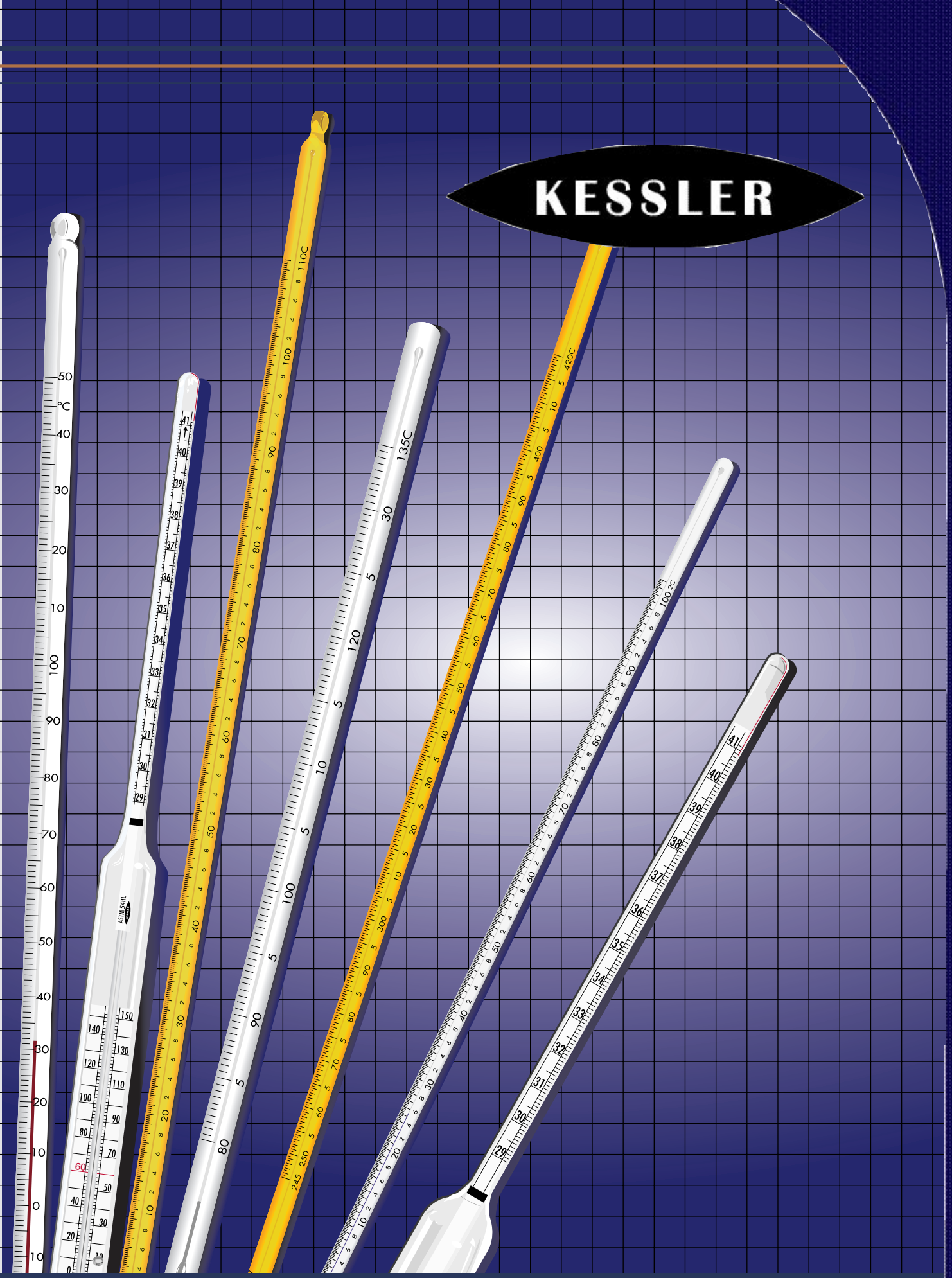

Catalog of Products & Services

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THE CONVERSION TABLE MAY BE USED FOR CONVERTING DEGREES FAHRENHEIT TO DEGREES CENTIGRADE OR VICE VERSA. BOLD FACE NUMBERS IN THE CENTER REFER TO THE KNOWN TEMPERATURE IN EITHER CENTIGRADE OR FAHRENHEIT. EQUIVALENT TEMPERATURE IS FOUND IN THE APPROPRIATE LEFT OR RIGHT COLUMN.

-140 to 20			21 to 55			56 to 90			91 to 340			350 to 690			700 to 1040		
°C		°F	°C		°F	°C		°F	°C		°F	°C		°F	°C		°F
-95.5	**-140**	-220	-6.1	**21**	69.8	13.3	**56**	132.8	32.8	**91**	195.8	177	**350**	662	371	**700**	1292
-90.0	**-130**	-202	-5.6	**22**	71.6	13.9	**57**	134.6	33.3	**92**	197.6	182	**360**	680	377	**710**	1310
-84.4	**-120**	-184	-5.0	**23**	73.4	14.4	**58**	136.4	33.9	**93**	199.4	188	**370**	698	382	**720**	1328
-78.9	**-110**	-166	-4.4	**24**	75.2	15.0	**59**	138.2	34.4	**94**	201.2	193	**380**	716	388	**730**	1346
-73.3	**-100**	-148	-3.9	**25**	77.0	15.6	**60**	140.0	35.0	**95**	203.0	199	**390**	734	393	**740**	1364
-67.6	**-90**	-130	-3.3	**26**	78.8	16.1	**61**	141.8	35.6	**96**	204.8	204	**400**	752	399	**750**	1382
-62.2	**-80**	-112	-2.8	**27**	80.6	16.7	**62**	143.6	36.1	**97**	206.6	210	**410**	770	404	**760**	1400
-56.6	**-70**	-94	-2.2	**28**	82.4	17.2	**63**	145.4	36.7	**98**	208.4	216	**420**	788	410	**770**	1418
-51.1	**-60**	-76	-1.7	**29**	84.2	17.8	**64**	147.2	37.2	**99**	210.2	221	**430**	806	416	**780**	1436
-45.5	**-50**	-58	-1.1	**30**	86.0	18.3	**65**	149.0	37.8	**100**	212.0	227	**440**	824	421	**790**	1454
-40.0	**-40**	-40	-.6	**31**	87.8	18.9	**66**	150.8				232	**450**	842	427	**800**	1472
-34.4	**-30**	-22	0	**32**	89.6	19.4	**67**	152.6	43	**110**	230	238	**460**	860	432	**810**	1490
-28.9	**-20**	-4				20.0	**68**	154.4	49	**120**	248	243	**470**	878	438	**820**	1508
-23.3	**-10**	14	0.6	**33**	91.4	20.6	**69**	156.2	54	**130**	266	249	**480**	896	443	**830**	1526
-17.8	**0**	32	1.1	**34**	93.2	21.1	**70**	158.0	60	**140**	284	254	**490**	914	449	**840**	1544
			1.7	**35**	95.0	21.7	**71**	159.8	66	**150**	302	260	**500**	932	454	**850**	1562
-17.2	**1**	33.8	2.2	**36**	96.8	22.2	**72**	161.6	71	**160**	320	266	**510**	950	460	**860**	1580
-16.7	**2**	35.6	2.8	**37**	98.6	22.8	**73**	163.4	77	**170**	338	271	**520**	968	466	**870**	1598
-16.1	**3**	37.4	3.3	**38**	100.4	23.3	**74**	165.2	82	**180**	356	277	**530**	986	471	**880**	1616
-15.6	**4**	39.2	3.9	**39**	102.2	23.9	**75**	167.0	88	**190**	374	282	**540**	1004	477	**890**	1634
-15.0	**5**	41.0	4.4	**40**	104.0	24.4	**76**	168.8	93	**200**	392	288	**550**	1022	482	**900**	1652
-14.4	**6**	42.8	5.0	**41**	105.8	25.0	**77**	170.6	99	**210**	410	293	**560**	1040	488	**910**	1670
-13.9	**7**	44.6	5.6	**42**	107.6	25.6	**78**	172.4	100	**212**	414	299	**570**	1058	493	**920**	1688
-13.3	**8**	46.4	6.1	**43**	109.4	26.1	**79**	174.2				304	**580**	1076	499	**930**	1706
-12.8	**9**	48.2	6.7	**44**	111.2	26.7	**80**	176.0	104	**220**	428	310	**590**	1094	504	**940**	1724
-12.2	**10**	50.0	7.2	**45**	113.0	27.2	**81**	177.8	110	**230**	446	316	**600**	1112	510	**950**	1742
-11.7	**11**	51.8	7.8	**46**	114.8	27.8	**82**	179.6	116	**240**	464	321	**610**	1130	516	**960**	1760
-11.1	**12**	53.6	8.3	**47**	116.6	28.3	**83**	181.4	121	**250**	482	327	**620**	1148	521	**970**	1778
-10.6	**13**	55.4	8.9	**48**	118.4	28.9	**84**	183.2	127	**260**	500	332	**630**	1166	527	**980**	1796
-10.0	**14**	57.2	9.4	**49**	120.2	29.4	**85**	185.0	132	**270**	518	338	**640**	1184	532	**990**	1814
-9.4	**15**	59.0	10.0	**50**	122.0	30.0	**86**	186.8	135	**280**	536	343	**650**	1201	538	**1000**	1832
-8.9	**16**	60.8	10.6	**51**	123.8	30.6	**87**	188.6	143	**290**	554	349	**660**	1220	543	**1010**	1850
-8.3	**17**	62.6	11.1	**52**	125.6	31.1	**88**	190.4	149	**300**	572	354	**670**	1238	549	**1020**	1868
-7.8	**18**	64.4	11.7	**53**	127.4	31.7	**89**	192.2	154	**310**	590	360	**680**	1256	554	**1030**	1886
-7.2	**19**	66.2	12.2	**54**	129.2	32.2	**90**	194.0	160	**320**	608	366	**690**	1274	560	**1040**	1904
-6.7	**20**	68.0	12.8	**55**	131.0				166	**330**	626						
									171	**340**	644						

FORMULA FOR CONVERTING TEMPERATURE SCALES

ABOVE 0°

TO CONVERT FAHRENHEIT READINGS TO CENTIGRADE:
SUBTRACT 32 DEGREES AND DIVIDE THE REMAINDER BY 1.8.

TO CONVERT CENTIGRADE READING TO FAHRENHEIT:
MULTIPLY BY 1.8 AND ADD 32 DEGREES TO THE RESULT.

BELOW 0°

TO CONVERT FAHRENHEIT READINGS TO CENTIGRADE:
ADD 32 DEGREES AND DIVIDE THE REMAINDER BY 1.8

TO CONVERT CENTIGRADE READING TO FAHRENHEIT:
MULTIPLY BY 1.8 AND SUBTRACT 32 DEGREES FROM THE RESULT.

ASTM

THERMOMETERS

KESSLER's rigid manufacturing tolerance and inspection ensure the production of ASTM thermometers that are well within the dimensional and accuracy specifications of E-1 and E-77 of the AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM). To order a copy of test method E-77, please use catalog number ASTM E-77.

PARTIAL IMMERSION

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
1C		1102	Partial Immersion	-20 to 150°C	1	322mm	76mm
1F		1104	Partial Immersion	0 to 302°F	2	322mm	76mm
2C	62C	1106	Partial Immersion	-5 to 300°C	1	390mm	76mm
2F	62F	1108	Partial Immersion	20 to 580°F	2	390mm	76mm
3C	73C	1110	Partial Immersion	-5 to 400°C	1	415mm	76mm
3F	73F	1112	Partial Immersion	20 to 760°F	2	415mm	76mm

ACID HEAT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
4C		1002	Acid Heat	-1 to 105°C	0.5	375mm	152mm
4F		1000	Acid Heat	30 to 220°F	1	375mm	152mm

CLOUD AND POUR - LOW AND HIGH

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
5C	1C	1006	Cloud & Pour, High	-38 to 50°C	1	230mm	108mm
5F	1F	1004	Cloud & Pour, High	-36 to 120°F	2	230mm	108mm
6C	2C	1010	Cloud & Pour, Low	-80 to 20°C	1	230mm	76mm
6F	2F	1008	Cloud & Pour, Low	-112 to 70°F	2	230mm	76mm

DISTILLATION - LOW AND HIGH

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
7C	5C	1014	Distillation, Low	-2 to 300°C	1	385mm	total
7F		1012	Distillation, Low	30 to 580°F	2	385mm	total
8C	6C	1018	Distillation, High	-2 to 400°C	1	385mm	total
8F		1016	Distillation, High	30 to 760°F	2	385mm	total

PENSKY-MARTENS - LOW AND HIGH

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
9C	15C	1022	Pensky-Martens Low	-5 to 110°C	0.5	290mm	57mm
9F	15F	1020	Pensky-Martens Low	20 to 230°F	1	290mm	57mm
10C	16C	1026	Pensky-Martens High	90 to 370°C	2	290mm	57mm
10F	16F	1024	Pensky-Martens High	200 to 700°F	5	290mm	57mm

OPEN FLASH

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
11C	28C	1038	Open Flash	-6 to 400°C	2	310mm	25mm
11F	28F	1036	Open Flash	20 to 760°F	5	310mm	25mm

DENSITY - WIDE RANGE (GRAVITY)

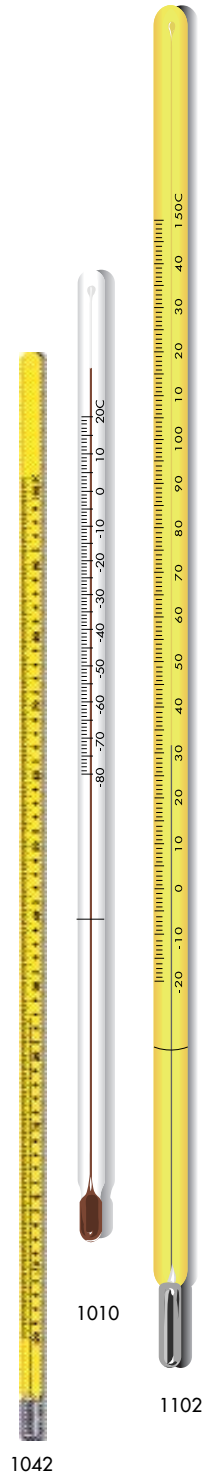
ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
12C	64C	1042	Gravity	-20 to 102°C	0.2	420mm	total
12F	64F	1040	Gravity	-5 to 215°F	0.5	420mm	total

LOSS ON HEAT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
13C	47C	1048A	Loss on Heat	155 to 170°C	0.5	155mm	total

PARAFFIN WAX MELTING POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
14C	17C	1051	Paraffin Wax Melt Pt.	38 to 82°C	0.1	375mm	79mm
14F	17F	1050	Paraffin Wax Melt Pt.	100 to 180°F	0.2	375mm	79mm



SOFTENING POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
15C	60C	1056	Softening Pt. Low	-2 to 80°C	0.2	397mm	total
15F		1054	Softening Pt. Low	30 to 180°F	0.5	397mm	total
16C	61C	1060	Softening Pt. High	30 to 200°C	0.5	397mm	total
16F		1058	Softening Pt. High	85 to 392°F	1	397mm	total

SAYBOLT VISCOSITY

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
17C		1085	Viscosity Saybolt	19 to 27°C	0.1	275mm	total
17F		1066	Viscosity Saybolt	66 to 80°F	0.2	275mm	total
18C	23C	1086	Say Vis & Reid Vapor	34 to 42°C	0.1	275mm	total
18F	23F	1067	Say Vis & Reid Vapor	94 to 108°F	0.2	275mm	total
19C		1087	Viscosity Saybolt	49 to 57°C	0.1	275mm	total
19F		1068	Viscosity Saybolt	120 to 134°F	0.2	275mm	total
20C		1088	Viscosity Saybolt	57 to 65°C	0.1	275mm	total
20F		1069	Viscosity Saybolt	134 to 148°F	0.2	275mm	total
21C		1089	Viscosity Saybolt	79 to 87°C	0.1	275mm	total
21F		1075	Viscosity Saybolt	174 to 188°F	0.2	275mm	total
22C	24C	1090	Say Vis & Oxy Stab.	95 to 103°C	0.1	275mm	total
22F	24F	1076	Say Vis & Oxy Stab.	204 to 218°F	0.2	275mm	total

ENGLER VISCOSITY

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
23C		1092	Viscosity Engler	18 to 28°C	0.2	212mm	90mm
24C		1093	Viscosity Engler	39 to 54°C	0.2	237mm	90mm
25C		1094	Viscosity Engler	95 to 105°C	0.2	212mm	90mm

STABILITY TEST OF SOLUBLE NITROCELLULOSE

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
26C		1120	Stab Test Sot Nit Cell	130 to 140°C	0.1	463mm	total

TURPENTINE DISTILLATION

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
27C		1122	Turpentine Dist.	147 to 182°C	0.5	301mm	76mm

