

EZ™/Zahn Dip Viscosity Cup #3 **Quick Start Manual**

Calibrated Viscosity Cups Designed, Produced & Sold by Paul N. Gardner

SPECIFICATION TABLE				
Cup Number	Seconds Range	Centistoke Range	Midrange Sensitivity (**)	Calibration Oil Number/ Centistokes (*)
1	40 to 60	10 to 36	1.3	G-10/19
2	20 to 60	19 to 156	3.3	G-60/117
3	12 to 60	64 to 596	10.5	G-200/458
4	10 to 60	79 to 784	13.9	G-200/458
5	10 to 60	161 to 1401	24.2	G350/878

(*) Centistoke values are nominal - Actual values printed on labels
 (**) Stated as centistokes per second of efflux time.

INSTRUCTIONS FOR USE

1. Select the proper number cup to be used from the specification table, which is dependent on the expected viscosity range of the material to be measured.
2. Insure that the cup is clean and that there is no residual dried material in or around the orifice. If necessary use a length of nylon fishing line to clean the orifice
3. Adjust the temperature, if necessary, of the test material.
4. Completely immerse the cup into the material to be measured in a location free from bubbles or foam, holding the cup vertically by means of the stainless steel split key ring.
5. Measure and record the temperature of the material that is encompassed by the cup.
6. Hold cup vertically by inserting index finger into handle ring. In a quick, steady motion, lift the cup out of the sample material, starting the timer when the top edge of the cup breaks the surface. During the flow time, hold the cup no more than 6" above the level of the sample material.
7. Stop the timer when the first definite break in the stream at the base of the cup is observed.
8. Record the number of seconds of efflux time, temperature and the cup number. (Example: No. 2, EZ™ Dip Cup, 35.0 seconds at 25.1°C.) As an option to the preceding step, refer to the conversion table furnished with the cup and as indicated on the following page, determine the centistoke viscosity for the measured efflux time in seconds and record this value and the measured temperature. (Example: 25.3 centistokes at 25.1°C.) Download the Insta-Visc Mobil App to quickly and easily calculate viscosity or draintime.
9. Promptly clean the cup unless it will be used immediately for a rerun of the same material.

CARE of CUP

EZ™ viscosity cups are ruggedly constructed with all parts made of stainless steel, except the nameplate, and will give many years of satisfactory service requiring only thorough cleaning after each use. It is recommended, however, that calibration of the cup be confirmed periodically, or if dropped or otherwise subjected to damage, use the appropriate standard oil selected from the specification table. The listed viscosity value of these oils as shown on the container label is traceable to the National Institute of Standards and Technology.

CONVERSION FORMULAS - EZ #3 ONLY

Use this formula derived by Paul N. Gardner company research to find viscosity (V) in centistokes when cup efflux time in seconds (T) is known:

$$V = 10.09T - 587 \div T$$

Use this formula to find cup efflux time in seconds (T) when viscosity (V) in centistokes is known:

$$T = (V + \sqrt{V^2 + 23691}) \div 20.18$$

Results from the above formulas, solved for each tenth of a second within the cup range, are shown on the reverse side of this page. To find centistoke viscosity for a given cup efflux time in seconds, read down the column on the left to find the nearest second. Then, read to the right to the nearest tenth of a second column to find centistoke value. The chart may be read in reverse to find efflux time seconds when viscosity is known.

EZ™ VISCOSITY CUP #3
EFFLUX TIME - CENTISTOKES CONVERSION TABLE©

Seconds	Viscosity in Centistokes									
	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
12	72	74	75	76	78	79	81	82	83	85
13	86	87	89	90	91	93	94	95	97	98
14	99	101	102	103	105	106	107	108	110	111
15	112	113	115	116	117	119	120	121	122	124
16	125	126	127	128	130	131	132	133	135	136
17	137	138	139	141	142	143	144	145	147	148
18	149	150	151	153	154	155	156	157	158	160
19	161	162	163	164	165	167	168	169	170	171
20	172	174	175	176	177	178	179	181	182	183
21	184	185	186	187	188	190	191	192	193	194
22	195	196	198	199	200	201	202	203	204	205
23	207	208	209	210	211	212	213	214	215	217
24	218	219	220	221	222	223	224	225	227	228
25	229	230	231	232	233	234	235	236	238	239
26	240	241	242	243	244	245	246	247	249	250
27	251	252	253	254	255	256	257	258	259	260
28	262	263	264	265	266	267	268	269	270	271
29	272	273	275	276	277	278	279	280	281	282
30	283	284	285	286	287	288	290	291	292	293
31	294	295	296	297	298	299	300	301	302	303
32	305	306	307	308	309	310	311	312	313	314
33	315	316	317	318	319	320	322	323	324	325
34	326	327	328	329	330	331	332	333	334	335
35	336	337	338	340	341	342	343	344	345	346
36	347	348	349	350	351	352	353	354	355	356
37	357	359	360	361	362	363	364	365	366	367
38	368	369	370	371	372	373	374	375	376	377
39	378	380	381	382	383	384	385	386	387	388
40	389	390	391	392	393	394	395	396	397	398
41	399	400	401	403	404	405	406	407	408	409
42	410	411	412	413	414	415	416	417	418	419
43	420	421	422	423	424	425	426	428	429	430
44	431	432	433	434	435	436	437	438	439	440
45	441	442	443	444	445	446	447	448	449	450
46	451	452	453	454	456	457	458	459	460	461
47	462	463	464	465	466	467	468	469	470	471
48	472	473	474	475	476	477	478	479	480	481
49	482	483	484	486	487	488	489	490	491	492
50	493	494	495	496	497	498	499	500	501	502
51	503	504	505	506	507	508	509	510	511	512
52	513	514	515	516	518	519	520	521	522	523
53	524	525	526	527	528	529	530	531	532	533
54	534	535	536	537	538	539	540	541	542	543
55	544	545	546	547	548	549	550	551	553	554
56	555	556	557	558	559	560	561	562	563	564
57	565	566	567	568	569	570	571	572	573	574
58	575	576	577	578	579	580	581	582	583	584
59	585	586	587	588	589	590	592	593	594	595
60	596	597	598	599	600	601	602	603	604	605

Example: 45.5 Seconds = 446 Centistokes

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