PRESSURE-VOLUME-TEMPERATURE RELATIONSHIP FOR POLYMER MELTS

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Numerous theoretical equations of state for polymer liquids have been developed. These, at the minimum, have to provide accurate fitting functions to experimental data. However, for the purpose of this table, the empirical Tait equation along with a polynomial expression for the zero pressure isobar is used. This equation is able to represent the experimental data for the melt state within the limits of experimental errors, i.e., the maximum deviations between measured and calculated specific volumes are about 0.001-0.002 cm^3/g.

The general form of the Tait equation is:

$$V(P,T) = V(0,T)\{1 - C\ \ln[1 + P/B(T)]\} \tag{1}$$

where the coefficient C is usually taken to be a universal constant equal to 0.0894. T is the absolute temperature in K and P the pressure in MPa. The volume V is the specific volume in cm^3/g. The Tait parameter $B(T)$ has the very simple meaning that it is inversely proportional to the compressibility κ at constant temperature and zero pressure:

$$\kappa(0,T) = -[1/V(0,T)](dV/dP) = C/B(T) \tag{2}$$

The $B(T)$ function is usually given by:

$$B(T) = B_0 \exp[-B_1(T\text{-}273.15)] \tag{3}$$

but, sometimes a polynomial expression is used:

$$B(T) = b_0 + b_1(T\text{-}273.15) + b_2(T\text{-}273.15)^2 \tag{4}$$

The zero-pressure isobar $V(0,T)$ is usually given by:

$$V(0,T) = A_0 + A_1(T\text{-}273.15) + A_2(T\text{-}273.15)^2 \tag{5}$$

where A_0, A_1, A_2 are specific constants for a given polymer (the expression T-273.15 is used because fitting to the zero-pressure isobar is usually done in terms of Celsius temperature). Other forms for $V(0,T)$ are also found in the literature, such as

$$V(0,T) = A_3 \exp[A_4(T\text{-}273.15)] \tag{6}$$

or

$$V(0,T) = A_5 \exp(A_6 T^{1.5}) \tag{7}$$

where A_3 and A_4 or A_5 and A_6 are again specific constants for a given polymer.

The Tait equation is particularly useful to calculate derivative quantities, such as the isothermal compressibility and the thermal expansivity coefficients. The isothermal compressibility $\kappa(P,T)$ is derived from equation (1) as:

$$\kappa(P,T) = -(1/V)(dV/dP) = 1/\{[P + B(T)][1/C - \ln(1 + P/B(T))]\} \tag{8}$$

and the thermal expansivity $\alpha(P,T)$ as:

$$\alpha(P,T) = (1/V)(dV/dT) = \alpha(0,T) - PB_1\kappa(P,T) \tag{9}$$

where $\alpha(0,T)$ represents the thermal expansivity at zero (atmospheric) pressure and is calculated from any suitable fit for the zero-pressure volume, such as equations (5) through (7) above.

Because polymer melt PVT-behavior depends only slightly on polymer molar mass above the oligomeric region, usually no information is given in the original literature for the average molar mass of the polymers.

Table 1 summarizes the polymers or copolymers considered here and the experimental ranges of pressure and temperature over which data are available. In Table 2 the Tait-equation functions, with parameters obtained from the fit, are given for 90 polymer or copolymer melts.

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Table 1
Names of the Polymers, Abbreviation Used, and Range of Experimental Data Applied in the Determination of the Equation Constants