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
28C	31C	1097G	Kinematic Viscosity	36.6 to 39.4°C	0.05	305mm	total
28F	31F	1096G	Kinematic Viscosity	97.5 to 102.5°F	0.1	305mm	total
29C	34C	1097I	Kinematic viscosity	52.6 to 55.4°C	0.05	305mm	total
29F	34F	1096I	Kinematic Viscosity	127.5 to 132.5°F	0.1	305mm	total
30F	32F	1096M	Kinematic viscosity	207.5 to 212.5°F	0.1	305mm	total

REID VAPOR

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
31F		1003	Reid Vapor	-30 to 120°F	1	305mm	total

ANILINE POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
33C	20F	1126	Aniline Point	-38 to 42°C	0.2	420mm	50mm
33F		1127	Aniline Point	-36.5 to 107.5°F	0.5	420mm	50mm
34C	21F	1128	Aniline Point	25 to 105°C	0.2	420mm	50mm
34F		1129	Aniline Point	77 to 221°F	0.5	420mm	50mm
35C	59F	1130	Aniline Point	90 to 170°C	0.2	420mm	50mm
35F		1131	Aniline Point	194 to 338°F	0.5	420mm	50mm

TITER TEST

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
36C		1272	Titer Test	-2 to 68°C	0.2	405mm	45mm

1056

SOLVENTS DISTILLATION

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
37C	77C	1132	Solvents Distillation	-2 to 52°C	0.2	395mm	100mm
38C	78C	1134	Solvents Distillation	24 to 78°C	0.2	395mm	100mm
39C	79C	1136	Solvents Distillation	48 to 102°C	0.2	395mm	100mm
40C	80C	1138	Solvents Distillation	72 to 126°C	0.2	395mm	100mm
41C	81C	1140	Solvents Distillation	98 to 152°C	0.2	395mm	100mm
42C	82C	1142	Solvents Distillation	95 to 255°C	0.5	395mm	100mm

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
43C	65C	1097B	Kinematic Viscosity	-51.6 to -34°C	0.1	417mm	total
43F	65F	1096B	Kinematic Viscosity	-61 to -29°F	0.2	417mm	total
44C	29C	1096Q	Kinematic Viscosity	18.5 to 21.5°C	0.05	305mm	total
44F	29F	1096E	Kinematic Viscosity	66.5 to 71.5°F	0.1	305mm	total
45C	30C	1096R	Kinematic Viscosity	23.6 to 26.4°C	0.05	305mm	total
45F	30F	1096F	Kinematic viscosity	74.5 to 79.5°F	0.1	305mm	total
46C	66C	1096S	Kinematic viscosity	48.6 to 51.4°C	0.05	305mm	total
46F	66F	1096H	Kinematic Viscosity	19.5 to 124.5°F	0.1	305mm	total
47C	35C	1096T	Kinematic Viscosity	58.6 to 61.4°C	0.05	305mm	total
47F	35F	1096K	Kinematic Viscosity	137.5 to 142.5°F	0.1	305mm	total
48C	90C	1097L	Kinematic Viscosity	80.6 to 83.4°C	0.05	305mm	total
48F	90F	1096L	Kinematic Viscosity	177.5 to 182.5°F	0.1	305mm	total

STORMER VISCOSITY

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
49C		1095	Stormer Viscosity	20 to 70°C	0.2	305mm	65mm

GAS CALORIMETER

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
50F		1144	Gas Calorimeter inlet	54 to 101°F	0.1	468mm	total
51F		1146	Gas Calorimeter inlet	69 to 116°F	0.1	468mm	total

BUTADINE BOILING POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
52C		1148	Butadine Boiling Pt.	-10 to 5°C	0.1	162mm	total

BENZENE FREEZING POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
53C		1148C	Benzene Freezing Pt.	-0.6 to 10.4°C	0.1	189mm	total

CONGEALING POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
54C	18C	1048	Congealing Point	20 to 100.6°C	0.2	310mm	total
54F	18F	1047	Congealing Point	68 to 213°F	0.5	310mm	total

BOMB CALORIMETER

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
56C		1147	Bomb Calorimeter	19 to 35°C	0.02	585mm	total
56F		1147A	Bomb Calorimeter	66 to 95°F	0.05	585mm	total

TAG CLOSED TESTER

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
57C		1034	Flash Tag Closed Low	-20 to 50°C	0.5	290mm	57mm
57F		1032	Flash Tag Closed Low	-4 to 122°F	1	290mm	57mm

1096E

1272

TANK GAUGING – REFILL

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
58C		1248	Tank, Refill, Low	-34 to 49°C	0.5	300mm	total
58F		1252	Tank, Refill, Low	-30 to 120°F	1	300mm	total
59C		1253	Tank, Refill, Medium	-18 to 82°C	0.5	300mm	total
59F		1256	Tank, Refill, Medium	0 to 180°F	1	300mm	total
60C		1257	Tank, Refill, High	77 to 260°C	1	300mm	total
60F		1260	Tank, Refill, High	170 to 500°F	2	300mm	total

ANY OF THE ABOVE MAY BE FURNISHED WITH RED READING LENS GLASS AT ADDITIONAL COST. ADD SUFFIX"RRL" TO CATALOG NUMBER.

PETROLATUM MELT POINT

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion
61C	16C	1053	Petrolatum Melt Pt.	32 to 127°C	0.2	380mm	79mm
61F		1052	Petrolatum Melt Pt.	90 to 260°F	0.5	380mm	79mm

ASTM PRECISION SERIES

- *Etched stem mercury-in-glass thermometers manufactured in strict accordance with ASTM and National Institute of Standards and Technology (formerly NBS) specifications.*
- *Extensively aged and annealed for minimal scale error and extended life.*
- *Auxiliary ice point reference scale for verification of main scale corrections.*

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion	
62C	2C	1300	Precision	-38 to 2°C	0.1	379mm		total
63C	61C	1302	Precision	-8 to 32°C	0.1	379mm		total
64C	12C	1304	Precision	25 to 55°C	0.1	379mm		total
65C	43C	1306	Precision	50 to 80°C	0.1	379mm		total
66C	46C	1308	Precision	75 to 105°C	0.1	379mm		total
67C	72C	1310	Precision	95 to 155°C	0.2	379mm		total
68C	73C	1312	Precision	145 to 205°C	0.2	379mm		total
69C	74C	1314	Precision	195 to 305°C	0.5	379mm		total
70C		1316	Precision	295 to 405°C	0.5	379mm		total

1296 Complete set of Celsius ranges ASTM 62C through 70C furnished in a velvet-lined protective case.

ASTM	IP	Cat No	Application	Temp Range	Div	Length	Immersion	
62F	2F	1320	Precision	-36 to 35°F	0.2	379mm		total
63F		1322	Precision	18 to 89°F	0.2	379mm		total
64F	12F	1324	Precision	77 to 131°F	0.2	379mm		total
65F	43F	1326	Precision	122 to 176°F	0.2	379mm		total
66F	46F	1328	Precision	167 to 221°F	0.2	379mm		total
67F	72F	1330	Precision	203 to 311°F	0.5	379mm		total
68F	73F	1332	Precision	293 to 401°F	0.5	379mm		total
69F	74F	1334	Precision	383 to 581°F	1.0	379mm		total
70F		1336	Precision	563 to 761°F	1.0	379mm		total

1298 Complete set of Fahrenheit ranges ASTM 62F through 70F furnished in a velvet-lined protective case.

1256

1308

OIL IN WAX

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
71C	1293A	Oil in Wax	-37 to 21°C	0.5	355mm	76mm
71F	1293	Oil in Wax	-35 to 70°F	1	355mm	76mm

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
72C	1097A	Kinematic Viscosity	-19.4 to -16.6°C	0.05	305mm	total
72F	1096A	Kinematic Viscosity	-2.5 to +2.5°F	0.1	305mm	total
73C	1096U	Kinematic Viscosity	-41.4 to -38.6°C	0.05	305mm	total
73F	1096C	Kinematic Viscosity	-42.5 to -37.5°F	0.1	305mm	total
74C	1096D	Kinematic Viscosity	-55.4 to -52.6°C	0.05	305mm	total
74F	10960	Kinematic viscosity	-67.5 to -62.5°F	0.1	305mm	total

COOLANT FREEZING POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
75F	1200	Coolant Freezing Pt.	-35 to 35°F	0.5	408mm	100mm
76F	1202	Coolant Freezing Pt.	-65 to +5°F	0.5	408mm	100mm

SAYBOLT VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
77F	1077	Viscosity Saybolt	245 to 265°F	0.5	275mm	total
78F	1079	Viscosity Saybolt	295 to 315°F	0.5	275mm	total
79F	1080	Viscosity Saybolt	345 to 365°F	0.5	275mm	total
80F	1082	Viscosity Saybolt	395 to 415°F	0.5	275mm	total
81F	1084	Viscosity Saybolt	445 to 465°F	0.5	275mm	total

FUEL RATING

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
82F	1204	Fuel Rating, Engine	0 to 220°F	2	165mm	30mm
82C	1205	Fuel Rating, Engine	-15 to 105°C	1	165mm	30mm
83F	1206	Fuel Rating, Air	60 to 160°F	1	174mm	40mm
83C	1207	Fuel Rating, Air	15 to 70°C	1	174mm	40mm
84F	1208	Fuel Rating, Orifice	75 to 175°F	1	387mm	249m
84C	1209	Fuel Rating, Orifice	25 to 80°C	1	387mm	249m
85F	1210	Fuel Rating, Surge	100 to 300°F	2	314mm	181mm
85C	1211	Fuel Rating, Surge	40 to 150°C	1	314mm	181mm
86F	1212	Fuel Rating, Mix	200 to 350°F	2	170mm	35mm
86C	1213	Fuel Rating, mix	95 to 174°C	1	170m	35mm
87F	1214	Fuel Rating, Coolant	300 to 400°F	1	175mm	40mm
87C	1215	Fuel Rating, Coolant	150 to 205°C	1	175mm	40mm

VEGETABLE OIL FLASH

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
88C	1216	Vegetable Oil Flash	10 to 200°C	1	287mm	57mm
88F	1218	Vegetable Oil Flash	50 to 392°F	2	287mm	57mm

SOLIDIFICATION POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
89C	1220	Solidification Point	-20 to +10°C	0.1	370mm	76mm
90C	1222	Solidification Point	0 to 30°C	0.1	370mm	76mm
91C	1224	Solidification Point	20 to 50°C	0.1	370mm	76mm
92C	1226	Solidification Point	40 to 70°C	0.1	370mm	76mm
93C	1228	Solidification Point	60 to 90°C	0.1	370mm	76mm
94C	1230	Solidification Point	80 to 110°C	0.1	370mm	76mm
95C	1232	Solidification Point	100 to 130°C	0.1	370mm	76mm
96C	1234	Solidification Point	120 to 150°C	0.1	370mm	76mm

TANK GAUGING – REFILL

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
97C	1244	Tank, Refill	-18 to 49°C	0.5	300mm	total
97F	1262	Tank, Refill	0 to 120°F	1	300mm	total
98C	1246	Tank, Refill	16 to 82°C	0.5	300mm	total
98F	1264	Tank, Refill	60 to 180°F	1	300mm	total

(For complete units and cases, see gauging section, Page #)


1082


1220


1214

WEATHERING TEST

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
99F	1278	Weathering Test	-58 to 41°F	0.5	305mm	35mm
99C	1279	Weathering Test	-50 to +5°C	0.2	305mm	35mm

SOLIDIFICATION POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
100C	1236	Solidification Point	145 to 205°C	0.2	370mm	76mm
101C	1238	Solidification Point	195 to 305°C	0.5	370mm	76mm

SOLVENTS DISTILLATION

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
102C	1266	Solvents Distillation	123 to 177°C	0.2	395mm	l00mm
103C	1268	Solvents Distillation	148 to 202°C	0.2	395mm	100mm
104C	1270	Solvents Distillation	173 to 227°C	0.2	395mm	100mm
105C	1273	Solvents Distillation	198 to 252°C	0.2	395mm	100mm
106C	1274	Solvents Distillation	223 to 277°C	0.2	395mm	100mm
107C	1276	Solvents Distillation	248 to 302°C	0.2	395mm	l00mm

SAYBOLT VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
108F	1091A	Viscosity Saybolt	270 to 290°F	0.5	275mm	total
109F	1091B	Viscosity Saybolt	320 to 340°F	0.5	275mm	total

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
110C	1096V	Kinematic viscosity	133.6 to 136.4°C	0.05	305mm	total
110F	1096N	Kinematic Viscosity	272.5 to 277.5°F	0.1	305mm	total

TAR ACID DISTILLATION

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
111C	1284	Tar Acid Distillation	170 to 250°C	0.2	395mm	100mm

SOLIDIFICATION POINT OF BENZENE

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
112C	1286	Solidification Benzene	4 to 6°C	0.02	220mm	total

BITUMINOUS MATERIALS SOFTENING POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
113C	1289	Bit. Mat. Sftn. Pt.	-1 to 175°C	0.5	4O6mm	total

AVIATION FUELS FREEZING POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
114C	1290	Aviation Fuel Frz. Pt.	-80 to 20°C	0.5	300mm	total
114F	1291	Aviation Fuel Frz. Pt.	-112 to 70°F	1.0	300mm	total

BOMB CALORIMETER

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
116C	1147B	Bomb Calorimeter	18.9 to 25.1°C	0.01	609mm	total
117C	1147C	Bomb Calorimeter	23.9 to 30.1°C	0.01	609mm	total

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
118F	1096P	Kinematic viscosity	83.5 to 88.5°F	0.1	305mm	total
118C	1096W	Kinematic viscosity	28.6 to 31.4°C	0.05	305mm	total

COOLANT FREEZING POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
119C	1096X	Coolant Frz. Pt.	-35.5 to -30°C	0.05	305mm	total
119F	1097X	Coolant Frz. Pt.	-37 to -22°F	0.1	3O5mm	total

1096N

1268

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
120C	1096Y	Kinematic Viscosity	38.5 to 41.5°C	0.05	305mm	total
121C	1096Z	Kinematic viscosity	98.5 to 101.5°C	0.05	305mm	total

BROOKFIELD VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
122C	1098A	Brookfield viscosity	-45 to -35°C	0.1	300mm	total
123C	1098B	Brookfield Viscosity	-35 to -25°C	0.1	300mm	total
124C	1098C	Brookfield Viscosity	-25 to -15°C	0.1	300mm	total
125C	10980	Brookfield Viscosity	-15 to -5°C	0.1	300mm	total

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
126C	1098E	Kinematic Viscosity	-27.4 to -24.6°C	0.05	305mm	total
126F	1098F	Kinematic Viscosity	-17.5 to -12.5°F	0.1	305mm	total
127C	1098G	Kinematic viscosity	-21.4 to -18.6°C	0.05	305mm	total
128C	1098H	Kinematic Viscosity	-1.4 to +1.4°C	0.05	305mm	total
128F	10981	Kinematic Viscosity	29.5 to 34.5°F	0.1	305mm	total
129C	1098J	Kinematic Viscosity	91.6 to 94.4°C	0.05	305mm	total
129F	1098K	Kinematic viscosity	197.5 to 202.5°F	0.1	305mm	total
132C	1098L	Kinematic Viscosity	148.6 to 151.4°C	0.05	305mm	total

TANK GAUGING – REFILL

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
130C	1271	Tank Gauging, Refill	-7 to 110°C	0.5	305mm	total
130F	1261	Tank Gauging, Refill	20 to 220°F	1	305mm	total

PRECISION-PARTIAL IMMERSION

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
133C	1099	Precision-Partial Immersion	-38 to +2°C	0.1	379mm	76mm

SLUDGE

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
134C	1100	Sludge	144 to 156°C	0.2	270mm	100mm

1271

LOW TOXIC NON-MERCURY NEW
DENSITY - WIDE RANGE (GRAVITY)

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S12C-03	1042-S	Density Wide Range	-20 to 102°C	0.2	435mm	total
S12F-03	1040-S	Density Wide Range	-5 to 215°F	0.5	435mm	total

BOMB CALORIMETER

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S56C-03	1147-S	Bomb Calorimeter	19 to 35°C	0.02	610mm	total
S56F-03	1147A-S	Bomb Calorimeter	66 to 95°F	0.05	610mm	total

TANK GAUGING

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S59C-03	1253-S	Tank	-18 to 82°C	0.5	300mm	total
S59F-03	1256-S	Tank	0 to 180°F	1	300mm	total

PRECISION-TOTAL IMMERSION

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S62C-03	1300-S	Precision	-38 to 2°C	0.1	401mm	total
S62F-03	1320-S	Precision	-36 to 35°F	0.2	401mm	total
S63C-03	1302-S	Precision	-8 to 32°C	0.1	401mm	total
S63F-03	1322-S	Precision	18 to 89°F	0.2	401mm	total
S64C-03	1304-S	Precision	25 to 55°C	0.1	401mm	total
S64F-03	1324-S	Precision	77 to 131°F	0.2	401mm	total
S65C-03	1306-S	Precision	50 to 80°C	0.1	401mm	total
S65F-03	1326-S	Precision	122 to 176°F	0.2	401mm	total
S66C-03	1308-S	Precision	75 to 105°C	0.1	401mm	total
S66F-03	1328-S	Precision	167 to 221°F	0.2	401mm	total
S67C-03	1310-S	Precision	95 to 155°C	0.2	401mm	total
S67F-03	1330-S	Precision	203 to 311°F	0.5	401mm	total

