Viscosity Cup Conversion Chart

Part No.	8201	8202	8203	8204	8205	6919	2102	2103	2104	6920	2106	2107	2108	2109	6922	7201	0175	0176	0115	0213	0214	0215	0216	Part No.
with cert	8206	8207	8208	8209	8210	8300	8301	8302	8303	8304	8305	8306	8307	8308	8309	0172	0173	0174	0115	0213	0214	0215	0216	with cert
	BYK-Gardner Zahn Cups					S90 Signature Zahn Cups					EZ Zahn Cups					Ford Cups			DIN Cup 4mm	ISO Cups				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	2	3	4	4mm	3mm	4mm	5mm	6mm	
Viscosity in Centistokes (mm²/s)	Drain Time in sec					Drain Time in sec					Drain Time in sec					Drain Time in sec			Drain Time in sec	Drain Time in Sec				Viscosity in Centistokes (mm²/s)
2.0	30.8																							2.0
2.5	31.3																							2.5
3.0	31.7																							3.0
3.5	32.2																							3.5
4.0	32.6																							4.0
4.5	33.1																							4.5
5.0	33.5																							5.0
5.5	34.0																							5.5
6.0	34.5																							6.0
6.5	34.9																							6.5
7.0	35.4																							7.0
7.5	35.8																							7.5
8.0	36.3																							8.0
8.5	36.7																							8.5
9.0	37.2																							9.0
9.5	37.6																							9.5
10.0	38.1										39.9									35.3				10.0
10.5	38.5										40.2									36.2				10.5
11.0	39.0										40.6									37.0				11.0
11.5	39.5										40.9									37.9				11.5
12.0	39.9										41.2									38.7				12.0
12.5	40.4										41.6									39.6				12.5
13.0	40.8										41.9									40.5				13.0
13.5	41.3										42.3									41.4				13.5
14.0	41.7										42.6									42.3				14.0
14.5	42.2										43.0									43.2				14.5
15.0	42.6					31.1					43.3									44.1				15.0
15.5	43.1					31.3					43.7									45.0				15.5
16.0	43.5					31.5					44.0									45.9				16.0
16.5	44.0					31.6					44.4									46.9				16.5
17.0	44.5					31.8					44.8									47.8				17.0
17.5	44.9					32.0					45.1									48.8				17.5
18.0	45.4					32.2					45.5									49.7				18.0
18.5	45.8					32.4					45.9									50.7				18.5
19.0	46.3					32.6					46.3	20.1								51.6				19.0
19.5	46.7					32.8					46.6	20.2								52.6				19.5
20.0	47.2					33.0					47.0	20.3								53.6				20.0
21.0	48.1					33.4					47.8	20.5								55.5				21.0
22.0	49.0					33.8					48.5	20.7								57.5				22.0
23.0	49.9					34.2					49.3	20.9								59.5				23.0
24.0	50.8					34.6					50.1	21.2								61.5				24.0
25.0	51.7					35.0					50.9	21.4				37.0				63.5	24.3			25.0
26.0	52.6					35.4					51.7	21.6				37.5				65.6	24.9			26.0
27.0	53.5					35.8					52.5	21.9				38.1				67.6	25.4			27.0
28.0	54.5	22.0				36.2					53.3	22.1				38.6				69.7	26.0			28.0
29.0	55.4	22.3				36.6					54.1	22.3				39.2				71.8	26.6			29.0
30.0	56.3	22.6				37.0					54.9	22.5				39.8				73.8	27.3			30.0
32.0	58.1	23.1				37.9					56.6	23.0				41.0				78.0	28.5			32.0
34.0	59.9	23.7				38.8					58.3	23.5				42.2				82.2	29.7			34.0
36.0	61.7	24.3				39.6					60.0	24.0				43.4				86.5	31.0			36.0