Polymer	Symbol	*T*/K	*P*/MPa	Ref.
Ethylene/propylene copolymer (50 wt%)	EP50	413-523	0.1-63	4
Ethylene/vinyl acetate copolymer				
18 wt% vinyl acetate	EVA18	385-491	0.1-177	4
25 wt% vinyl acetate	EVA25	367-506	0.1-177	4
28 wt% vinyl acetate	EVA28	367-508	0.1-177	4
40 wt% vinyl acetate	EVA40	348-508	0.1-177	4
Polyamide-6	PA6	509-569	0.1-196	4
Polyamide-11	PA11	478-542	0.1-200	5
Polyamide-66	PA66	519-571	0.1-196	4
cis-1,4-Polybutadiene	cPBD	277-328	0.1-284	4
Polybutadiene, 8% 1,2-content	PBD-8	298-473	0.1-200	6
Polybutadiene, 24% 1,2-content	PBD-24	298-473	0.1-200	6
Polybutadiene, 40% 1,2-content	PBD-40	298-473	0.1-200	6
Polybutadiene, 50% 1,2-content	PBD-50	298-473	0.1-200	6
Polybutadiene, 87% 1,2-content	PBD-87	298-473	0.1-200	6
Poly(1-butene), isotactic	iPB	406-519	0.1-196	4
Poly(butyl methacrylate)	PnBMA	307-473	0.1-200	4
Poly(butylene terephthalate)	PBT	508-576	0.1-200	3
Poly(ε-caprolactone)	PCL	373-421	0.1-200	4
Polycarbonate-bisphenol-A	PC	424-613	0.1-177	4
Polycarbonate-bisphenol-chloral	BCPC	428-557	0.1-200	4
Polycarbonate-hexafluorobisphenol-A	HFPC	432-553	0.1-200	4
Polycarbonate-tetramethylbisphenol-A	TMPC	491-563	0.1-160	4
Poly(cyclohexyl methacrylate)	PcHMA	396-471	0.1-200	4
Poly(2,5-dimethylphenylene oxide)	PPO	473-593	0.1-177	4
Poly(dimethyl siloxane)	PDMS	298-343	0.1-100	4
Poly(dimethyl siloxane) $M_n = 1000$	PDMS-10	304-420	0.1-250	10
Poly(dimethyl siloxane) $M_n = 4000$	PDMS-40	298-418	0.1-250	10
Poly(dimethyl siloxane) $M_n = 6000$	PDMS-60	291-423	0.1-250	10
Poly(epichlorohydrin)	PECH	333-413	0.1-200	4
Poly(ether ether ketone)	PEEK	619-671	0.1-200	4
Poly(ethyl acrylate)	PEA	310-490	0.1-196	4
Poly(ethyl methacrylate)	PEMA	386-434	0.1-196	4
Polyethylene, high density	HDPE	413-476	0.1-196	4
Polyethylene, linear	LPE	415-473	0.1-200	4
Polyethylene, linear, high MW	HMLPE	410-473	0.1-200	4
Polyethylene, branched	BPE	398-471	0.1-200	4
Polyethylene, low density	LDPE	394-448	0.1-196	4
Polyethylene, low density, type A	LDPE-A	385-498	0.1-196	1
Polyethylene, low density, type B	LDPE-B	385-498	0.1-196	1
Polyethylene, low density, type C	LDPE-C	385-498	0.1-196	1
Poly(ethylene oxide)	PEO	361-497	0.1- 68	4
Poly(ethylene terephthalate)	PET	547-615	0.1-196	4
Poly(4-hexylstyrene)	P4HS	303-403	30-100	4
Polyisobutylene	PIB	326-383	0.1-100	4
Polyisoprene, 8% 3,4-content	PI-8	298-473	0.1-200	6
Polyisoprene, 14% 3,4-content	PI-14	298-473	0.1-200	6
Polyisoprene, 41% 3,4-content	PI-41	298-473	0.1-200	6
Polyisoprene, 56% 3,4-content	PI-56	298-473	0.1-200	6
Poly(methyl acrylate)	PMA	310-493	0.1-196	4