SOLIDIFICATION POINT

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S91C-03	1224-S	Solidification Point	20 to 50°C	0.1	390mm	76mm

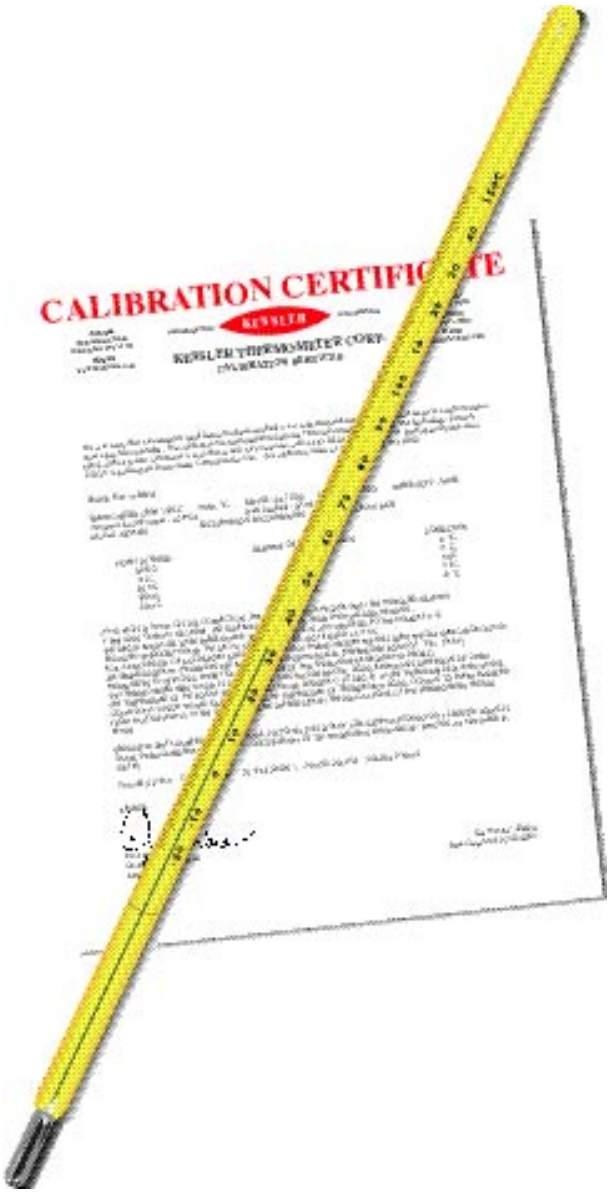
KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
S120C-03	1096Y-S	Kinematic Viscosity	38.6 to 41.1°C	0.05	300mm	total

1042-S

ASTM CERTIFIED MASTER

THERMOMETERS



PARTIAL IMMERSION

ASTM	IP	Cat No	Certification Test Points
1C		1102-C	Certified @ ASTM specified test points of -20, 0, 50, 100, 150C
1F		1104-C	Certified @ ASTM specified test points of 0, 32, 122, 212, 302F
2C	62C	1106-C	Certified @ ASTM specified test points of 0, 75, 150, 225, 300C
2F	62F	1108-C	Certified @ ASTM specified test points of 32, 150, 300, 450, 580F
3C	73C	1110-C	Certified @ ASTM specified test points of 0, 100, 200, 300, 370C
3F	73F	1112-C	Certified @ ASTM specified test points of 32, 200, 370, 540, 700F

ACID HEAT

ASTM	IP	Cat No	Certification Test Points
4C		1002-C	Certified @ ASTM specified test points of 0, 50, 100C
4F		1000-C	Certified @ ASTM specified test points of 32, 122, 215F

CLOUD AND POUR - LOW AND HIGH

ASTM	IP	Cat No	Certification Test Points
5C	1C	1006-C	Certified @ ASTM specified test points of -30, 0, 50C
5F	1F	1004-C	Certified @ ASTM specified test points of -30, 32, 120C
6C	2C	1010-C	Certified @ ASTM specified test points of -70, 35, 0, 20C
6F	2F	1008-C	Certified @ ASTM specified test points of -94, -30, 32, 70F

DISTILLATION - LOW AND HIGH

ASTM	IP	Cat No	Certification Test Points
7C	5C	1014-C	Certified @ ASTM specified test points of 0, 50, 100, 150, 200, 250, 300C
7F		1012-C	Certified @ ASTM specified test points of 32, 100, 200, 300, 400, 500, 570F
8C	6C	1018-C	Certified @ ASTM specified test points of 0, 100, 200, 300, 370C
8F		1016-C	Certified @ ASTM specified test points of 32, 200, 370, 540, 700F

PENSKY-MARTENS - LOW AND HIGH

ASTM	IP	Cat No	Certification Test Points
9C	15C	1022-C	Certified @ ASTM specified test points of 0, 35, 70, 150C
9F	15F	1020-C	Certified @ ASTM specified test points of 32, 100, 160, 220F
10C	16C	1026-C	Certified @ ASTM specified test points of 100, 200, 300, 370C
10F	16F	1024-C	Certified @ ASTM specified test points of 212, 390, 570, 700F

OPEN FLASH

ASTM	IP	Cat No	Certification Test Points
11C	28C	1038-C	Certified @ ASTM specified test points of 0, 100, 200, 300, 370C
11F	28F	1036-C	Certified @ ASTM specified test points of 32, 200, 370, 540, 700F

DENSITY - WIDE RANGE (GRAVITY)

ASTM	IP	Cat No	Certification Test Points
12C	64C	1042-C	Certified @ ASTM specified test points of -20, -10, 0, 10, 20, 30, 40, 50C
12F	64F	1040-C	Certified @ ASTM specified test points of -5, 15, 32, 60, 85F

LOSS ON HEAT

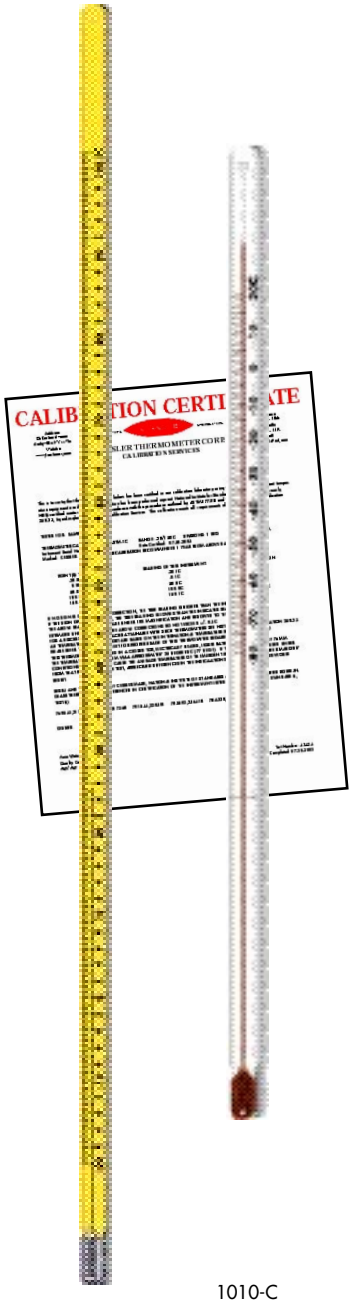
ASTM	IP	Cat No	Certification Test Points
13C	47C	1048A-C	Certified @ ASTM specified test points of 155, 163, 170C

PARAFFIN WAX MELTING POINT

ASTM	IP	Cat No	Certification Test Points
14C	17C	1051-C	Certified @ ASTM specified test points of 40, 50, 60, 70, 80C
14F	17F	1050-C	Certified @ ASTM specified test points of 100, 120, 140, 160, 180F

SOFTENING POINT

ASTM	IP	Cat No	Certification Test Points
15C	60C	1056-C	Certified @ ASTM specified test points of 0, 20, 40, 60, 80C
15F		1054-C	Certified @ ASTM specified test points of 32, 70, 100, 140, 180F
16C	61C	1060-C	Certified @ ASTM specified test points of 30, 60, 90, 120, 150, 180, 200C
16F		1058-C	Certified @ ASTM specified test points of 90, 140, 190, 240, 290, 340, 390F



1042-C

1010-C

SAYBOLT VISCOSITY

ASTM	IP	Cat No	Certification Test Points
17C		1085-C	Certified @ ASTM specified test points of 21, 25C
17F		1066-C	Certified @ ASTM specified test points of 70, 77F
18C	23C	1086-C	Certified @ ASTM specified test points of 38, 41C
18F	23F	1067-C	Certified @ ASTM specified test points of 100, 107F
19C		1087-C	Certified @ ASTM specified test points of 50, 54C
19F		1068-C	Certified @ ASTM specified test points of 122, 130F
20C		1088-C	Certified @ ASTM specified test points of 60, 64C
20F		1069-C	Certified @ ASTM specified test points of 140, 147F
21C		1089-C	Certified @ ASTM specified test points of 82, 86C
21F		1075-C	Certified @ ASTM specified test points of 180, 187F
22C	24C	1090-C	Certified @ ASTM specified test points of 99, 102C
22F	24F	1076-C	Certified @ ASTM specified test points of 210, 212C

ENGLER VISCOSITY

ASTM	IP	Cat No	Certification Test Points
23C		1092-C	Certified @ ASTM specified test points of 20, 25C
24C		1093-C	Certified @ ASTM specified test points of 40, 50C
25C		1094-C	Certified @ ASTM specified test points of 95, 100C

STABILITY TEST OF SOLUBLE NITROCELLULOSE

ASTM	IP	Cat No	Certification Test Points
26C		1120-C	Certified @ ASTM specified test points of 130, 135, 140C

TURPENTINE DISTILLATION

ASTM	IP	Cat No	Certification Test Points
27C		1122-C	Certified @ ASTM specified test points of 155, 165, 175C

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
28C	31C	1097G-C	Certified @ ASTM specified test points of 0, 37.8, 39C
28F	31F	1096G-C	Certified @ ASTM specified test points of 32, 100, 102F
29C	34C	1097I-C	Certified @ ASTM specified test points of 0, 54.4, 55C
29F	34F	1096I-C	Certified @ ASTM specified test points of 32, 130, 132F
30F	32F	1096M-C	Certified @ ASTM specified test points of 32, 210, 212F

REID VAPOR

ASTM	IP	Cat No	Certification Test Points
31F		1003-C	Certified @ ASTM specified test points of -20, 32, 100F

ANILINE POINT

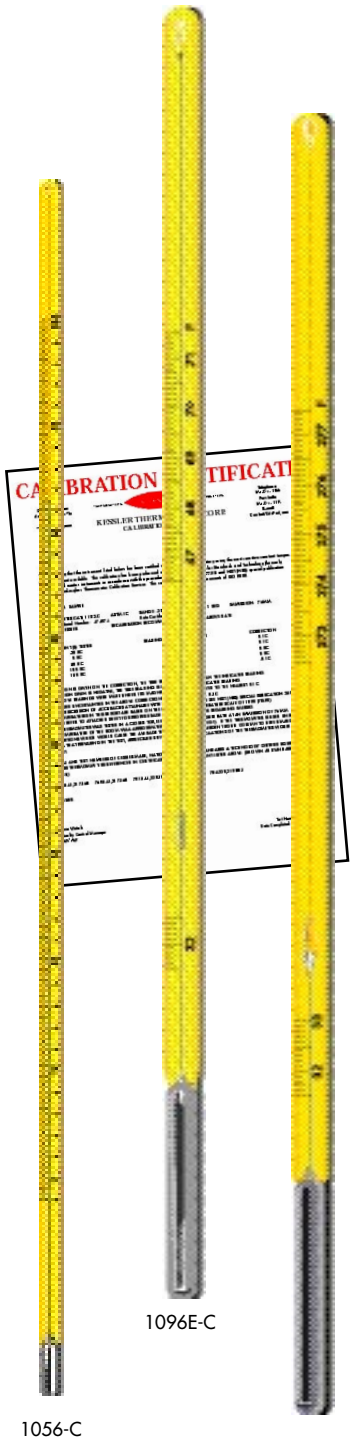
ASTM	IP	Cat No	Certification Test Points
33C	20F	1126-C	Certified @ ASTM specified test points of -35, -20, 0, 20, 40C
33F		1127-C	Certified @ ASTM specified test points of -31, -4, 32, 68, 104F
34C	21F	1128-C	Certified @ ASTM specified test points of 25, 45, 65, 85, 100C
34F		1129-C	Certified @ ASTM specified test points of 77, 113, 149, 185, 212F
35C	59F	1130-C	Certified @ ASTM specified test points of 100, 120, 140, 160, 170C
35F		1131-C	Certified @ ASTM specified test points of 212, 250, 285, 320, 338F

TITER TEST

ASTM	IP	Cat No	Certification Test Points
36C		1272-C	Certified @ ASTM specified test points of 0, 15, 30, 45, 65C

SOLVENTS DISTILLATION

ASTM	IP	Cat No	Certification Test Points
37C	77C	1132-C	Certified @ ASTM specified test points of 15, 30, 50C
38C	78C	1134-C	Certified @ ASTM specified test points of 25, 40, 55, 75C
39C	79C	1136-C	Certified @ ASTM specified test points of 50, 65, 80, 100C
40C	80C	1138-C	Certified @ ASTM specified test points of 75, 90, 105, 125C
41C	81C	1140-C	Certified @ ASTM specified test points of 100, 115, 130, 150C
42C	82C	1142-C	Certified @ ASTM specified test points of 100, 150, 200, 250C



KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
43C	65C	1097B-C	Certified @ ASTM specified test points of -50, -45, -40, -35, 0C
43F	65F	1096B-C	Certified @ ASTM specified test points of -60, -50, -40, -30, +32F
44C	29C	1096Q-C	Certified @ ASTM specified test points of 0, 20, 21C
44F	29F	1096E-C	Certified @ ASTM specified test points of 32, 68, 70F
45C	30C	1096R-C	Certified @ ASTM specified test points of 0, 25, 26C
45F	30F	1096F-C	Certified @ ASTM specified test points of 32, 77, 79F
46C	66C	1096S-C	Certified @ ASTM specified test points of 0, 50, 51C
46F	66F	1096H-C	Certified @ ASTM specified test points of 32, 122, 124F
47C	35C	1096T-C	Certified @ ASTM specified test points of 0, 60, 61C
47F	35F	1096K-C	Certified @ ASTM specified test points of 32, 140, 142F
48C	90C	1097L-C	Certified @ ASTM specified test points of 0, 82.2, 83C
48F	90F	1096L-C	Certified @ ASTM specified test points of 32, 180, 182F

STORMER VISCOSITY

ASTM	IP	Cat No	Certification Test Points
49C		1095-C	Certified @ ASTM specified test points of 20, 35, 50, 70C

GAS CALORIMETER

ASTM	IP	Cat No	Certification Test Points
50F		1144-C	Certified @ ASTM specified test points of 55, 60, 70, 75, 80, 85, 90, 85, 100F
51F		1146-C	Certified @ ASTM specified test points of 70, 75, 80, 85, 90, 95, 100, 105, 110, F

BUTADINE BOILING POINT

ASTM	IP	Cat No	Certification Test Points
52C		1148-C	Certified @ ASTM specified test points of -10, 0, 5C

BENZENE FREEZING POINT

ASTM	IP	Cat No	Certification Test Points
53C		1148C-C	Certified @ ASTM specified test points of 0, 5, 10C

CONGEALING POINT

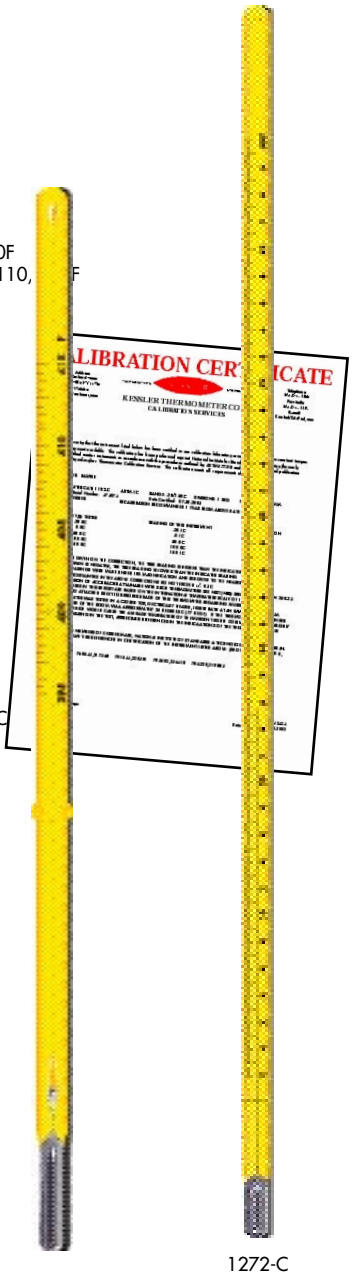
ASTM	IP	Cat No	Certification Test Points
54C	18°C	1048-C	Certified @ ASTM specified test points of 20, 50, 75, 100C
54F	18 °F	1047-C	Certified @ ASTM specified test points of 70, 120, 170, 210F

BOMB CALORIMETER

ASTM	IP	Cat No	Certification Test Points
56C		1147-C	Certified @ ASTM specified test points of 19, 21, 23, 25, 27, 29, 31, 33, 35C
56F		1147A-C	Certified @ ASTM specified test points of 66, 70, 74, 78, 82, 88, 92, 95F

TAG CLOSED TESTER

ASTM	IP	Cat No	Certification Test Points
57C		1034-C	Certified @ ASTM specified test points of -20, 25, 50C
57F		1032-C	Certified @ ASTM specified test points of -3, 32, 77, 122F



1272-C

1082-C

KESSLER

TANK GAUGING – REFILL

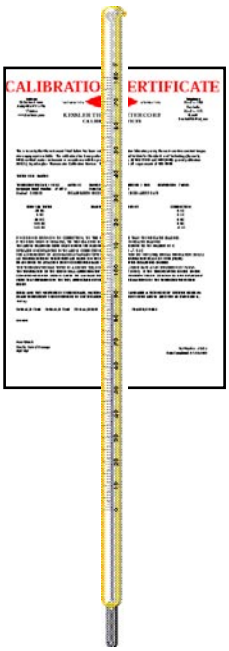
ASTM	IP	Cat No	Certification Test Points
58C		1248-C	Certified @ ASTM specified test points of -30, 0, 25, 45C
58F		1252-C	Certified @ ASTM specified test points of -20, 32, 80, 120F
59		1253-C	Certified @ ASTM specified test points of 0, 25, 55, 80C
59F		1256-C	Certified @ ASTM specified test points of 32, 80, 180, 180F
60C		1257-C	Certified @ ASTM specified test points of 100, 175, 255C
60F		1260-C	Certified @ ASTM specified test points of 212, 350, 490F

(For complete units and cases, see gauging section, Page #)

ANY OF THE ABOVE MAY BE FURNISHED WITH RED READING LENS GLASS AT ADDITIONAL COST. ADD SUFFIX"RRL" TO CATALOG NUMBER.