38.0	63.5	24.9				40.5						24.5				44.6				90.8	32.3			38.0
40.0	65.4	25.4				41.4	19.1					25.0				45.8	26.4			95.0	33.5			40.0
42.0	67.2	26.0				42.3	19.4					25.5				47.1	27.0				34.8			42.0
44.0	69.0	26.6				43.2	19.7					26.0	10.1			48.3	27.7				36.2			44.0
46.0	70.8	27.1				44.2	20.1					26.5	10.2			49.6	28.3				37.5			46.0
48.0	72.6	27.7				45.1	20.4					27.0	10.4			50.9	29.0				38.8			48.0
50.0	74.5	28.3				46.1	20.7					27.5	10.5			52.2	29.7				40.1			50.0
52.0	76.3	28.9				47.0	21.1					28.1	10.6			53.5	30.4				41.5			52.0
54.0	78.1	29.4				48.0	21.4					28.6	10.8			54.9	31.0				42.8			54.0
56.0	79.9	30.0				49.0	21.8					29.2	10.9			56.2	31.7				44.2			56.0
58.0	81.7	30.6				50.0	22.1					29.7	11.0			57.6	32.4				45.5			58.0
60.0	83.5	31.1				50.9	22.5					30.2	11.2			58.9	33.2				46.9			60.0
62.0		31.7				51.9	22.8	11.1				30.8	11.3			60.3	33.9				48.3			62.0
64.0		32.3				53.0	23.2	11.3				31.4	11.4			61.7	34.6				49.7			64.0
66.0		32.9				54.0	23.5	11.4				31.9	11.6	10.0		63.1	35.3				51.0			66.0
68.0		33.4				55.0	23.9	11.5				32.5	11.7	10.1		64.5	36.0				52.4			68.0
70.0		34.0				56.0	24.2	11.7				33.1	11.8	10.2		65.9	36.8	23.5			53.8	24.1		70.0
72.0		34.6				57.1	24.6	11.8				33.6	12.0	10.3		67.3	37.5	24.0			55.2	24.7		72.0
74.0		35.1				58.1	25.0	11.9				34.2	12.1	10.4		68.7	38.3	24.4			56.6	25.2		74.0
76.0		35.7				59.2	25.4	12.1				34.8	12.3	10.5		70.1	39.0	24.9			58.0	25.8		76.0
78.0		36.3				60.2	25.7	12.2				35.4	12.4	10.6		71.6	39.8	25.3			59.4	26.3		78.0
80.0		36.9					26.1	12.4				36.0	12.6	10.8		73.0	40.5	25.8			60.8	26.9		80.0
82.0		37.4					26.5	12.5				36.6	12.7	10.9		74.5	41.3	26.3			62.2	27.4		82.0
84.0		38.0					26.9	12.7				37.2	12.9	11.0		75.9	42.0	26.7			63.6	28.0		84.0
86.0		38.6					27.2	12.8				37.8	13.0	11.1		77.4	42.8	27.2			65.0	28.6		86.0
88.0		39.1					27.6	12.9				38.4	13.1	11.2		78.8	43.6	27.7			66.4	29.1		88.0
90.0		39.7					28.0	13.1				39.0	13.3	11.3		80.3	44.3	28.2			67.8	29.7		90.0
92.0		40.3					28.4	13.2				39.6	13.4	11.4		81.8	45.1	28.6			69.3	30.3		92.0
94.0		40.9					28.8	13.4				40.2	13.6	11.5		83.3	45.9	29.1			70.7	30.8		94.0
96.0		41.4					29.2	13.5				40.8	13.7	11.6		84.7	46.7	29.6			72.1	31.4		96.0
98.0		42.0					29.6	13.7	10.1			41.4	13.9	11.7		86.2	47.4	30.1			73.5	32.0		98.0
100.0		42.6					30.0	13.8	10.2			42.1	14.1	11.8		87.7	48.2	30.6	25.7		74.9	32.5		100.0
105.0		44.0					31.0	14.2	10.4			43.6	14.4	12.1		91.5	50.2	31.8	26.7		78.5	34.0		105.0
110.0		45.4					32.0	14.6	10.7			45.2	14.8	12.4		95.2	52.2	33.0	27.6		82.1	35.4		110.0
115.0		46.9					33.0	15.0	10.9			46.8	15.2	12.7		99.0	54.2	34.2	28.6		85.6	36.9		115.0
120.0		48.3					34.0	15.4	11.2			48.4	15.6	13.0		102.8	56.2	35.5	29.6		89.2	38.3		120.0
125.0		49.7					35.1	15.8	11.4			50.0	16.0	13.3			58.2	36.7	30.6		92.8	39.8		125.0
130.0		51.1					36.1	16.2	11.7			51.6	16.4	13.5			60.2	38.0	31.6		96.4	41.3	22.5	130.0
135.0		52.6					37.2	16.6	11.9			53.2	16.8	13.8			62.3	39.2	32.6			42.7	23.1	135.0
140.0		54.0					38.2	17.0	12.2			54.9	17.2	14.1			64.3	40.5	33.6			44.2	23.8	140.0