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Polymer	Symbol	*T*/K	*P*/MPa	Ref.
Poly(methyl methacrylate)	PMMA	387-432	0.1-200	4
Poly(4-methyl-1-pentene)	P4MP	514-592	0.1-196	4
Poly(α-methylstyrene)	PαMS	473-533	0.1-170	7
Poly(*o*-methylstyrene)	PoMS	412-471	0.1-180	4
Polyoxymethylene	POM	463-493	0.1-196	2
Phenoxy[a]	PH	341-573	0.1-177	4
Polysulfone[b]	PSF	475-644	0.1-196	4
Polyarylate[c]	PAr	450-583	0.1-177	4
Polypropylene, atactic	aPP	353-393	0.1-100	4
Polypropylene, isotactic	iPP	443-570	0.1-196	4
Polystyrene	PS	388-469	0.1-200	4
Poly(tetrafluoroethylene)	PTFE	603-645	0.1- 39	4
Poly(tetrahydrofuran)	PTHF	335-439	0.1- 78	4
Poly(vinyl acetate)	PVAc	308-373	0.1- 80	4
Poly(vinyl chloride)	PVC	373-423	0.1-200	4
Poly(vinyl methyl ether)	PVME	303-471	0.1-200	4
Poly(vinylidene fluoride)	PVdF	451-521	0.1-200	5
Styrene/acrylonitrile copolymer				
2.7 wt% acrylonitrile	SAN3	378-539	0.1-200	4
5.7 wt% acrylonitrile	SAN6	370-540	0.1-200	4
15.3 wt% acrylonitrile	SAN15	405-531	0.1-200	4
18.0 wt% acrylonitrile	SAN18	377-528	0.1-200	4
40 wt% acrylonitrile	SAN40	373-543	0.1-200	4
70 wt% acrylonitrile	SAN70	373-544	0.1-200	4
Styrene/butadiene copolymer				
10 wt% styrene	SBR10	393-533	0.1-196	8
23.5 wt% styrene	SBR23	393-533	0.1-196	8
60 wt% styrene	SBR60	393-533	0.1-196	8
85 wt% styrene	SBR85	393-533	0.1-196	8
Styrene/methyl methacrylate copolymer				
20 wt% methyl methacrylate	SMMA20	383-543	0.1-200	4
60 wt% methyl methacrylate	SMMA60	383-543	0.1-200	4
N-Vinylcarbazole/4-ethylstyrene copolymer				
50 mol% ethylstyrene	VCES50	393-443	30-100	9
N-Vinylcarbazole/4-hexylstyrene copolymer				
80 mol% hexylstyrene	VCHS80	313-423	30-100	9
67 mol% hexylstyrene	VCHS67	333-423	30-100	9
60 mol% hexylstyrene	VCHS60	383-453	30-100	9
50 mol% hexylstyrene	VCHS50	373-443	30-100	9
40 mol% hexylstyrene	VCHS40	423-493	30-100	9
33 mol% hexylstyrene	VCHS33	463-523	30-100	9
20 mol% hexylstyrene	VCHS20	473-523	30-100	9
N-Vinylcarbazole/4-octylstyrene copolymer				
50 mol% octylstyrene	VCOS50	403-453	30-100	9
N-Vinylcarbazole/4-pentylstyrene copolymer				
50 mol% pentylstyrene	VCPS50	383-443	30-100	9

[a]Phenoxy = Poly(oxy-2-hydroxytrimethyleneoxy-1,4-phenyleneisopropylidene-1,4-phenylene)
[b]Polysulfone = Poly(oxy-1,4-phenylenesulfonyl-1,4-phenyleneoxy-1,4-phenyleneisopropylidene-1,4-phenylene)
[c]Polyarylate = Poly(oxyterephthaloyl/isophthaloyl T/I=50/50)oxy-1,4-phenyleneisopropylidene-1,4-phenylene

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Table 2
Tait Equation Parameter Functions for Polymer Melts