PETROLATUM MELT POINT

ASTM	IP	Cat No	Certification Test Points
61C	16C	1053-C	Certified @ ASTM specified test points of 40, 60, 80, 100, 120C
61F		1052-C	Certified @ ASTM specified test points of 100, 150, 200, 250F



1256-C

ASTM PRECISION SERIES

Primary reference Standards

Certified Traceable To NIST

- *Thermometers as on facing page, Certified NIST (formerly NBA) traceable at the ice point and four pointson the main scale, as specified by ASTM E-1. With Certificate of Calibration as shown.*
- *Ideal for use as primary laboratory reference standards.*

ASTM	IP	Cat No	Temp Range	Corrections given at each temperature				
62C	2C	1300C	-38 to 2°C	-37	-30	-20	-10	0C
63C	61C	1302C	-8 to 32°C	-7	0	10	20	
64C	12C	1304C	25 to 55°C	0	25	35	45	
65C	43C	1306C	50 to 80°C	0	50	60	70	
66C	46C	1308C	75 to 105°C	0	75	85	95	
67C	72C	1310C	95 to 155°C	0	100	110	130	
68C	73C	1312C	145 to 205°C	0	150	170	190	
69C	74C	1314C	195 to 305°C	0	200	235	270	
70C		1316C	295 to 405°C	0	300	335	370	
62F	2F	1320C	-36 to 35°F	-35	-15	0	15	
63F		1322C	18 to 89°F	20	32	50	70	
64F	12F	1324C	77 to 131°F	32	80	95	115	
65F	43F	1326C	122 to 176°F	32	125	145	160	
66F	46F	1328C	167 to 221°F	32	168	185	200	
67F	72F	1330C	203 to 311°F	32	205	240	275	
68F	73F	1332C	293 to 401°F	32	300	340	370	
69F	74F	1334C	383 to 581°F	32	400	460	520	
70F		1336C	563 to 761°F	32	570	640	700	

30C

Available individually or in sets.

Complete set of Fahrenheit thermometers, ASTM numbers 62F through 70F, each furnished with NIST Traceable Certificate of Calibration in a velvet lined protective case.
Catalog No. 1298-C

Complete set of Celsius thermometers, ASTM numbers 62C through 70C, each furnished with NIST Traceable Certificate of Calibration in a velvet lined protective case.
Catalog No. 1296-C

OIL IN WAX

ASTM	IP	Cat No	Certification Test Points
71C		1293A-C	Certified @ ASTM specified test points of -35, -18, 0, 20C
71F		1293-C	Certified @ ASTM specified test points of -30, 0, 32, 70F

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
72C		1097A-C	Certified @ ASTM specified test points of -19, -17.8, 0C
72F		1096A-C	Certified @ ASTM specified test points of -2, 0, 32F
73C		1096U-C	Certified @ ASTM specified test points of -41, 0C
73F		1096C-C	Certified @ ASTM specified test points of -42, -41, 32F
74C		109Th-C	Certified @ ASTM specified test points of -55, -55.9, 0C
74F		10960-C	Certified @ ASTM specified test points of -67, -65, 32F

COOLANT FREEZING POINT

ASTM	IP	Cat No	Certification Test Points
75F		1200-C	Certified @ ASTM specified test points of -35, 0, 32F
76F		1202-C	Certified @ ASTM specified test points of -65, -30, 32F

SAYBOLT VISCOSITY

ASTM	IP	Cat No	Certification Test Points
77F		1077-C	Certified @ ASTM specified test points of 250, 260F
78F		1079-C	Certified @ ASTM specified test points of 300, 310F
79F		1080-C	Certified @ ASTM specified test points of 350, 360F
80F		1082-C	Certified @ ASTM specified test points of 400, 410F
81F		1084-C	Certified @ ASTM specified test points of 450, 460F

FUEL RATING

ASTM	IP	Cat No	Certification Test Points
82F		1204-C	Certified @ ASTM specified test points of 32, 100, 200F
82C		1205-C	Certified @ ASTM specified test points of 0, 50, 100C
83F		1206-C	Certified @ ASTM specified test points of 85, 135F
83C		1207-C	Certified @ ASTM specified test points of 25, 70C
84F		1208-C	Certified @ ASTM specified test points of 100, 150F
84C		1209-C	Certified @ ASTM specified test points of 30, 80C
85F		1210-C	Certified @ ASTM specified test points of 150, 250F
85C		1211-C	Certified @ ASTM specified test points of 50, 150C
86F		1212-C	Certified @ ASTM specified test points of 225, 325F
86C		1213-C	Certified @ ASTM specified test points of 100, 175C
87F		1214-C	Certified @ ASTM specified test points of 300, 400F
87C		1215-C	Certified @ ASTM specified test points of 160, 200C

VEGETABLE OIL FLASH

ASTM	IP	Cat No	Certification Test Points
88C		1216-C	Certified @ ASTM specified test points of 40, 100, 150, 200C
88F		1218-C	Certified @ ASTM specified test points of 110, 212, 300, 392F

SOLIDIFICATION POINT

ASTM	IP	Cat No	Certification Test Points
89C		1220-C	Certified @ ASTM specified test points of -20, -10, 0, 10C
90C		1222-C	Certified @ ASTM specified test points of 0, 10, 20, 30C
91C		1224-C	Certified @ ASTM specified test points of 20, 30, 40, 50C
92C		1226-C	Certified @ ASTM specified test points of 40, 50, 60, 70C
93C		1228-C	Certified @ ASTM specified test points of 60, 70, 80, 90C
94C		1230-C	Certified @ ASTM specified test points of 80, 90, 100, 110C
95C		1232-C	Certified @ ASTM specified test points of 100, 110, 120, 130C
96C		1234-C	Certified @ ASTM specified test points of 120, 130, 140, 150C

TANK GAUGING – REFILL

ASTM	IP	Cat No	Certification Test Points
97C		1244-C	Certified @ ASTM specified test points of -50, 0, 20, 45C
97F		1262-C	Certified @ ASTM specified test points of 0, 32, 70, 110F
98C		1246-C	Certified @ ASTM specified test points of 20, 40, 60, 80C
98F		1264-C	Certified @ ASTM specified test points of 60, 100, 140, 180F

1214-C

1220-C

WEATHERING TEST

ASTM	IP	Cat No	Certification Test Points
99F		1278-C	Certified @ ASTM specified test points of -50, -25, 0, 32F
99C		1279-C	Certified @ ASTM specified test points of -46, -32, -18, 0C

SOLVENTS DISTILLATION

ASTM	IP	Cat No	Certification Test Points
102C		1266-C	Certified @ ASTM specified test points of 125, 140, 155, 175C
103C		1268-C	Certified @ ASTM specified test points of 150, 165, 180, 200C
104C		1270-C	Certified @ ASTM specified test points of 175, 190, 205, 225C
105C		1273-C	Certified @ ASTM specified test points of 200, 215, 230, 250C
106C		1274-C	Certified @ ASTM specified test points of 225, 240, 255, 275C
107C		1276-C	Certified @ ASTM specified test points of 250, 265, 280, 300C

SAYBOLT VISCOSITY

ASTM	IP	Cat No	Certification Test Points
108F		1091A-C	Certified @ ASTM specified test points of 275, 285F
109F		1091B-C	Certified @ ASTM specified test points of 325, 335F

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
110C		1096V-C	Certified @ ASTM specified test points of 0, 135, 136C
110F		1096N-C	Certified @ ASTM specified test points of 32, 375, 377F

TAR ACID DISTILLATION

ASTM	IP	Cat No	Certification Test Points
111C		1284-C	Certified @ ASTM specified test points of 170, 200, 250C

SOLIDIFICATION POINT OF BENZENE

ASTM	IP	Cat No	Certification Test Points
112C		1286-C	Certified @ ASTM specified test points of 0, 4, 5, 6C

BITUMINOUS MATERIALS SOFTENING POINT

ASTM	IP	Cat No	Certification Test Points
113C		1289-C	Certified @ ASTM specified test points of 0, 50, 100, 150, 175C

AVIATION FUELS FREEZING POINT

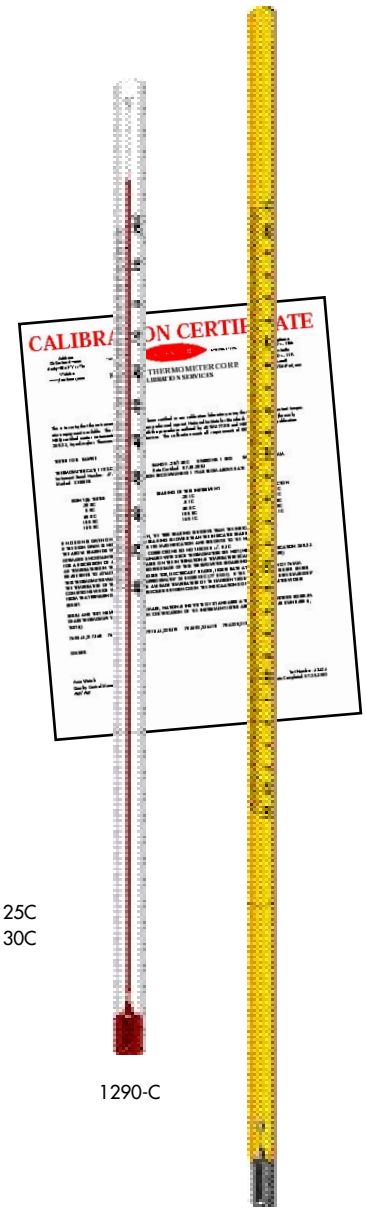
ASTM	IP	Cat No	Certification Test Points
114C		1290-C	Certified @ ASTM specified test points of -75, -60, -40, 0C
114F		1291-C	Certified @ ASTM specified test points of -103, -76, -40, 32F

BOMB CALORIMETER

ASTM	IP	Cat No	Certification Test Points
116C		1147B-C	Certified @ ASTM specified test points of 19, 20, 21, 22, 23, 24, 25C
117C		1147C-C	Certified @ ASTM specified test points of 24, 25, 26, 27, 28, 29, 30C

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
118F		1096P--C	Certified @ ASTM specified test points of 32, 86, 88F
118C		1096W-C	Certified @ ASTM specified test points of 0, 30, 31C



1290-C

1268-C

COOLANT FREEZING POINT

ASTM	IP	Cat No	Certification Test Points
119C		1096X-C	Certified @ ASTM specified test points of -38, -30, 0C
119F		1097X-C	Certified @ ASTM specified test points of -36, -22, +32F

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
120C		1096Y-C	Certified @ ASTM specified test points of 0, 40, 41C
121C		1096Z-C	Certified @ ASTM specified test points of 0, 100, 101C

BROOKFIELD VISCOSITY

ASTM	IP	Cat No	Certification Test Points
122C		1098A-C	Certified @ ASTM specified test points of -45, -40, -35C
123C		1098B-C	Certified @ ASTM specified test points of -35, -30, -25C
124C		1098C-C	Certified @ ASTM specified test points of -25, -20, -15C
125C		10980-C	Certified @ ASTM specified test points of -15, -10, -5C

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
126C		1098E-C	Certified @ ASTM specified test points of -27, -26.1, 0C
126F		1098F-C	Certified @ ASTM specified test points of -17, -15, +32F
127C		1098G-C	Certified @ ASTM specified test points of -21, -20, 0C
128C		1098H-C	Certified @ ASTM specified test points of 0, 1C
128F		10981-C	Certified @ ASTM specified test points of 32, 34F
129C		1098J-C	Certified @ ASTM specified test points of 0, 93.3, 94C
129F		1098K-C	Certified @ ASTM specified test points of 32, 200, 202F
132C		1098L -C	Certified @ ASTM specified test points of 0, 150, 151C

TANK GAUGING – REFILL

ASTM	IP	Cat No	Certification Test Points
130C		1271-C	Certified @ ASTM specified test points of 0, 35, 70, 105C
130F		1261-C	Certified @ ASTM specified test points of 32, 100, 160, 220F

PRECISION-PARTIAL IMMERSION

ASTM	IP	Cat No	Certification Test Points
133C		1099-C	Certified @ ASTM specified test points of -36, -30, -24, -18, -12, -6, 0C

SLUDGE

ASTM	IP	Cat No	Certification Test Points
134C		1100-C	Certified @ ASTM specified test points of 145, 150, 155C

1271-C

LOW TOXIC NON-MERCURY NEW

DENSITY - WIDE RANGE (GRAVITY)

ASTM	IP	Cat No	Certification Test Points
S12C-03		1042-S-C	Certified @ ASTM specified test points of -20, -10, 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100C
S12F-03		1040-S-C	Certified @ ASTM specified test points of -5, 15, 32, 60, 85, 110, 135, 160, 185, 210F

BOMB CALORIMETER

ASTM	IP	Cat No	Certification Test Points
S56C-03		1147-S-C	Certified @ ASTM specified test points of 19, 21, 23, 25, 27, 29, 31, 33, 35C
S56F-03		1147A-S-C	Certified @ ASTM specified test points of 65, 69, 73, 77, 81, 85, 89, 93, 95F

TANK GAUGING

ASTM	IP	Cat No	Certification Test Points
S59C-03		1253-S-C	Certified @ ASTM specified test points of 0, 25, 55, 80C
S59F-03		1256-S-C	Certified @ ASTM specified test points of 32, 80, 130, 180F

PRECISION-TOTAL IMMERSION

ASTM	IP	Cat No	Certification Test Points
S62C-03		1300-S-C	Certified @ ASTM specified test points of -37, -30, -20, -10, 0C
S62F-03		1320-S-C	Certified @ ASTM specified test points of -35, -15, 0, 15, 32F
S63C-03		1302-S-C	Certified @ ASTM specified test points of -7, 0, 10, 20, 30C
S63F-03		1322-S-C	Certified @ ASTM specified test points of 20, 32, 50, 70, 88F
S64C-03		1304-S-C	Certified @ ASTM specified test points of 0, 25, 35, 45, 55C
S64F-03		1324-S-C	Certified @ ASTM specified test points of 32, 80, 95, 115, 130F
S65C-03		1306-S-C	Certified @ ASTM specified test points of 0, 50, 60, 70, 80C
S65F-03		1326-S-C	Certified @ ASTM specified test points of 32, 125, 145, 160, 175F
S66C-03		1308-S-C	Certified @ ASTM specified test points of 0, 75, 85, 95, 105C
S66F-03		1328-S-C	Certified @ ASTM specified test points of 32, 168, 185, 200, 220F
S67C-03		1310-S-C	Certified @ ASTM specified test points of 0, 100, 110, 130, 150C
S67F-03		1330-S-C	Certified @ ASTM specified test points of 32, 205, 240, 275, 310F

SOLIDIFICATION POINT

ASTM	IP	Cat No	Certification Test Points
S91C-03		1224-S-C	Certified @ ASTM specified test points of 20, 30, 40, 50C

KINEMATIC VISCOSITY

ASTM	IP	Cat No	Certification Test Points
S120C-03		1096Y-S-C	Certified @ ASTM specified test points of 0, 40, 41C

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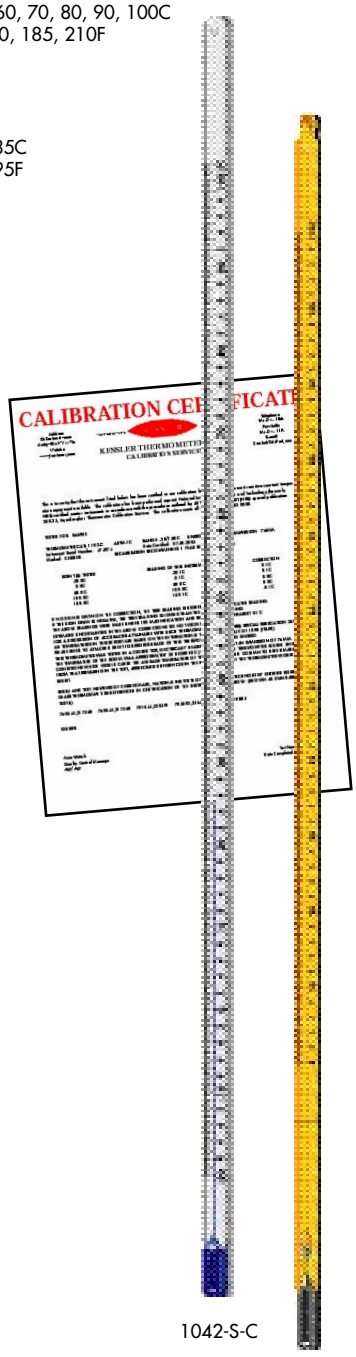


1042-S-C

1714

FRACTIONAL DEGREE PRECISION

LABORATORY THERMOMETERS

KESSLER Precision Laboratory Thermometers are supplied in yellow back glass with **PERMETCH** Brand permanent pigmentation of graduations. All of these instruments are aged and annealed for extended accurate service life, and are suitable for certification.