145.0		55.4					39.3	17.4	12.5			56.5	17.7	14.4			66.4	41.8	34.6			45.7	24.4	145.0
150.0		56.9	20.3				40.4	17.8	12.7			58.2	18.1	14.8			68.4	43.1	35.6			47.2	25.0	150.0
155.0		58.3	20.7				41.5	18.2	13.0			59.8	18.5	15.1			70.5	44.3	36.6			48.6	25.7	155.0
160.0		59.7	21.2				42.6	18.7	13.3				18.9	15.4			72.5	45.6	37.6			50.1	26.3	160.0
165.0		61.1	21.6				43.6	19.1	13.6				19.4	15.7	10.1		74.6	46.9	38.7			51.6	27.0	165.0
170.0		62.6	22.0				44.7	19.5	13.8				19.8	16.0	10.3		76.7	48.2	39.7			53.1	27.6	170.0
175.0		64.0	22.5				45.8	19.9	14.1				20.2	16.3	10.4		78.8	49.5	40.7			54.6	28.3	175.0
180.0		65.4	22.9				46.9	20.4	14.4				20.7	16.6	10.6		80.9	50.8	41.8			56.1	28.9	180.0
185.0		66.9	23.3				48.0	20.8	14.7				21.1	16.9	10.8		83.0	52.1	42.8			57.6	29.6	185.0
190.0		68.3	23.7				49.2	21.2	15.0				21.5	17.3	10.9		85.1	53.4	43.8			59.1	30.3	190.0
195.0		69.7	24.2				50.3	21.7	15.3				22.0	17.6	11.1		87.1	54.7	44.9			60.6	30.9	195.0
200.0		71.1	24.6				51.4	22.1	15.5				22.4	17.9	11.3		89.2	56.0	45.9			62.1	31.6	200.0
210.0		74.0	25.4				53.6	23.0	16.1				23.3	18.6	11.6		93.5	58.6	48.0			65.1	32.9	210.0
220.0		76.9	26.3				55.9	23.9	16.7	10.0			24.2	19.2	12.0		97.7	61.2	50.1			68.1	34.3	220.0
230.0		79.7	27.2	20.5			58.2	24.8	17.3	10.3			25.1	19.9	12.3			63.9	52.2			71.1	35.7	230.0
240.0			28.0	21.2			60.4	25.7	17.9	10.7			26.0	20.6	12.7			66.5	54.3			74.1	37.0	240.0
250.0			28.9	21.9				26.6	18.5	11.0			26.9	21.2	13.0			69.1	56.5			77.1	38.4	250.0
260.0			29.7	22.6				27.5	19.1	11.3			27.9	21.9	13.4			71.8	58.6			80.1	39.8	260.0
270.0			30.6	23.2				28.4	19.7	11.6			28.8	22.6	13.8			74.4	60.7			83.1	41.1	270.0
280.0			31.4	23.9				29.3	20.3	11.9			29.7	23.3	14.1			77.1	62.8			86.1	42.5	280.0
290.0			32.3	24.6				30.2	20.9	12.3			30.6	24.0	14.5			79.7	65.0			89.2	43.9	290.0
300.0			33.1	25.3				31.1	21.5	12.6			31.6	24.7	14.9			82.4	67.1			92.2	45.3	300.0
310.0			34.0	25.9				32.1	22.1	12.9			32.5	25.4	15.2			85.1	69.3			95.2	46.7	310.0
320.0			34.9	26.6				33.0	22.7	13.2			33.5	26.1	15.6			87.7	71.4			98.2	48.1	320.0
330.0			35.7	27.3				33.9	23.4	13.6			34.4	26.8	16.0			90.4	73.6			101.3	49.5	330.0
340.0			36.6	28.0				34.8	24.0	13.9			35.3	27.5	16.4			93.1	75.7			104.3	50.9	340.0
350.0			37.4	28.6				35.8	24.6	14.2			36.3	28.2	16.7			95.7	77.9			107.3	52.3	350.0
360.0			38.3	29.3				36.7	25.2	14.6			37.2	28.9	17.1			98.4	80.0			110.4	53.7	360.0
370.0			39.1	30.0				37.7	25.8	14.9			38.2	29.6	17.5			101.1	82.2			113.4	55.1	370.0
380.0			40.0	30.7				38.6	26.5	15.2			39.1	30.3	17.9				84.3				56.5	380.0
390.0			40.8	31.4				39.5	27.1	15.6			40.1	31.0	18.3				86.5				57.9	390.0
400.0			41.7	32.0				40.5	27.7	15.9			41.1	31.8	18.7				88.6				59.4	400.0
425.0			43.8	33.7				42.9	29.3	16.8			43.5	33.6	19.6				94.0				62.9	425.0
450.0			46.0	35.4	19.6			45.2	30.9	17.6			45.9	35.4	20.6				99.5				66.5	450.0
475.0			48.1	37.1	20.7			47.6	32.5	18.5			48.3	37.2	21.6				104.9				70.0	475.0
500.0			50.2	38.8	21.7			50.0	34.1	19.4			50.7	39.0	22.6				110.3				73.6	500.0