Polymer	$V(0,T)/cm^3g^{-1}$	$B(T)$/MPa
EP50	$1.2291 + 5.799\cdot10^{-5}(T\text{-}273.15) + 1.964\cdot10^{-6}(T\text{-}273.15)^2$	$487.0\ \exp[-8.103\cdot10^{-3}(T\text{-}273.15)]$
EVA18	$1.02391\ \exp(2.173\cdot10^{-5}T^{1.5})$	$188.2\ \exp[-4.537\cdot10^{-3}(T\text{-}273.15)]$
EVA25	$1.00416\ \exp(2.244\cdot10^{-5}T^{1.5})$	$184.4\ \exp[-4.734\cdot10^{-3}(T\text{-}273.15)]$
EVA28	$1.00832\ \exp(2.241\cdot10^{-5}T^{1.5})$	$183.5\ \exp[-4.457\cdot10^{-3}(T\text{-}273.15)]$
EVA40	$1.06332\ \exp(2.288\cdot10^{-5}T^{1.5})$	$205.1\ \exp[-4.989\cdot10^{-3}(T\text{-}273.15)]$
PA6	$0.7597\ \exp[4.701\cdot10^{-4}(T\text{-}273.15)]$	$376.7\ \exp[-4.660\cdot10^{-3}(T\text{-}273.15)]$
PA11	$0.9581\ \exp[6.664\cdot10^{-4}(T\text{-}273.15)]$	$254.7\ \exp[-4.178\cdot10^{-3}(T\text{-}273.15)]$
PA66	$0.7657\ \exp[6.600\cdot10^{-4}(T\text{-}273.15)]$	$316.4\ \exp[-5.040\cdot10^{-3}(T\text{-}273.15)]$
cPBD	$1.0970\ \exp[6.600\cdot10^{-4}(T\text{-}273.15)]$	$177.7\ \exp[-3.593\cdot10^{-3}(T\text{-}273.15)]$
PBD-8	$1.1004 + 6.718\cdot10^{-4}(T\text{-}273.15) + 6.584\cdot10^{-7}(T\text{-}273.15)^2$	$200.0\ \exp[-4.606\cdot10^{-3}(T\text{-}273.15)]$
PBD-24	$1.1049 + 6.489\cdot10^{-4}(T\text{-}273.15) + 7.099\cdot10^{-7}(T\text{-}273.15)^2$	$193.0\ \exp[-4.519\cdot10^{-3}(T\text{-}273.15)]$
PBD-40	$1.1013 + 6.593\cdot10^{-4}(T\text{-}273.15) + 5.776\cdot10^{-7}(T\text{-}273.15)^2$	$188.0\ \exp[-4.437\cdot10^{-3}(T\text{-}273.15)]$
PBD-50	$1.1037 + 5.955\cdot10^{-4}(T\text{-}273.15) + 7.789\cdot10^{-7}(T\text{-}273.15)^2$	$183.0\ \exp[-4.425\cdot10^{-3}(T\text{-}273.15)]$
PBD-87	$1.1094 + 6.729\cdot10^{-4}(T\text{-}273.15) + 4.470\cdot10^{-7}(T\text{-}273.15)^2$	$175.0\ \exp[-4.538\cdot10^{-3}(T\text{-}273.15)]$
iPB	$1.1417\ \exp[6.751\cdot10^{-4}(T\text{-}273.15)]$	$167.5\ \exp[-4.533\cdot10^{-3}(T\text{-}273.15)]$
PnBMA	$0.9341 + 5.5254\cdot10^{-4}(T\text{-}273.15) + 6.5803\cdot10^{-6}(T\text{-}273.15)^2 + 1.5691\cdot10^{-10}(T\text{-}273.15)^3$	$226.7\ \exp[-5.344\cdot10^{-3}(T\text{-}273.15)]$
PBT	$0.9640 - 1.017\cdot10^{-3}(T\text{-}273.15) + 3.065\cdot10^{-6}(T\text{-}273.15)^2$	$263.0\ \exp[-3.444\cdot10^{-3}(T\text{-}273.15)]$
PCL	$0.9049\ \exp[6.392\cdot10^{-4}(T\text{-}273.15)]$	$189.0\ \exp[-3.931\cdot10^{-3}(T\text{-}273.15)]$