EXTREME PRECISION THERMOMETERS

CELSIUS RANGES - (MERCURY FILLED) TOTAL IMMERSION

CAT NO		TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2100	+	Extreme Precision	-1 to 51°C	0.1	457mm	Total
2102	+	Extreme Precision	-1 to 101°C	0.2	457mm	Total
2104	+	Extreme Precision	-1 to 101°C	0.1	610mm	Total
2106	+	Extreme Precision	-1 to 201°C	0.2	610mm	Total

CELSIUS RANGES - (MERCURY FILLED) PARTIAL IMMERSION

CAT NO		TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2100-3	+	Extreme Precision	-1 to 51°C	0.1	457mm	76mm
2102-3	+	Extreme Precision	-1 to 101°C	0.2	457mm	76mm
2104-3	+	Extreme Precision	-1 to 101°C	0.1	610mm	76mm
2106-3	+	Extreme Precision	-1 to 201°C	0.2	610mm	76mm

FAHRENHEIT RANGES- (MERCURY FILLED) TOTAL IMMERSION

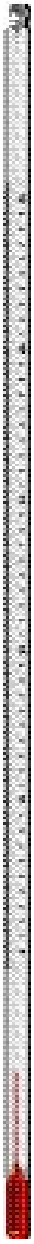
CAT NO		TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2118	+	Extreme Precision	+30 to 124°F	0.2	457mm	Total
2120	+	Extreme Precision	+30 to 124°F	0.1	610mm	Total
2122	+	Extreme Precision	+30 to 220°F	0.2	610mm	Total
2124	+	Extreme Precision	+30 to 394°F	0.5	610mm	Total

FAHRENHEIT RANGES- (MERCURY FILLED) PARTIAL IMMERSION

CAT NO		TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2118-3	+	Extreme Precision	+30 to 124°F	0.2	457mm	3″
2120-3	+	Extreme Precision	+30 to 124°F	0.1	610mm	3″
2122-3	+	Extreme Precision	+30 to 220°F	0.2	610mm	3″
2124-3	+	Extreme Precision	+30 to 394°F	0.5	610mm	3″

+ ITEMS MARKED WITH + AVAILABLE IMMEDIATELY FROM STOCK WITH NIST TRACEABLE CERTIFICATE OF CALIBRATION. ADD "-C" TO CAT. NO.

2100



2100-RL

EXTREME PRECISION THERMOMETERS (NON-MERCURIAL)

NEW

CELSIUS RANGES - TOTAL IMMERSION

CAT NO	TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2100-RL	Extreme Precision	-1 to 51°C	0.1	457mm	Total
2102-RL	Extreme Precision	-1 to 101°C	0.2	457mm	Total
2104-RL	Extreme Precision	-1 to 101°C	0.1	610mm	Total
2106-RL	Extreme Precision	-1 to 201°C	0.2	610mm	Total

CELSIUS RANGES - PARTIAL IMMERSION

CAT NO	TYPE	TEMP RANGE	DIV	LENGTH	IMMERSION
2100-3RL	Extreme Precision	-1 to 51°C	0.1	457mm	76mm
2102-3RL	Extreme Precision	-1 to 101°C	0.2	457mm	76mm
2104-3RL	Extreme Precision	-1 to 101°C	0.1	610mm	76mm
2106-3RL	Extreme Precision	-1 to 201°C	0.2	610mm	76mm

EXTREME PRECISION THERMOMETERS (Non-Mercurial) NEW

FAHRENHEIT RANGES - Total immersion

Cat No	Type	Temp Range	Div	Length	Immersion
2118-RL	Extreme Precision	+30 to 124°F	0.2	457mm	Total
2120-RL	Extreme Precision	+30 to 124°F	0.1	610mm	Total
2122-RL	Extreme Precision	+30 to 220°F	0.2	610mm	Total
2124-RL	Extreme Precision	+30 to 394°F	0.5	610mm	Total

FAHRENHEIT RANGES - Partial immersion

Cat No	Type	Temp Range	Div	Length	Immersion
2118-3RL	Extreme Precision	+30 to 124°F	0.2	457mm	3″
2120-3RL	Extreme Precision	+30 to 124°F	0.1	610mm	3″
2122-3RL	Extreme Precision	+30 to 220°F	0.2	610mm	3″
2124-3RL	Extreme Precision	+30 to 394°F	0.5	610mm	3″

+ items marked with + available immediately from stock with NIST traceable certificate of calibration. Add "-C" to cat. no.

2214

2302

MANUFACTURING CHEMISTS ASSOCIATION "R" SERIES

Sequential Celsius ranges for general research and testing procedures.

Cat No	Type	Temp Range	Div	Length	Immersion	
2150	Precision	M.C.A.R-1	-36 to 54°C	0.2	406mm	76mm
2152	Precision	M.C.A.R-2	-10 to 80°C	0.2	406mm	76mm
2154	Precision	M.C.A.R-3	70 to 160°C	0.2	406mm	76mm
2156	Precision	M.C.A.R-4	140 to 230°C	0.2	406mm	76mm

CELSIUS - PRECISION TEST - PARTIAL IMMERSION

This thermometer series has been designed in conjunction with the thermometer committee of one of the chemical industry's largest companies to satisfy their nationwide requirements for close, accurate readings in both laboratory and production work.

Cat No	Type	Temp Range	Div	Length	Immersion	
2200	Precision	JL-1	-36 to 30°C	0.2	406mm	76mm
2202	Precision	JL-2	-5 to 30°C	0.1	406mm	76mm
2204	Precision	JL-3	25 to 60°C	0.1	406mm	76mm
2206	Precision	JL-4	55 to 90°C	0.1	406mm	76mm
2208	Precision	JL-5	85 to 120°C	0.1	406mm	76mm
2210	Precision	JL-6	115 to 185°C	0.2	406mm	76mm
2212	Precision	JL-7	180 to 250°C	0.2	406mm	76mm
2214	Precision	JL-8	245 to 420°C	0.5	406mm	76mm

FAHRENHEIT - PRECISION TEST - PARTIAL IMMERSION

Designed as the Fahrenheit counterparts of our popular 2200 series (above), this series allows close, accurate readings in both laboratory and production work.

Cat No	Type	Temp Range	Div	Length	Immersion
2300	Precision	-36 to 85°F	0.5	406m	3″
2302	Precision	23 to 86°F	0.2	406mm	3″
2304	Precision	77 to 140°F	0.2	406mm	3″
2306	Precision	131 to 194°F	0.2	406mm	3″
2308	Precision	185 to 248°F	0.2	406mm	3″
2310	Precision	239 to 365°°F	0.5	406mm	3″
2312	Precision	356 to 482°F	0.5	406mm	3″
2314	Precision	473 to 788°F	1.0	406mm	3″

2216	*Complete set of the Celsius above thermometers in velvet-lined case*
2316	*Complete set of the Fahrenheit above thermometers in velvet-lined case*

LABORATORY THERMOMETERS

Precision Grade

Manufactured for general testing and laboratory procedures where an ASTM thermometer is not specified. Supplied with PERMETCH brand permanent pigmentation of graduations. Manufactured with greatest ease for extended and long service life. All instruments of this series comply with NIST Special Publication 250-23 and are eligible for certification.

MERCURY THERMOMETERS (YELLOW GLASS)

CELSIUS RANGES

TOTAL IMMERSION

CAT NO.	RANGE	DIV	LENGTH
2048T	-35to 50°C	1	305mm
2050T	-20 to 110°C	1	305mm
2052T	-20 to 150°C	1	305mm
2054T	-10 to 210°C	1	381mm
2056T	-10 to 250°C	1	381mm
2058T	-10 to 310°C	1	381mm
2060T	-10 to 360°C	1	406mm
2062T	-10 to 400°C	1	406mm
2064T*	-10 to 510°C	2	406mm

76MM IMMERSION

CAT NO.	RANGE	DIV	LENGTH
2048	-35 to 50°C	1	305mm
2050	-20 to 110°C	1	305mm
2052	-20 to 150°C	1	305mm
2053	-5 to 150°C0	.5	381mm
2054	-10 to 210°C	1	381mm
2056	-10 to 250°C	1	381mm
2058	-10 to 310°C	1	381mm
2060	-10 to 360°C	1	406mm
2062	-10 to 400°C	1	406mm
2064*	-10 to 510°C	2	406mm

FAHRENHEIT RANGES

TOTAL IMMERSION

CAT NO.	RANGE	DIV	LENGTH
2000T	0 to 120°F	1	12″
2001T	-30 to 120°F	1	12″
2002T	0 to 150°F	1	12″
2003T	-4 to 230°F	2	12″
2004T	30 to 220°F	1	15″
2005T	0 to 300°F	2	12″
2006T	30 to 300°F	1	15″
2007T	0 to 400°F	2	12″
2008T	30 to 400°F	2	15″
2010T	30 to 500°F	2	15″
2012T	30 to 600°F	2	15″
2016T	30 to 750°F	2	16″
2022T*	30 to 1000°F	5	16″

3″ IMMERSION

CAT NO.	RANGE	DIV	LENGTH
2000	0 to 120°F	1	12″
2001	-30 to 120°F	1	12″
2002T	0 to 150°F	1	12″
2003T	-4 to 230°F	2	12″
2004	30 to 220°F	1	15″
2005	0 to 300°F	2	12″
2006	30 to 300°F	1	15″
2007	0 to 400°F	2	12″
2008	30 to 400°F	2	15″
2010	30 to 500°F	2	15″
2012	30 to 600° F	2	15″
2016	30 to 750°F	2	16″
2022	30 to 1000°F	5	16″

DUAL SCALE (CELSIUS AND FAHRENHEIT)

TOTAL IMMERSION

CAT NO.	RANGE	DIV	LENGTH
3050T	-20/110°C & 0/230°F	1C 2F	12″
3052T	-20/150°C & 0/300°F	1C 2F	12″
3056T	-10/260°C & 30/500°F	1C 2F	15″
3060T	-10/360°C & 30/700°F	1C 2F	16″
3062T	-10/400°C & 30/750°F	1C 2F	16″

76MM IMMERSION

CAT NO.	RANGE	DIV	LENGTH
3050	-20/110°C & 0/230°F	1C 2F	12″
3052	-20/150°C & 0/300°F	1C 2F	12″
3056	-10/260°C & 30/500°F	1C 2F	15″
3060	-10/360°C & 30/700°F	1C 2F	16″
3062	-10/400°C & 30/750°F	1C 2F	16″

** FABRICATED OF WHITE BACK BOROSILICATE GLASS FOR ACCURACY AND STABILITY.*

MERCURY FILLED TEFLON ENCAPSULATED*

AN ACCURATE LIQUID-IN-GLASS THERMOMETER, HERMETICALLY SEALED WITHIN A CAPSULE OF TEFLON TUBING.

RESISTS BREAKAGE – IMPERVIOUS TO ACID-CONTAMINATION FREE.

CELSIUS RANGES

TOTAL IMMERSION

CAT NO	TEMP RANGE	DIV	LENGTH
2026T	-20 to 10°C	1	305mm
2028T	-20 to 150°C	1	305mm
2030T	-10 to 210°C	1	381mm
2031T	-10 to 250°C	1	381mm

76MM IMMERSION

CAT NO	TEMP RANGE	DIV	LENGTH
2026	-20 to 110°C	1	305mm
2028	-20 to 150°C	1	305mm
2030	-10 to 210°C	1	381mm
2031	-10 to 250°C	1	381mm

** Most thermometers in this catalog, including ASTM thermometers, with top ranges not exceeding approximately 260C (or 500F) may be Teflon encapsulated. Please consult factory for specific details.*

2056

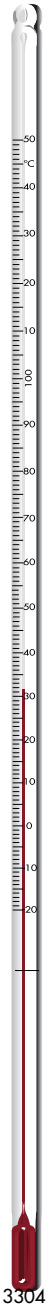
MERCURY FILLED TEFLON ENCAPSULATED (Continued)
FAHRENHEIT RANGES

TOTAL IMMERSION

Cat No	Temp Range	Div	Length
2032T	-4 to 230°F	2	12″
2034T	0 to 300°F	2	12″
2036T	30 to 400°F	2	15″
2037T	30 to 500°F	2	15″

76MM IMMERSION

Cat No	Temp Range	Div	Length
2001-TE	-30 to 120°F	1	12″
2032	-4 to 230°F2	1	12″
2034	0 to 300°F2	1	12″
2036	30 to 400°F	2	15″
2037	30 to 500°F	2	15″



3304

NON-MERCURIAL SAFETY LAB THERMOMETERS (Whiteback)

*In recognition of increased workplace and environmental concerns, **KESSLER** has introduced an expanded line of non-mercurial thermometers. These instruments provide the accurate, reliable readings expected of a **KESSLER** thermometer, with an environmentally safe alcohol or miner. spirits filling. See article located in back of catalog "The New Non-Mercurial Thermometers - Just How Good are They?"*

Non-Mercurial Celsius Ranges

TOTAL IMMERSION

Cat No.	Medium	Range	Div	Length
3136	Pentane	-200 to 30°C	1	350mm
3134	Alcohol	-100 to 50°C	1	305mm
305mm				
3130	Alcohol	- 50 to 50°C	1	305mm
305mm				
3300T	Alcohol	- 35 to 50°C	1	305mm
3302T	Min Spirits	- 20 to 110°C	1	305mm
305mm				
3304T	Min Spirits	-20 to 150°C	1	305mm
3306T	Min Spirits	-10 to 210°C	1	381mm

76MM IMMERSION

Cat No.	Medium	Range	Div	Length
3134-3	Alcohol	-100 to 50°C	1	305mm
3130-3	Alcohol	-50 to 50°C		1
3300	Alcohol	-35 to 50°C		1
3302	Min Spirits-	20 to 110°C		1
3304	Min Spirits	-20 to 150°C	1	305mm
3306	Min Spirits	-10 to 210°C	1	381mm
3308	Min Spirits	-10 to 250°C	1	381mm

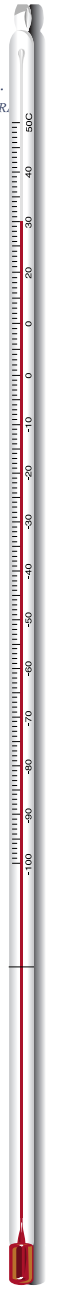
Non-Mercurial Fahrenheit Ranges

TOTAL IMMERSION

Cat No.	Medium	Range	Div	Length
3138	Alcohol	-150 to 120F	2	12″
3140	Alcohol	-60 to 120F	1	12″
3316T	Alcohol	-30 to 120F	1	12″
3320T	Min Spirits	-4 to 230F	2	12″
3324T	Min Spirits	-0 to 300F	2	12″
3328T	Min Spirits	-30 to 400F	2	15″

3″ IMMERSION

Cat No.	Medium	Range	Div	Length
3138-3	Alcohol	-150 to 120F	2	12″
3140-3	Alcohol	-60 to 120F	1	12″
3316	Alcohol	-30 to 120F	1	12″
3317	Alcohol	-30 to 120F	0.5	12″
3320	Min Spirits	-4 to 230F	2	12″
3324	Min Spirits	-0 to 300F	2	12″
3328	Min Spirits	-30 to 400F	2	15″
3330	Min Spirits	-30 to 485F	2	15″