525.0			52.4	40.5	22.8			52.4	35.7	20.2			53.1	40.8	23.6								77.2	525.0
550.0			54.5	42.2	23.9			54.8	37.3	21.1			55.6	42.7	24.6								80.7	550.0
575.0			56.6	43.9	25.0			57.2	38.9	22.0			58.0	44.5	25.6								84.3	575.0
600.0			58.8	45.5	26.1			59.6	40.5	22.9				46.3	26.7								87.9	600.0
625.0			60.9	47.2	27.2				42.2	23.8				48.2	27.7								91.5	625.0
650.0			63.1	48.9	28.3				43.8	24.6				50.0	28.7								95.1	650.0
675.0			65.2	50.6	29.3				45.4	25.5				51.9	29.7								98.7	675.0
700.0			67.3	52.3	30.4				47.0	26.4				53.7	30.7								102.3	700.0
725.0			69.5	54.0	31.5				48.7	27.3				55.6	31.8									725.0
750.0			71.6	55.7	32.6				50.3	28.2				57.4	32.8									750.0
775.0			73.7	57.4	33.7				51.9	29.1				59.3	33.8									775.0
800.0			75.9	59.1	34.8				53.5	30.0					34.9									800.0
825.0			78.0	60.7	35.9				55.2	30.9					35.9									825.0
850.0			80.1	62.4	37.0				56.8	31.8					36.9									850.0
875.0				64.1	38.0				58.4	32.7					38.0									875.0
900.0				65.8	39.1				60.1	33.6					39.0									900.0
925.0				67.5	40.2					34.5					40.0									925.0
950.0				69.2	41.3					35.4					41.1									950.0
975.0				70.9	42.4					36.3					42.1									975.0
1000.0				72.6	43.5					37.2					43.2									1000.0
1025.0				74.3	44.6					38.1					44.2									1025.0
1050.0				75.9	45.7					39.0					45.3									1050.0
1075.0				77.6	46.7					39.9					46.3									1075.0
1100.0				79.3	47.8					40.8					47.4									1100.0
1125.0					48.9					41.7					48.4									1125.0
1150.0					50.0					42.6					49.5									1150.0
1175.0					51.1					43.5					50.5									1175.0
1200.0					52.2					44.4					51.5									1200.0
1225.0					53.3					45.4					52.6									1225.0
1250.0					54.3					46.3					53.6									1250.0
1275.0					55.4					47.2					54.7									1275.0
1300.0					56.5					48.1					55.7									1300.0
1325.0					57.6					49.0					56.8									1325.0
1350.0					58.7					49.9					57.8									1350.0
1375.0					59.8					50.8					58.9									1375.0
1400.0					60.9					51.7					59.9									1400.0
1425.0					62.0					52.6														1425.0
1450.0					63.0					53.5														1450.0
1475.0					64.1					54.5														1475.0
1500.0					65.2					55.4														1500.0
1525.0					66.3					56.3														1525.0
1550.0					67.4					57.2														1550.0
1575.0					68.5					58.1														1575.0
1600.0					69.6					59.0														1600.0
1625.0					70.7					59.9														1625.0
1650.0					71.7																			1650.0
1675.0					72.8																			1675.0
1700.0					73.9																			1700.0
1725.0					75.0																			1725.0
1750.0					76.1																			1750.0
1775.0					77.2																			1775.0
1800.0					78.3																			1800.0
	BYK-Gardner Zahn Cups					S90 Signature Zahn Cups					EZ Zahn Cups					Ford Cups			DIN Cup 4mm	ISO Cups				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	2	3	4	4mm	3mm	4mm	5mm	6mm	
Part No.	8201	8202	8203	8204	8205	6919	2102	2103	2104	6920	2106	2107	2108	2109	6922	7201	0175	0176	0115	0213	0214	0215	0216	Part No.