PC	$0.73565\ \exp(1.859\cdot10^{-5}T^{1.5})$	$310.0\ \exp[-4.078\cdot10^{-3}(T\text{-}273.15)]$
BCPC	$0.6737 + 3.634\cdot10^{-4}(T\text{-}273.15) + 2.370\cdot10^{-7}(T\text{-}273.15)^2$	$363.4\ \exp[-4.921\cdot10^{-3}(T\text{-}273.15)]$
HFPC	$0.6111 + 4.898\cdot10^{-4}(T\text{-}273.15) + 1.730\cdot10^{-7}(T\text{-}273.15)^2$	$236.6\ \exp[-5.156\cdot10^{-3}(T\text{-}273.15)]$
TMPC	$0.8497 + 5.073\cdot10^{-4}(T\text{-}273.15) + 3.832\cdot10^{-7}(T\text{-}273.15)^2$	$231.4\ \exp[-4.242\cdot10^{-3}(T\text{-}273.15)]$
PcHMA	$0.8793 + 4.0504\cdot10^{-4}(T\text{-}273.15) + 7.774\cdot10^{-7}(T\text{-}273.15)^2 - 7.7534\cdot10^{-10}(T\text{-}273.15)^3$	$295.2\ \exp[-5.220\cdot10^{-3}(T\text{-}273.15)]$
PPO	$0.78075\ \exp(2.151\cdot10^{-5}T^{1.5})$	$227.8\ \exp[-4.290\cdot10^{-3}(T\text{-}273.15)]$
PDMS	$1.0079\ \exp[9.121\cdot10^{-4}(T\text{-}273.15)]$	$89.4\ \exp[-5.701\cdot10^{-3}(T\text{-}273.15)]$
PDMS-10	$0.8343 + 5.991\cdot10^{-4}(T\text{-}273.15) + 5.734\cdot10^{-7}(T\text{-}273.15)^2$	$542.63\ \exp[-6.69\cdot10^{-3}(T\text{-}273.15)]$
PDMS-40	$0.8018 + 7.072\cdot10^{-4}(T\text{-}273.15) + 3.635\cdot10^{-7}(T\text{-}273.15)^2$	$482.73\ \exp[-6.09\cdot10^{-3}(T\text{-}273.15)]$
PDMS-60	$0.8146 + 5.578\cdot10^{-4}(T\text{-}273.15) + 5.774\cdot10^{-7}(T\text{-}273.15)^2$	$482.73\ \exp[-6.09\cdot10^{-3}(T\text{-}273.15)]$
PECH	$0.7216\ \exp[5.825\cdot10^{-4}(T\text{-}273.15)]$	$238.3\ \exp[-4.171\cdot10^{-3}(T\text{-}273.15)]$
PEEK	$0.7158\ \exp[6.690\cdot10^{-4}(T\text{-}273.15)]$	$388.0\ \exp[-4.124\cdot10^{-3}(T\text{-}273.15)]$
PEA	$0.8756\ \exp[7.241\cdot10^{-4}(T\text{-}273.15)]$	$193.2\ \exp[-4.839\cdot10^{-3}(T\text{-}273.15)]$
PEMA	$0.8614\ \exp[7.468\cdot10^{-4}(T\text{-}273.15)]$	$260.9\ \exp[-5.356\cdot10^{-3}(T\text{-}273.15)]$
HDPE	$1.1595 + 8.0394\cdot10^{-4}(T\text{-}273.15)$	$179.9\ \exp[-4.739\cdot10^{-3}(T\text{-}273.15)]$
LPE	$0.9172\ \exp[7.806\cdot10^{-4}(T\text{-}273.15)]$	$176.7\ \exp[-4.661\cdot10^{-3}(T\text{-}273.15)]$
HMLPE	$0.8992\ \exp[8.502\cdot10^{-4}(T\text{-}273.15)]$	$168.3\ \exp[-4.292\cdot10^{-3}(T\text{-}273.15)]$
BPE	$0.9399\ \exp[7.341\cdot10^{-4}(T\text{-}273.15)]$	$177.1\ \exp[-4.699\cdot10^{-3}(T\text{-}273.15)]$