3134-3

NON-MERCURIAL TEFLON ENCAPSULATED
CELSIUS RANGES

TOTAL IMMERSION

Cat No	Temp Range	Div	Length
2038T	-35 to 50°C	1	305mm
2039T	-20 to 1O°C	1	305mm
2040T	-20 to 150°C	1	305mm
2041T	10 to 210°C	1	381mm

76MM IMMERSION

Cat No	Temp Range	Div	Length
2038	-35 to 50°C	1	305mm
2039	-20 to 1O°C	1	305mm
2040	-20 to 150°C	1	305mm
2041	-10 to 210°C	1	381mm

FAHRENHEIT RANGES

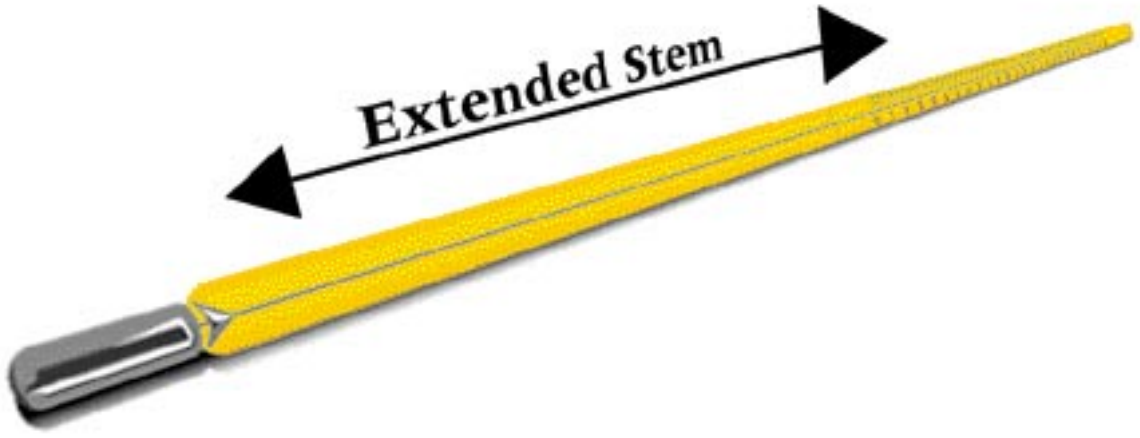
TOTAL IMMERSION

Cat No	Temp Range	Div	Length
2042T	- 30 to 120°F	1	12″
2043T	-4 to 230°F	2	12″
2044T	0 to 300°F	2	12″
2045T	30 to 400°F	2	15″

76MM IMMERSION

Cat No	Temp Range	Div	Length
2042	-30 to 120°F	1	12″
2043	-4 to 230°F	2	12″
2044	0 to 300°F	2	12″
2045	30 to 400°F	2	15″
2046	30 to 485°F	2	15″

DEEP IMMERSION EXTENDED STEM & VARI-IMMERSION THERMOMETERS



Used for temperature measurement in deep vessels, flasks, ovens, sterilizers, incubators and similar equipment where the greater depth is required for accurate reading. All graduated in 1 degree divisions.

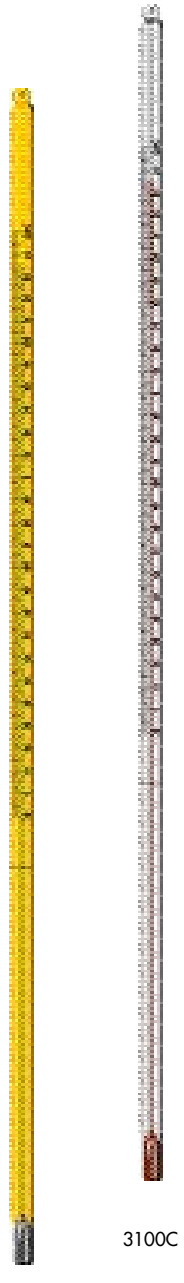
MERCURY THERMOMETERS - Yellow Glass

Celsius Ranges

Cat No	Temp Range	Div	Immersion	Length
3098B	-20 to 150C	1	100mm	325mm
3098C	-10 to 250C	1	100mm	406mm
3099B	-20 to 150C	1	100mm	355mm
3099C	-10 to 250C	1	125mm	406mm
3100B	-20 to 150C	1	125mm	385mm
3100C	-10 to 250C	1	152mm	457mm
3100D	-10 to 360C	1	152mm	485mm
3101A	-20 to 110C	1	152mm	430mm
3101B	-20 to 150C	1	203mm	430mm
3101C	-10 to 250C	1	203mm	510mm
3101D	-10 to 360C	1	203mm	535mm
3102B	-20 to 150C	1	225mm	457mm
3102C	-10 to 250C	1	225mm	535mm
3102D	-10 to 360C	1	225mm	560mm
3103A	-20 to 110C	1	255mm	480mm
3103B	-20 to 250C	1	255mm	480mm
3103C	-10 to 250C	1	255mm	560mm
3103D	-10 to 360C	1	255mm	585mm
3104A	-20 to 110C	1	305mm	535mm
3104B	-20 to 150C	1	305mm	535mm
3104C	-10 to 250C	1	305mm	610mm
3104D	-10 to 360C	1	305mm	610mm
3106B	-20 to 150C	1	457mm	685mm
3106C	-10 to 250C	1	457mm	760mm
3106D	-10 to 360C	1	457mm	760mm
3108C	-10 to 250C	1	610mm	915mm

NON-MERCURIAL EXTENDED STEM THERMOMETERS - Red Spirit, White Glass

Cat No	Temp Range	Div	Immersion	Length
3098BRL	-20 to 150C	1	100mm	325mm
3098CRL	-10 to 250C	1	100mm	406mm
30998RL	-20 to 150C	1	125mm	355mm
3099CRL	-10 to 250C	1	125mm	430mm
3134-6	-100 to 50C	1	152mm	385mm
3130-6	-50 to 50C	1	152mm	385mm
3100BRL	-20 to 150C	1	152mm	385mm
3100CRL	-10 to 250C	1	152mm	457mm
3134-9	-100 to 50C	1	225mm	457mm
3130-9	-50 to 50C	1	225mm	457mm
31028RL	-20 to 150C	1	225mm	457mm
3I02CRL	-10 to 250C	1	225mm	535mm
3134-12	-100 to 50C	1	305mm	535mm
3130-12	-50 to 50C	1	305mm	535mm
3104BRL	-20 to 150C	1	305mm	535mm
3104CRL	-10 to 250C	1	305mm	610mm
3106BRL	-20 to 150C	1	457mm	685mm
3106CRL	-10 to 250C	1	457mm	760mm



3100C

3100C

OVEN THERMOMETERS - Mercury

For use with Freeze, Thelco and most laboratory ovens. Items marked '' have an enlargement at the Immersion Point.*

Cat No	Temp Range	Div	Immersion	Length
3114*	0 to 70C	1	125mm	305mm
3116*	+20 to 110C	1	165mm	305mm
3118*	35 to 230C	1	125mm	305mm
3120*	-10 to 250C	1	152mm	485mm
3110	-10 to 200C	1	305mm	585mm
3122*	0 to 350C	1	178mm	510mm
3112	-10 to 300C	1	305mm	610mm

VARI-IMMERSION THERMOMETERS

KESSLER *Vari-Immersion thermometers are designed for use in work where a requirement for adjustable immersion depth exists. The Vari-Immersion when used in conjunction with* **KESSLER's** *Teflon 10/18 standard taper #4103 adjustable adapter permit a vacuum capability nearly as high as a conventional ground glass joint. The Vari-Immersion is constructed of two types of tubing joined together just below the scale. The stem portion is of an extremely fine bore glass to minimize correction factors at immersion depths other than the mid-point of the stem. The scale portion is of a wide bore glass to facilitate reading of the instrument and to accommodate the ranges listed below. Each thermometer is furnished with an instruction sheet and listing of correction factors. Graduated in single degree divisions with* **PERMETCH** *markings.*

Mercury Filled

Cat No.	Temp Range	Immersion
4100B	-20 to 150°C	3" to 7" (76 - 178mm)
4100C	-10 to 250°C	3" to 7" (76 - 178mm)
4100D	-10 to 360°C	3" to 7" (76 - 178mm)
4102B	-20 to 150°C	7" to 12" (178 - 305mm)
4102C	-10 o 250°C	7" to 12" (178 - 305mm)
4102D	-10 to 360°C	7" to 12" (178 - 305mm)
4104B	-20 to 150°C	12" to 18" (305-457mm)
4104C	-10 to 250°C	12" to 18" (305-457mm)
4104D	-10 to 360°C	12" to 18" (305-457mm)

Non-Mercurial Filled

Cat No.	Temp Range	Immersion
4100L	-100 to 50°C	3" to 7" (76 - 178mm)
4100BRL	-20 to 150°C	3" to 7" (76 - 178mm)
4100CRL	-10 to 250°C	3" to 7" (76 - 178mm)
4102L	-100 to 50°C	7" to 12" (178 - 305mm)
4102BRL	-20 o 150°C	7" to 12" (178 - 305mm)
4102CRL	-10 to 250°C	7" to 12" (178 - 305mm)
4104L	-100 to 50°C	12" to 18" (305-457mm)
4104BRL	-20 to 150°C	12" to 18" (305-457mm)
4104CRL	-10 to 250°C	12" to 18" (305-457mm)

4100B

ENVIRONMENTAL CHAMBER & SPECIALTY

THERMOMETERS

A precision mercury-in-glass thermometer, graduated in 0.5 degree divisions. Teflon encapsulated for extra safety, mounted in a clear polycarbonate "bottle with mineral oil (sterilized sand for Oven model 1732) for use as a "heat sink" prevents rapid change of indication when chamber is opened for inspection.

MEET EPA AND FDA REQUIREMENTS. NIST TRACEABLE

ENVIRONMENTAL CHAMBER BOTTLE THERMOMETERS

Our Environmental Chamber bottle Thermometers are offered in several ranges to observe critical temperatures, such as Ultra Low Freezers, Blood Bank Refrigerators, Ovens and Incubators. Each chamber-bottle thermometer is mounted in a square shaped plastic bottle filled with a medium to ensure accurate readings despite the opening and closing of instrument doors.

The thermometers have engraved stems and are thoroughly annealed for long-lasting accuracy. Each thermometer has its own individual serial number and has been calibrated according to NIST standards.

A certificate of accuracy is included with each thermometer making it traceable to NIST.

We offer these thermometers with your choice of either mercury or mineral spirits, with a Teflon coating for safety, which absorbs shock, and will contain the glass and liquid should breakage occur.

The Environmental Chamber bottle also has a double magnet attached on one side so it can be attached to the walls or doors of instruments to reduce space and breakage problems.

MERCURY FILLED

Cat No	Temp Range	Div	Immersion	Application	Verified at:
1716	-30 to 0°C	0.5	Total	Freezers	-20, 0C
1718	-5 to +15°C	0.5	Total	Refrigerators	0, 10C
1719	-5 to 20°C	0.5	Total	Blood Bank	0, 15C
1722	+10 to +30°C	0.5	Total	Incubators	15, 25C
1723	+18 to +50°C	0.5	Total	Incubators	20, 37C
1720	+30 to +45°C	0.5	Total	Incubators	37, 44.5C
1732	+20 to +130°C	1.0	Total	Oven	85, 120C
1734	-5 to +205°C	1.0	Total	Oven	0, 180C

NON-MERCURIAL NEW

Cat No	Temp Range	Div	Immersion	Application	Verified at:
1715RL	-90 to +20°C	1	Total	Ultra low Freezers	-60, 0C
1716RL	-30 to 0°C	0.5	Total	Freezers	-20, 0C
1718RL	-5 to +15°C	0.5	Total	Refrigerators	0, 10C
1719RL	-5 to 20°C	0.5	Total	Blood Bank	0, 15C
1722RL	+10 to +30°C	0.5	Total	Incubators	15, 25C
1723RL	+18 to +50°C	0.5	Total	Incubators	20, 37C
1720RL	+30 to +45°C	0.5	Total	Incubators	37, 44.5C
1732RL	+20 to +130°C	1.0	Total	Oven	85, 120C
1734RL	-5 to +205°C	1.0	Total	Oven	0, 180C

SPECIALTY THERMOMETERS

AUTOCLAVE

Constricted capillary design registers highest temperature attained until manually reset.

Cat No	Temp Range	Feature	Length	Div	Immersion	Liquid
1530	80 to 135°C	Maximum Registering	215mm	1.0	Total	Mercury
1531	80 to 135°C	Maximum Registering	215mm	0.5	Total	Mercury
1532	175 to 275°C	Maximum Registering	215mm	1.0	Total	Mercury

COLIFORM INCUBATOR

Cat No	Temp Range	Feature	Length	Div	Immersion	
1700	34.5 to 46°C	Arrows @ 35, 37, 44.5	240mm	0.1	76mm	Mercury
1701	34.5 to 46°C	Arrows, @ 35, 37, 44.5	152mm	0.1	Total	Mercury

INCU-BLOK

Cat No	Temp Range	Feature	Length	Div	Immersion	
1702	24 to 57°C	Arrows @ 25, 30, 37, 56	175mm	0.5	35mm	Mercury
1702RL	24 to 57°C	Arrows @ 25, 30, 37, 56	175mm	0.5	35mm	Mineral Spirits

BLOOD BANK

Cat No	Temp Range	Feature	Length	Div	Immersion	
1704	-5 to 20°C	4 & 6C Marked with arrows	152mm	1.0	Total	Mercury
1704RL	-5 to 20°C	4 & 6C Marked with arrows	152mm	1.0	Total	Mineral Spirits

ENZYMOLOGY

Cat No	Temp Range	Feature	Length	Div	Immersion	
1706	24 to 38°C	Extremely Sensitive	305mm	0.05	95mm	Mercury

TRI-TEMP

Cat No	Temp Range	Feature	Length	Div	Immersion	
1708	25, 37, 56°C	Graduated only at test pts.	238mm	0.5	76mm	Mercury
1708RL	25, 37, 56°C	Graduated only at test pts.	238mm	0.5	76mm	Mineral Spirits

1702

1702RL

1530

POCKET, MAXIMUM REGISTERING AND SPECIALTY THERMOMETERS

In response to an increased awareness of environmental, workplace safety, and quality control considerations, **Kessler** *has expanded its line of Teflon encapsulated thermometers.*

MAXIMUM REGISTERING THERMOMETERS

'EASY SHAKER' MAXIMUM THERMOMETERS

These thermometers are useful for determining the highest temperature attained in locations where it is inconvenient or impossible to measure the temperature with a conventional indicating thermometer. Designed with a constriction in the mercury column, these thermometers will display and retain the highest temperature obtained until manually 'shaken down' or reset, similar to a fever thermometer. thermometers are furnished in protective cases with a pocket clip or as a refill thermometer only. Length approximately 5-1/2"

Complete with case			Refill Unit Only		
Cat No	Temp Range	Div	Cat No	Temp Range	Div
1510	0 to 220°F	2	1510R	0 to 220°F	2
1511	30 to 300°F	2	1511R	30 to 300°F	2
1512	30 to 300°F	2	1512R	30 to 300°F	2
1513	30 to 300°F	2	1513R	30 to 300°F	2
1514	30 to 300°F	2	1514R	30 to 300°F	2
1520	-20 to 110°C	1	1520R	-20 to 110°C	1
1522	-5 to 200°C	2	1522R	-5 to 200°C	2

See also **AUTOCLAVE** *maximum registering thermometer on page #*

'HARD SHAKER' MAXIMUM THERMOMETERS

Identical in function to the above mentioned thermometers, these units are designed with a severely restricted capillary to resist vibration and are commonly used in service such as oil well logging and geothermal exploration.

CANNOT BE RESET MANUALLY - REQUIRES A CENTRIFUGE TO RESET!

Cat No	Temp Range	Div	Length	Cat No	Temp Range	Div	Length
1540	60 to 220°F	2	5.5"	1542	60 to 220°F	2	6.25"
1544	0 to 300°F	2	5.5"	1546	0 to 300°F	2	6.25"
1548	100 to 300°F	2	5.5"	1550	60 to 330°F	2	5"
1552	100 to 400°F	2	5.5"	1554	100 to 400°F	2	6.25"
1556	200 to 400°F	2	5.5"	1558	200 to 500°F	2	5"
1559	200 to 500°F	2	5.5"	1560	200 to 500°F	2	6.25"
1562	400 to 650°F	2	5"	1564	350 to 650°F	2	6.25"
1636	-20 to 120°C	2	6.25"	1638	14 to 106°C	2	6.25"
1640	14 to 166°C	2	5"	1641	25 to 200°C	2	6.25"
1642	40 to 206°C	2	6.25"	1643	0 to 200°F	2	5.5"
1644	90 to 260°C	2	6.25"	1645	90 to 260°F	2	5"
1662	200 to 350°C	2	5"				

1522

MIN-MAX THERMOMETER

Thermometer Registers high and low readings from last setting. Plastic case. Push button reset. Dual Scale: -40/120°F & -40/50°C (Mercury Filled)

Cat. No. 5460

Thermometer Registers high and low readings from last setting. Plastic case. Magnetic reset. Dual Scale: -40/120°F & -40/50°C (Mercury Filled)

Cat. No. 5465

5465

5460

POCKET THERMOMETERS

Pocket thermometers are furnished in protective cases with a pocket clip or as a refill thermometer only. Length approximately 5-1/2".

