							
C ₁₄ H ₁₈ S	150	12						Ruzicka, Pfeiffer (1926)
C ₁₆ H ₂₈ S "Dihexylthiophene"	98-100	2			1.4909	20/D		Weinmayr (1950)
C ₁₆ H ₂₆ S "Tri- <i>g</i> -butylthiophene"	94-5	2	.8565	20/4	1.4885	20/D		Weinmayr (1950)
C ₁₆ H ₂₈ S "Dimethyldiamylthiophene"	160-2	11						Friedmann (1916) A
C ₁₆ H ₁₂ S "3-Styrylthianaphthene"	2/238-42	13						Buu-Hoi, Hoan (1951)
C ₁₆ H ₁₀ S "3,4-Benzo-9-thiafluorene"							173.7-5.2	Neuboyer, Armstutz (1944)
C ₁₇ H ₃₀ S "Dihexyl-2-methylthiophene"	150-2	10	.9214	20/4	1.4995	20/D		Weinmayr (1950)
C ₂₀ H ₃₈ S "Hexadecylthiophene"	150-60	2						Caesar (1948)
C ₂₀ H ₃₆ S "Dioctylthiophene"	75-130 > 300	3 760	.920		1.4902	20/D		Caesar, Waldo (1951) Caesar (1948)
C ₂₀ H ₃₆ S "2,5-Di- <i>g</i> -butylthiophene"	146-7	3			1.4890	35/D	36-7	Caesar (1946)
C ₂₀ H ₁₄ S "4,4'-Diphenylbenzothiophene"							114-5	Staudinger, Siegwert (1920) A
C ₂₁ H ₃₈ S "3-Methyldioctylthiophene"	133-4	1					29.3	Weinmayr (1950)
C ₂₁ H ₁₆ S "Diphenyl-2-thianaphthyl- methane"							104-5	Ancizar-Sordo, Bistrzycki (1931)
C ₂₂ H ₂₈ S "Di- <i>g</i> -amylidibenzo- thiophenes"	200-20							Richter, Fuller (1950)
C ₂₆ H ₄₂ S "18-carbon 3-Thianaph- thene"	184-5	1			1.4970	20/D		Conary, McCleary (1953)
C ₃₈ H ₄₂ S "Dibenzyl dipiperidinaphtha- lene thiophene"							207-10	Dziewonaki (1903) B

1/ 60/60 °E.

2/ "Probably a mixture of 2 isomers."

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