LDPE	$1.1944 + 2.841\cdot10^{-4}(T\text{-}273.15) + 1.872\cdot10^{-6}(T\text{-}273.15)^2$	$202.2\ \exp[-5.243\cdot10^{-3}(T\text{-}273.15)]$
LDPE-A	$1.1484\ \exp[6.950\cdot10^{-4}(T\text{-}273.15)]$	$192.9\ \exp[-4.701\cdot10^{-3}(T\text{-}273.15)]$
LDPE-B	$1.1524\ \exp[6.700\cdot10^{-4}(T\text{-}273.15)]$	$196.6\ \exp[-4.601\cdot10^{-3}(T\text{-}273.15)]$
LDPE-C	$1.1516\ \exp[6.730\cdot10^{-4}(T\text{-}273.15)]$	$186.7\ \exp[-4.391\cdot10^{-3}(T\text{-}273.15)]$
PEO	$0.8766\ \exp[7.087\cdot10^{-4}(T\text{-}273.15)]$	$207.7\ \exp[-3.947\cdot10^{-3}(T\text{-}273.15)]$
PET	$0.6883 + 5.90\cdot10^{-4}(T\text{-}273.15)$	$369.7\ \exp[-4.150\cdot10^{-3}(T\text{-}273.15)]$
P4HS	$0.8251 + 6.77\cdot10^{-4}T$	$103.1\ \exp[-2.417\cdot10^{-3}(T\text{-}273.15)]$
PIB	$1.0750\ \exp[5.651\cdot10^{-4}(T\text{-}273.15)]$	$200.3\ \exp[-4.329\cdot10^{-3}(T\text{-}273.15)]$
PI-8	$1.1030 + 6.488\cdot10^{-4}(T\text{-}273.15) + 5.125\cdot10^{-7}(T\text{-}273.15)^2$	$188.0\ \exp[-4.541\cdot10^{-3}(T\text{-}273.15)]$
PI-14	$1.0943 + 6.293\cdot10^{-4}(T\text{-}273.15) + 6.231\cdot10^{-7}(T\text{-}273.15)^2$	$202.0\ \exp[-4.653\cdot10^{-3}(T\text{-}273.15)]$
PI-41	$1.0951 + 6.188\cdot10^{-4}(T\text{-}273.15) + 6.629\cdot10^{-7}(T\text{-}273.15)^2$	$199.0\ \exp[-4.622\cdot10^{-3}(T\text{-}273.15)]$
PI-56	$1.0957 + 6.655\cdot10^{-4}(T\text{-}273.15) + 5.661\cdot10^{-7}(T\text{-}273.15)^2$	$200.0\ \exp[-4.644\cdot10^{-3}(T\text{-}273.15)]$
PMA	$0.8365\ \exp[6.795\cdot10^{-4}(T\text{-}273.15)]$	$235.8\ \exp[-4.493\cdot10^{-3}(T\text{-}273.15)]$
PMMA	$0.8254 + 2.8383\cdot10^{-4}(T\text{-}273.15) + 7.792\cdot10^{-7}(T\text{-}273.15)^2$	$287.5\ \exp[-4.146\cdot10^{-3}(T\text{-}273.15)]$
P4MP	$1.4075 - 9.095\cdot10^{-4}(T\text{-}273.15) + 3.497\cdot10^{-6}(T\text{-}273.15)^2$	$37.67 + 0.2134(T\text{-}273.15)] - 7.0445\cdot10^{-4}(T\text{-}273.15)^2$
PαMS	$0.89365 + 3.4864\cdot10^{-4}(T\text{-}273.15) + 5.0184\cdot10^{-7}(T\text{-}273.15)^2$	$297.7\ \exp[-4.074\cdot10^{-3}(T\text{-}273.15)]$
PoMS	$0.9396\ \exp[5.306\cdot10^{-4}(T\text{-}273.15)]$	$261.9\ \exp[-4.114\cdot10^{-3}(T\text{-}273.15)]$
POM	$0.7484\ \exp[6.770\cdot10^{-4}(T\text{-}273.15)]$	$305.6\ \exp[-4.326\cdot10^{-3}(T\text{-}273.15)]$
PH	$0.76644\ \exp(1.921\cdot10^{-5}T^{1.5})$	$359.9\ \exp[-4.378\cdot10^{-3}(T\text{-}273.15)]$