Pocket case only Cat No. 3155.

MERCURY FILLED

Temp. Range	Div	Complete w/Metal Case	Complete w/plastic Case	Complete w/Open Face Armor	Refill
-35 to 50°C	1	3147	3147-B	3147-A	3147-R
-10 to 110°C	1	3148	3148-B	3148-A	3148-R
-30 to 120°F	2	3150	3150-B	3150-A	3150-R
+30 to 120°F	1	3152	3152-B	3152-A	3152-R
0 to 220°F	2	3154	3154-B	3154-A	3154-R
0 to 300°F	2	3156	3156-B	3156-A	3156-R
100 to 450°F	5	3158	3158-B	3158-A	3158-R

NON-MERCURIAL - (Mineral Spirits Filled)

Temp. Range	Div	Complete w/Metal Case	Complete w/plastic Case	Complete w/Open Face Armor	Refill
-40 to 50°C	1	3142SP	3142SP-B	3142SP-A	3142-RSP
-10 to 110°C	1	3148SP	3148SP-B	3148SP-A	3148-RSP
-40 to 120°C	2	3149SP	3149SP-B	3149SP-A	3149-RSP
-30 to 120°F	2	3150SP	3150SP-B	3150SP-A	3150-RSP
0 to 120°F	1	3151SP	3151SP-B	3151SP-A	3151-RSP
0 to 220°F	2	3154SP	3154SP-B	3154SP-A	3154-RSP
0 to 300°F	2	3156SP	3156SP-B	3156SP-A	3156-RSP

3148

ASPHALT, SOIL, AND CONCRETE TESTING THERMOMETERS

Cat No	Designation	Temp Range	Grad	Immersion	Special Features
6300	Asphalt Testing	50 to 450°F	5	Stem	With penetration armor
6308	Asphalt Testing	10 to 310°C	2	Stem	With penetration armor
6310	Asphalt Testing	50 to 600°F	5	Stem	With penetration armor
6320	Concrete, soils	0 to 120°F	1	Stem	With penetration armor
6400	pocket Concrete	0 to 120°F	1	Bulb	w/pocket case, plated bulb

DEEP FRY (Fast foods) CALIBRATION THERMOMETERS

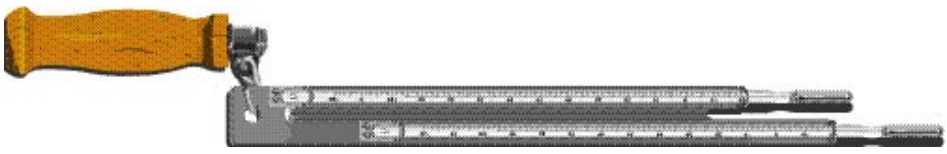
Cat No	Designation	Temp Range	Grad	Immersion	Special Features
6420	Fry calibration	120 to 430°F	2	4-6"	Teflon Encapsulated, w/armor case, 16" lg.
6420R	Fry calibration	120 to 430°F	2	4-6"	Refill thermometer only

WEATHER BUREAU METEOROLOGICAL THERMOMETERS

Cat No	Designation	Temp Range	Div	Immersion	Special Features
6500S	USWB Sling Psychrometer	-30 to 120°F	1	TTL	w/frame, handle, wicks
6500	USWB Sling Psychrometer	-20 to 120°F	1	TTL	w/frame, handle, wicks
6502	USWB Sling Psychrometer	-30 to 50°C	1	TTL	w/frame, handle, wicks
6520	USWB Maximum Thermometer	-20 to 120°F	1	TTL	w/stainless backplate
6522	USWB Maximum Thermometer	-25 to 65°C	1	TTL	w/stainless backplate
6540	USWB Minimum Thermometer	-40 to 110°F	1	TTL	w/stainless backplate
6542	USWB Minimum Thermometer	-40 to 45°C	1	TTL	w/stainless backplate
6560	USWB 'Exposed'	-38 to 110°F	1	TTL	w/stainless backplate
6562	USWB 'Exposed'	-38 to 45°C	1	TTL	w/stainless backplate

For thermometer or psychrometer refill tube only add 'R' to catalog number.

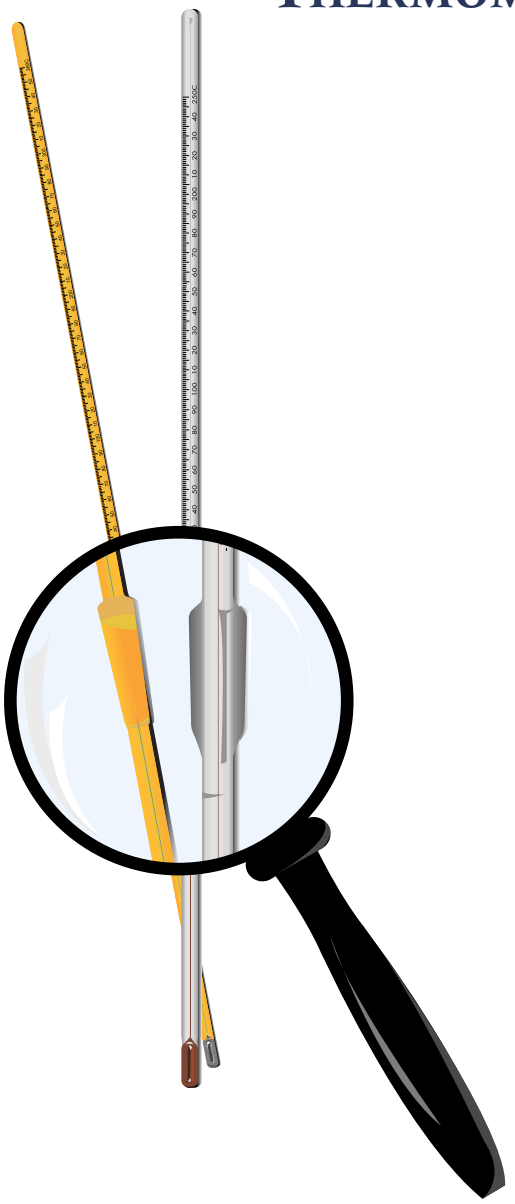
6300



6500

JOINTED

THERMOMETERS



KESSLER ST (Standard Taper) jointed thermometers are uniquely fabricated by enlarging and molding the stem glass to the required size, then precision grinding to a true standard taper for a perfect fit. This style of fabrication avoids the inherent weaknesses found in ordinary jointed thermometers built from 3 separate pieces of glass.

10/30 ST JOINTED THERMOMETERS (Mercury Filled)

Fabricated from yellow glass, all in 1 degree C divisions.

Stem Length	-20 to 110°C	-20 to 150°C	-10 to 250°C	-10 to 360°C
1″ (25mm)	3998A	3998B	3998C	3998D
1.5″ (38mm)	---------	---------	3998.5C	---------
2″ (51mm)	3999A	3999B	3999C	3999D
2.5″ (63mm)	---------	---------	3999.5C	---------
3″ (76mm)	4000A	4000B	4000C	4000D
4″ (100mm)	4001A	4001B	4001C	4001D
5″ (125mm)	4002A	4002B	4002C	4002D
6″ (152mm)	4003A	4003B	4003C	4003D
7″ (178mm)	4004A	4004B	4004C	4004D
7.5″ (190mm)	4005A	4005B	4005C	4005D
8″ (203mm)	4006A	4006B	4006C	4006D
8.5″ (215mm)	4007A	4007B	4007C	4007D
9″ (225mm)	4008A	4008B	4008C	4008D
10″ (255mm)	4009A	4009B	4009C	4009D
11″ (280mm)	4010A	4010B	4010C	4010D
12″ (305mm)	4011A	4011B	4011C	4011D

10/30 ST JOINTED THERMOMETERS (Non-Mercurial)

Fabricated from white glass, all in 1 degree C divisions, mineral spirits filled.

Stem Length	-20 to 110°C	-20 to 150°C	-10 to 250°C
1″ (25mm)	---------	3998BRL	3998CRL
2″ (51mm)	---------	3999BRL	3999CRL
3″ (76mm)	---------	4000BRL	4000CRL
4″ (100mm)	---------	4001BRL	4001CRL
5″ (125mm)	---------	4002BRL	4002CRL
6″ (152mm)	---------	4003BRL	4003CRL
7″ (178mm)	---------	4004BRL	4004CRL
7.5″ (190mm)	---------	4005BRL	4005CRL
8″ (203mm)	---------	4006BRL	4006CRL
8.5″ (215mm)	---------	4007BRL	4007CRL
9″ (225mm)	---------	4008BRL	4008CRL
10″ (255mm)	---------	4009BRL	4009CRL
11″ (280mm)	---------	4010BRL	4010CRL
12″ (305mm)	---------	4011BRL	4011CRL

10/18 ST JOINTED THERMOMETERS

Fabricated from yellow glass, all in 1 degree C divisions.

Stem Length	-20 to 110°C	-20 to 150°C	-10 to 250°C	-10 to 360°C
1″ (25mm)	---------	4098B	4098C	4098D
2″ (51mm)	---------	4099B	4099C	4099D
3″ (76mm)	---------	---------	4500C	4500D
4″ (100mm)	---------	---------	4501C	---------
5″ (125mm)	---------	---------	4502C	---------

4003CRL

4003D

4099C

10/30 ST JOINTED THERMOMETERS (Teflon Encapsulated)

New from **KESSLER**, *these Teflon encapsulated thermometers reduce chances of joint seizure from glass-to-glass binding, and greatly decrease chances of contamination from spilled mercury or glass fragments.*

Stem Length	-20 to 150°C	-10 to 250°C
1″ (25mm)	4400B	4400C
2″ (51mm)	4402B	4402C
3″ (76mm)	4404B	4404C
4″ (100mm)	4406B	4406C
5″ (125mm)	4408B	4408C
6″ (152mm)	4410B	4410C

7/12 ST JOINTED 'MICRO' THERMOMETERS

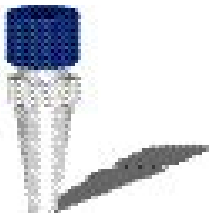
Fabricated from white glass, 150C in 1 degree C divisions, 300C in 2 degree C divisions

Stem Length	0 to 150°C	0 to 300°C
2cm (20mm)	4206E	4206F
3cm (30mm)	4208E	4208F
4cm (40mm)	4210E	4210F
5cm (50mm)	4212E	4212F
6cm (60mm)	4214E	4214F
7cm (70mm)	4216E	4216F
8cm (80mm)	4218E	4218F
9cm (90mm)	4220E	4220F
10cm (100mm)	4222E	4222F

TEFLON ADJUSTABLE 10/18 ADAPTERS

10/18 Standard Taper Adjustable Teflon Adapter. Allows Vari-Immersion thermometers to be used in 10/18 or 10/30 female joints.

Cat No. 4103



4206E

GAUGING

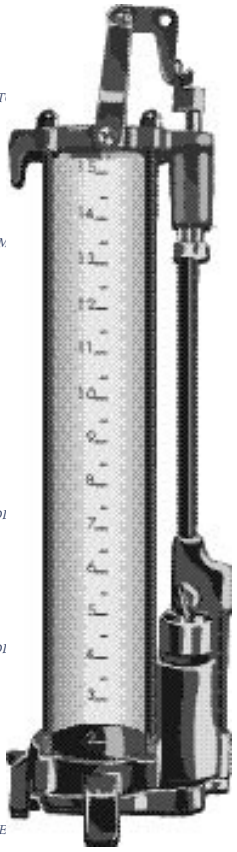
EQUIPMENT

OIL SAMPLERS

MIDTANK SAMPLER

May be used to obtain stratification sample from any point in tank or preset to obtain sample starting any place up to 12" from tank bott
Lowered by means of tape or chain in open position. A sharp tug on the line closes the valve and secures sample.

Cat No MTS-12 - with 12" graduated acrylic cylinder
Cat No MTS-15 - with 16" graduated acrylic cylinder


MTS-15

"BACON BOMB" BOTTOM SAMPLERS

For sampling of petroleum in accordance with ASTM Method D-275. Error free one line pickup of bottom sample. May also be used for m
point sampling with addition of secondary 'trip' line.

Cat No	Capacity	
277	32oz	
277A	16oz	
277B	8oz	
277C	4oz	
277D	4oz	Slimline Pencil type (1 1/8" OD fits narrow fill pipes


277A

WEIGHTED SAMPLER

Weighted copper beaker of nickel plated brass construction. One quart capacity with cork closure and brass chain securing cork to handl
Cat No WCB-1 - 3/4" opening
Cat No WCB-2 - 1 1/2" opening

GAUGING PASTE (From Kolor Kut)

Weighted copper beaker of nickel plated brass construction. One quart capacity with cork closure and brass chain securing cork to handl
Cat No WFP - Water finding paste
Cat No GGP - Gasoline Gauging Paste

WFP
GGP

LUFKIN GAUGING TAPES

CHROME-NUBIAN (CN) style (half of the tape face is chrome, half flat black) permits gauging of both light and dark products with one

INNAGE TAPES (Require 590 series plumb Bob)

Length	English (ft & Inches) Only	English-Metric	Dual Scale
25'	CN1290SF590	N/A	
33'	CN1291SF590	N/A	
50'	CN1293SF590	CN1293SMEF590	(50' & 15m)
66'	CN1294SF590	CN1294SMEF590	(66' & 20m)
75'	CN1295SF590	N/A	
100'	CN1296SF590	CN1296SMEF590	(100' & 30m)
50'	CN1293SD590	Graduated in feet and tenths	
50'	CN1293SF587	CN1293SMEF587	(50' & 15m)
66'	CN1294SF587	CN1294SMEF587	(66' & 20m)


CN1295SF590

Please Note: The above numbers specify tapes complete with reel and handle.

To order refill tape only, add prefix '0' before catalog number. Tapes do not include Bob. Order Bob separat

LUFKIN GAUGING BOBS

Engraved brass plumb bobs for use with the above gauging tapes.

6" INNAGE BOBS

Cat No.	Feature
590	Ungraduated
590G	Graduated in inches to 1/8"
590GME	Graduated in inches and mm
590SD	Use with SD Tapes

6" OUTAGE (ULLAGE) BOBS

Cat No.	Feature
587	Graduated in inches
587-1/2	Graduated in inches to 1/8"
587GME	Graduated in metric & english

590G

590SD

CYLINDRICAL BRASS CUPCASE GAUGING THERMOMETERS

12″ LENGTH BY 1-3/4″ DIAMETER

PRINTED SCALE

With large, vivid lines and numerals for quick, easy reading at a glance.

Temp Range	Div	Complete with case	Refill unit only
-10 to 110°F	1	5103	5103R
0 to 200°F	1	5104	5104R

ENGRAVED STEM

Lines and numbers etched into the glass for even greater accuracy.

Temp Range	Div	Complete with case	Refill unit only
0 to 90°F	0.5	5108ES	5108RES
+10 to 100°F	0.5	5109ES	5109RES
-10 to 100°F	1	5103ES	5103RES
0 to 200°F	1	5104ES	5104RES
0 to 220°F	1	5106ES	5106RES
20 to 260°F	1	5107ES	5107RES
100 to 300°F	1	5105	5105R
+30 to 450°F	2	5115ES	5115RES
-50 to 50°C	0.5	5110ES	5110RES
-35 to 50°C	0.5	5114ES	5114RES
-30 to 100°C	1	5112ES	5112RES

12″ LENGTH BY 1″ DIAMETER

ENGRAVED STEM

Lines and numbers etched into glass for accuracy. Narrow 1″ OD permits insertion through 1 1/2″ fill pipes.

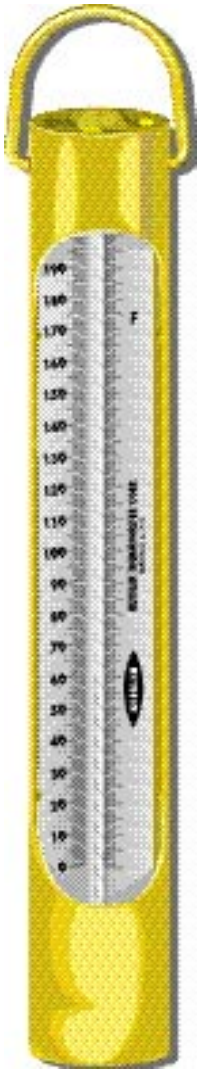
Temp Range	Div	Complete with case	Refill unit only
-20 to 120°F	1	5100	5100R
-10 to 220°F	2	5101	5101R
30 to 320°F	2	5102	5102R
35 to 50°C	0.5	5111	5111R

10″ LENGTH BY 1″ DIAMETER

ENGRAVED STEM

Lines and numbers etched into glass for accuracy. Narrow 1″ OD permits insertion through 1 1/2″ fill pipes.