with cert	8206	8207	8208	8209	8210	8300	8301	8302	8303	8304	8305	8306	8307	8308	8309	0172	0173	0174	0115	0213	0214	0215	0216	with cert
Std Methods	ASTM D 816, D 1084 & D 4212										ASTM D 4212					ASTM D 333, D 365 & D 1200			DIN 53 211	ASTM D 5125 & ISO 2431				Std Methods
K	1.1	3.5	11.7	14.8	23	1.59	4.18	10.23	15.13	27.27	0.875	2.8	10.09	13.26	23.56	1.24	2.31	3.7	4.57	0.443	1.37	3.28	6.9	K
C	29	14	7.5	5	0	1070	760	575	545	540	993	747	587	673	744	770	550	400	452	200	200	220	570	C
Min (sec)	20	22	20	20	20	31	19	11	10	10	40	20	12	10	10	30	25	20	20	30	25	25	25	Min (sec)
Max (sec)	84	80	80	80	78	60	60	60	60	60	60	60	60	60	60	100	105	105	110	100	100	100	100	Max (sec)
Min (cSt)	2	30	150	230	460	15	39	63	97	219	10	19	64	79	161	25	40	70	100	10	25	70	130	Min (cSt)
Max (cSt)	60	230	830	1100	1800	78	238	604	899	1627	36	156	596	784	1401	120	220	370	500	40	130	370	700	Max (cSt)
Equation	V = K(T-C)					V = KT – C/T					V = KT – C/T					V = KT – C/T			V = KT – C/T	V = KT – C/T				Equation
Std Oil	C10	C20	C35	C60	C100	C200	C100	C200	C350	C350	C600	C20	C60	C100	C350	C350	C10	C60	C200	C200	C350	C20	C35	C35	C60	C60	C100	C100	C200	C10	C35	C60	C100	C100	C200	Std Oil
Std Oil Part No.	4000	4001	4002	4003	4004	4005	4004	4005	4006	4006	4015	4001	4003	4004	4006	4006	4000	4003	4005	4005	4006	4001	4002	4002	4003	4003	4004	4004	4005	4000	4002	4003	4004	4004	4005	Std Oil Part No.
Viscosity (cSt)	17	34	66	120	230	460	230	460	850	850	1600	34	120	230	850	850	17	120	460	460	850	34	66	66	120	120	230	230	460	17	66	120	230	230	460	Viscosity (cSt)

Conversion Chart

This chart is a guide to convert the efflux time, in seconds, measured with a given viscosity cup to the efflux time that an alternate cup would measure using the same fluid. This chart is not meant to take the place of making the actual measurement.

How to Use This Chart

To convert from one cup's efflux time to another, first select the column corresponding to the cup for which you have a measurement. Second, find the time in this column that is closest to your measured efflux time. Then, move horizontally left or right in the appropriate row until you reach the column for the cup you are converting to. The time in the second column is the efflux time that the alternate cup would measure under controlled conditions. The kinematic viscosity corresponding to the given efflux times can be found on the far left and right of the table. Note that efflux time may also be referred to as drain time or time of flow.

Viscosity Cups

A flow cup, sometimes called an efflux or viscosity cup, is a simple gravity device that measures the timed flow for a known volume of liquid passing through an orifice located at the bottom of the shaped cup. Under ideal conditions this rate of flow would be proportional to the kinematic viscosity, which is dependent upon the specific gravity of the liquid and typically measured in stokes, centistokes, or mm²/s. For many applications, it is not necessary to know the absolute viscosity. The efflux time is often sufficient for a relative classification of the viscosity. Conditions such as the temperature of the fluid can affect the measurement, so consult the instruction manual and standard method for each cup.

At least fifty types of flow cups have been developed and used over the years, mainly for production control and field inspection purposes. Most of these cups are of two main types – mounted on a stand for filling and draining or dipped directly into the liquid container before draining back into the same container. No matter which type of