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Table 2
Tait Equation Parameter Functions for Polymer Melts

Polymer	$V(0,T)/cm^3g^{-1}$	$B(T)$/MPa
PSF	$0.7644 + 3.419\cdot10^{-4}(T\text{-}273.15) + 3.126\cdot10^{-7}(T\text{-}273.15)^2$	$365.9\ \exp[-3.757\cdot10^{-3}(T\text{-}273.15)]$
PAr	$0.73381\ \exp(1.626\cdot10^{-5}T^{1.5})$	$296.9\ \exp[-3.375\cdot10^{-3}(T\text{-}273.15)]$
aPP	$1.1841 - 1.091\cdot10^{-4}(T\text{-}273.15) + 5.286\cdot10^{-6}(T\text{-}273.15)^2$	$162.1\ \exp[-6.604\cdot10^{-3}(T\text{-}273.15)]$
iPP	$1.1606\ \exp[6.700\cdot10^{-4}(T\text{-}273.15)]$	$149.1\ \exp[-4.177\cdot10^{-3}(T\text{-}273.15)]$
PS	$0.9287\ \exp[5.131\cdot10^{-4}(T\text{-}273.15)]$	$216.9\ \exp[-3.319\cdot10^{-3}(T\text{-}273.15)]$
PTFE	$0.3200 + 9.5862\cdot10^{-4}(T\text{-}273.15)$	$425.2\ \exp[-9.380\cdot10^{-3}(T\text{-}273.15)]$
PTHF	$1.0043\ \exp[6.691\cdot10^{-4}(T\text{-}273.15)]$	$178.6\ \exp[-4.223\cdot10^{-3}(T\text{-}273.15)]$
PVAc	$0.82496 + 5.820\cdot10^{-4}(T\text{-}273.15) + 2.940\cdot10^{-7}(T\text{-}273.15)^2$	$204.9\ \exp[-4.346\cdot10^{-3}(T\text{-}273.15)]$
PVC	$0.7196 + 5.581\cdot10^{-5}(T\text{-}273.15) + 1.468\cdot10^{-6}(T\text{-}273.15)^2$	$294.2\ \exp[-5.321\cdot10^{-3}(\mathrm{T}\text{-}273.15)]$
PVME	$0.9585\ \exp[6.653\cdot10^{-4}(T\text{-}273.15)]$	$215.8\ \exp[-4.588\cdot10^{-3}(T\text{-}273.15)]$
PVdF	$0.5790\ \exp[8.051\cdot10^{-4}(T\text{-}273.15)]$	$244.0\ \exp[-5.210\cdot10^{-3}(T\text{-}273.15)]$
SAN3	$0.9233 + 3.936\cdot10^{-4}(T\text{-}273.15) + 5.685\cdot10^{-7}(T\text{-}273.15)^2$	$239.8\ \exp[-4.376\cdot10^{-3}(T\text{-}273.15)]$
SAN6	$0.9211 + 4.370\cdot10^{-4}(T\text{-}273.15) + 5.846\cdot10^{-7}(T\text{-}273.15)^2$	$226.9\ \exp[-4.286\cdot10^{-3}(T\text{-}273.15)]$
SAN15	$0.9044 + 4.207\cdot10^{-4}(T\text{-}273.15) + 4.077\cdot10^{-7}(T\text{-}273.15)^2$	$238.4\ \exp[-3.943\cdot10^{-3}(T\text{-}273.15)]$
SAN18	$0.9016 + 4.036\cdot10^{-4}(T\text{-}273.15) + 4.206\cdot10^{-7}(T\text{-}273.15)^2$	$240.4\ \exp[-3.858\cdot10^{-3}(T\text{ -}273.15)]$
SAN40	$0.8871 + 3.406\cdot10^{-4}(T\text{-}273.15) + 4.938\cdot10^{-7}(\mathrm{T}\text{-}273.15)^2$	$289.3\ \exp[-4.431\cdot10^{-3}(T\text{-}273.15)]$
SAN70	$0.8528 + 3.616\cdot10^{-4}(T\text{-}273.15) + 2.634\cdot10^{-7}(\mathrm{T}\text{-}273.15)^2$	$335.4\ \exp[-3.923\cdot10^{-3}(T\text{-}273.15)]$
SBR10	$0.9053\ \exp(2.437\cdot10^{-5}T^{1.5})$	$530.3\ \exp[-3.99\cdot10^{-3}(T\text{-}273.15)]$
SBR23	$0.8986\ \exp(2.317\cdot10^{-5}T^{1.5})$	$551.6\ \exp[-4.17\cdot10^{-3}(T\text{-}273.15)]$
SBR60	$0.8812\ \exp(2.031\cdot10^{-5}T^{1.5})$	$486.0\ \exp[-4.34\cdot10^{-3}(T\text{-}273.15)]$
SBR85	$0.8704\ \exp(1.846\cdot10^{-5}T^{1.5})$	$356.7\ \exp[-4.24\cdot10^{-3}(T\text{-}273.15)]$
SMMA20	$0.9063 + 3.570\cdot10^{-4}(T\text{-}273.15) + 6.532\cdot10^{-7}(T\text{-}273.15)^2$	$232.0\ \exp[-4.143\cdot10^{-3}(T\text{-}273.15)]$
SMMA60	$0.8610 + 3.350\cdot10^{-4}(T\text{-}273.15) + 6.980\cdot10^{-7}(T\text{-}273.15)^2$	$261.0\ \exp[-4.611\cdot10^{-3}(T\text{-}273.15)]$
VCES50	$0.6676 + 6.63\cdot10^{-4}T$	$5281.7\ \exp[-9.264\cdot10^{-3}(T\text{-}273.15)]$
VCHS80	$0.7753 + 6.17\cdot10^{-4}T$	$247.6\ \exp[-2.604\cdot10^{-3}(T\text{-}273.15)]$
VCHS67	$0.8028 + 6.50\cdot10^{-4}T$	$581.7\ \exp[-4.553\cdot10^{-3}(T\text{-}273.15)]$
VCHS60	$0.8213 + 6.23\cdot10^{-4}T$	$229.1\ \exp[-2.133\cdot10^{-3}(T\text{-}273.15)]$
VCHS50	$0.7827 + 5.05\cdot10^{-4}T$	$136.0\ \exp[-1.083\cdot10^{-3}(T\text{-}273.15)]$
VCHS40	$0.7805 + 4.92\cdot10^{-4}T$	$155.0\ \exp[-1.605\cdot10^{-3}(T\text{-}273.15)]$
VCHS33	$0.7710 + 4.86\cdot10^{-4}T$	$460.4\ \exp[-3.453\cdot10^{-3}(T\text{-}273.15)]$
VCHS20	$0.6416 + 5.42\cdot10^{-4}T$	$489.8\ \exp[-3.193\cdot10^{-3}(T\text{-}273.15)]$
VCOS50	$0.7081 + 7.40\cdot10^{-4}T$	$666.5\ \exp[-4.503\cdot10^{-3}(T\text{-}273.15)]$
VCPS50	$0.7814 + 4.36\cdot10^{-4}T$	$880.1\ \exp[-4.393\cdot10^{-3}(T\text{-}273.15)]$

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