Temp Range	Div	Complete with case	Refill unit only
-20 to 120°F	1	5100	5100R
-10 to 220°F	2	5101-10	5101R-10
+30 to 320°F	2	5102-10	5102R-10



5104

ASTM TANK GAUGING THERMOMETERS

ASTM and similar (no assigned ASTM number but manufactured to the identical specifications) tank thermometers may be furnished in any of the three following cases or as refill units only.

STANDARD CASE (Case Only - Cat No 1259)

Long accepted favorite for gauging as specified in ASTM Method D270

MARINE CASE (Case Only - Cat No 1259CM)

Specially adapted with grounding plate to conduct static buildup to tape and away from product. Deflector lid on cup opens on descent, closes on ascent to prevent 'washing' effect of unit being drawn up through product at lesser depths.

TANKMASTER CASE (Case Only - Cat No 1259TM)

The most versatile and well designed gauging thermometer case on the market today. Constructed of DuPont Zytel, it is impervious to chemicals which attack conventional materials. Will not generate or conduct static electricity. Weighted to aid rapid descent in heavy products. Oversized 120ml capacity cup plus insulating properties of Zytel offer better head retention capabilities. Exceeds requirements of ASTM D-270. For continuous use to 240F, intermittent use to 300F. Accepts thermometers with varying top finishes.

FAHRENHEIT RANGES (yellow lens tubing standard*)

ASTM	Temp Range	Div	w/Standard Case	w/Marine Case	w/Tankmaser Case	Refill Only
58F	-30 to 120°F	1	1250	1252CM	1252TM	1252
97F	0 to 120°F	1	1262C	1262CM	1262TM	1262
	0 to 120°F	0.5	1263C	1263CM	1263TM	1263
59F	0 to 180°F	1	1254	1256CM	1256TM	1256
98F	60 to 180°F	1	1264C	1264CM	1264TM	1264
	0 to 220°F	0.5	1240C	1240CM	1240TM	1240
130F	20 to 220°F	1	1261C	1261CM	1261TM	1261
	20 to 260°F	1	1294C	1294CM	1294TM	1294
60F	170 to 500°F	2	1258	1260CM	1260TM	1260

CELSIUS RANGES (yellow lens tubing standard*)

ASTM	Temp Range	Div	w/Standard Case	w/Marine Case	w/Tankmaser Case	Refill Only
	-50 to 50°C	0.5	1247C	1247CM	1247TM	1247
58C	-34 to 49°C	0.5	1248C	1248CM	1248TM	1248
97C	-18 to 49°C	0.5	1244C	1244CM	1244TM	1244
98C	16 to 82°C	0.5	1246C	1246CM	1246TM	1246
59C	-18 to 82°C	0.5	1253C	1253CM	1253TM	1253
130C	-7 to 110°C	0.5	1271C	1271CM	1271TM	1271
	0 to 150°C	1	1242C	1242CM	1242TM	1242
60C	77 to 260°C	1	1257C	1257CM	1257TM	1257

** Any of the above may be furnished with Red Reading Lens at additional cost. To order, add suffix "RRL" to catalog number.*

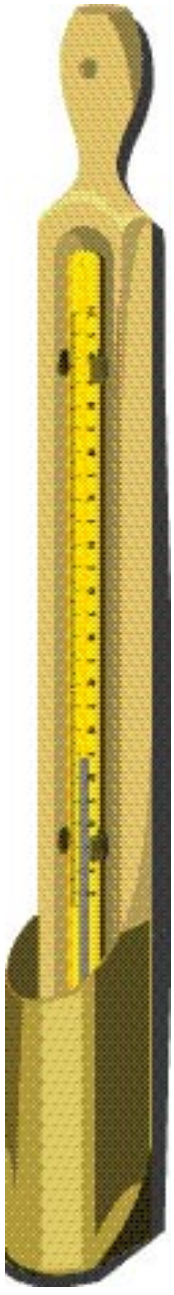
SMALL CUP & WOODBACK TANK THERMOMETERS

Similar in appearance and construction to ASTM thermometers above but with smaller cup, shorter overall length. Narrow OD allows passage through 1 1/2 fill pipe.

Cat No 5200 - Range -30 to 120F in 1 divisions complete with case
Cat No 5200R - Range -30 to 120F in 1 divisions - refill thermometer only
Cat No 5202 - Range -30 to 180F in 1 divisions complete with case
Cat No 5202R - Range -30 to 180F in 1 divisions - refill thermometer only

1256TM

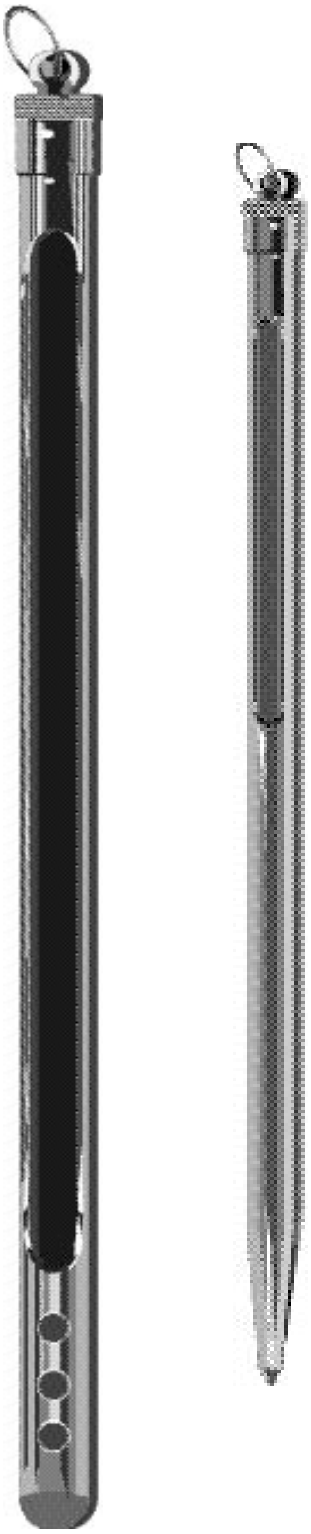
1256



1271C

ACCESSORIES

Armor Cases



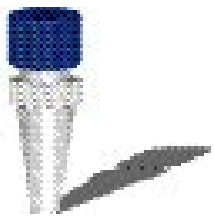
Leatherette Cases

Thermometer and Hydrometer Racks

TEFLON ADJUSTABLE 10/18 ADAPTERS

10/18 Standard Taper Adjustable Teflon Adapter. Allows Vari-Immersion thermometers to be used in 10/18 or 10/30 female joints.

Cat No. 4103



ARMOR CASES FOR GLASS THERMOMETERS

Available to fit most thermometers listed in this catalog. **KESSLER** *Armors are fabricated from seamless brass tubing and are double nickel plated. A ring is furnished at the top of the case for suspension. The cutout front portion of the armor enables the user to read the thermometer scale while in the case.*

3250	For 6″ thermometers
3252**	For 12″ thermometers
3251	For 15″ thermometers
3253**	For 6 1/4″ thermometers
3254**	For 16″ thermometers
3256**	For 18″ thermometers
3257**	For 24″ thermometers
3258SS	For 30″ thermometers only available in stainless steel

*** Also available in stainless steel. Add "SS" to catalog number.*

LEATHERETTE STORAGE CASES

Wooden, leatherette covered case with velvet lined interior. 2 safety snaps on cover. Calibration certificate may be folded and stored in case with thermometer. A 'must' for certified or expensive thermometers to prevent breakage in storage or in transit.

Cat No	Capacity	Maximum length of Thermometer
3260	1 thermometer	12.5″ (317mm)
3262	1 thermometer	16.5″ (420mm)
3264	1 thermometer	18.5″ (470mm)
3265	1 thermometer	24.5″ (620mm)
3266	9 thermometers	16″ (406mm)
3267	9 hydrometers	12″ (305mm)
3268	10 hydrometers	15″ (381mm)

PVC STORAGE CASES FOR THERMOMETERS AND HYDROMETERS

constructed of rugged PVC plastic, lined with heavy carpet-like cushioning to provide exceptional durability and protection for the instrument in field applications. Friction-fit cap.

Cat No	Capacity	Maximum length
3270	1 thermometer	12″ (305mm)
3272	1 thermometer	16″ (406mm)
3274	1 thermometer	18″ (457mm)
3276	1 hydrometer	24″ (610mm)
8960	1 hydrometer	13″ (330mm)
8962	1 hydrometer	15″ (385mm)

POLYPROPYLENE THERMOMETER AND HYDROMETER RACKS

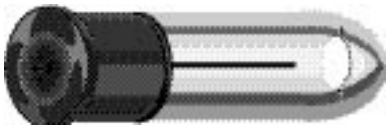
Fragile glass thermometers and hydrometers are protected and held in the preferred upright position by placing them in these racks.

Cat No	Type	Capacity
8990	Hydrometers, long form	Holds 9″ to 15″ hydrometers
8992	Hydrometers, short form	Holds 6″ to 9″ hydrometers
8998	Thermometers	Holds 6″ and longer thermometers

THERMOMETER READING GLASS

Thermometer reading lens, single element type, approximate magnification 4x, focal length 50mm. With spring clip for attachment directly to thermometers with outside diameter 6 to 16mm. Observation tube has opening 5/32-inch diameter to facilitate reading without parallax.

Catalog No. 4300



THERMOMETER CALIBRATION

EQUIPMENT

Most laboratories are required to periodically reverify ALL their temperature measuring devices, from precision glass thermometers to bimetal dial thermometers to thermistor based electronics. The **KESSLER** TCB-900 offers the quality conscious laboratory the means to accurately and effectively compare these devices to an NIST Traceable Certified Thermometer, thus satisfying the mandates of good practice and the requirements of regulatory agencies.

TEMPERATURE CALIBRATION SYSTEM
SATISFIES THE REQUIREMENTS OF THE F.D.A. & E.P.A

The **KESSLER TCB-900** *Thermometer Calibration Bath has been designed to permit calibration and verification of liquid-in-glass thermometers, dial thermometers, digital thermometers and most any temperature instrument requiring the use of a precision temperature comparator.*

The **TCB-900** *has been designed and built to satisfy the requirements of NIST SP 250-23 and ASTM E-77.*

The **TCB-900** *consists of a constant temperature bath and a separate, built-in Dewar flask for comparison of certified and 'working' thermometers.*

The working depth of the constant temperature back is 12", which will permit most 15" total immersion thermometers to be used under correct conditions of immersion, as well as accommodating all partial immersion thermometers.

The **TCB-900** *is entirely solid contained, compact and lightweight, requiring little counter space.*

Temperatures below ambient can be attained by circulating tap water through the built in cooling coil. In the event your lab has refrigerated recirculating equipment, the coolant can be circulated through the coil, allowing operation down to approximately -30C, depending upon the capacity of your equipment.

TCB-900

LABORATORY PRECISION

The calibration bath holds temperatures to +/- 0.02C in the range of +15 to 200C. Adjustment is made by means of a dial, with a large digital readout.

EASY, AUTOMATIC OPERATION

Simply dial in the desired temperature. Fine adjustment to standard thermometer is made by means of fine adjustment knob.

VERSATILE

The system includes an ice bath for performing ice points calibration.

Main bath may be cooled below ambient by circulating tap water or refrigerated liquid through built in cooling loop.

SPECIFICATIONS

Model TCB-900
Minimum Temp 15C
Maximum Temp 200C
Uniformity +/-0.02C
Working Depth
Controlled Chamber 12"
Ice Bath 10.5"
Controller
Electronic solid state digital - thermometer sensor
Readout LED
Switchable Celsius or Fahrenheit
Heater 1000W
Overtemp
Safety control protects against overheating - screwdriver adjustable from rear of bath.
Drains
For both heated bath and ice bath
Safety
Overflow port
Stainless Steel
Interior, steel exterior with corrosion resistant polyurethane finish.
Cooling Coil
For operation at below ambient temperatures.
Motor 1/15hp
Dimensions 23"h x 18" x 17"
Weight 45lbs (dry)
Electrical 110v AC 60C
Shipping Weight 66lbs
Dim
21 x 24 x 29 in
Accessories shipped separately

SPECIFICATIONS

Turntable Rack holds six thermometers plus port for standard thermometer.

Certified Thermometer range -1/ 201C in 0.2 divisions, 76mm Immersion, 24"length.
Certified traceable to NBS at 0, 20, 40, 60, 80, 100, 120, 140, 160, 180 200C, with protective storage case.

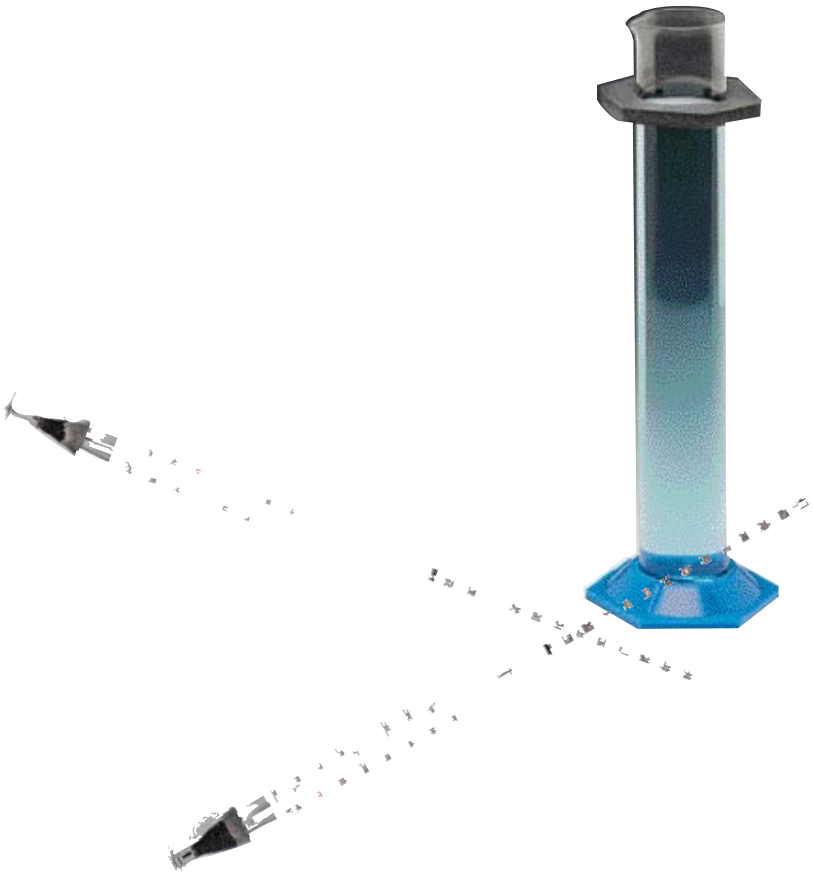
Thermometer Reading Glass

ASTM E77 Test Method
"Calibration and Verification of Liquid in Glass Thermometers"

Complete Instructions

THIS PRODUCT, ALL COMPONENTS AND ACCESSORIES ARE MADE IN THE UNITED STATES OF AMERICA.

HYDROMETERS



Popular in many applications due to small amount of product sample required to take a reading, these instruments are manufactured to strict ASTM specifications and to **KESSLER's** own demanding quality control standards.

ASTM HYDROMETERS - API - 6″ LENGTH

Cat No	ASTM	API Range	Div
7500	21H	0 to 6	0.1
7502	22H	5 to 11	0.1
7504	23H	10 to 16	0.1
7506	24H	15 to 21	0.1
7508	25H	20 to 26	0.1
7510	26H	25 to 31	0.1
7512	27H	30 to 36	0.1
7514	28H	35 to 41	0.1
7516	29H	40 to 46	0.1
7518	30H	45 to 51	0.1
7520	31H	50 to 56	0.1
7522	32H	55 to 61	0.1
7524	33H	60 to 66	0.1
7526	34H	65 to 71	0.1
7528	35H	70 to 76	0.1
7530	36H	75 to 81	0.1
7532	37H	80 to 86	0.1
7534	38H	85 to 91	0.1
7536	39H	90 to 96	0.1
7539	-----	89 to 101	0.2
7550	-----	-1 to 11	0.2
7552	-----	9 to 21	0.2
7554	-----	19 to 31	0.2
7556	-----	29 to 41	0.2
7558	-----	39 to 51	0.2
7560	-----	49 to 61	0.2
7562	-----	59 to 71	0.2
7564	-----	69 to 81	0.2
7566	-----	79 to 91	0.2

7502

HYDROMETERS - API - 4″ LENGTH

Allow accurate testing with an even smaller sample (4oz) than above units.

Cat No	API Range	Div
7500-4	0 to 6	0.1
7502-4	5 to 11	0.1
7504-4	10 to 16	0.1
7506-4	15 to 21	0.1
7508-4	20 to 26	0.1
7510-4	25 to 31	0.1
7512-4	30 to 36	0.1
7514-4	35 to 41	0.1
7516-4	40 to 46	0.1
7518-4	45 to 51	0.1
7520-4	50 to 56	0.1
7522-4	55 to 61	0.1
7524-4	60 to 66	0.1
7526-4	65 to 71	0.1

Cat No		API Range	Div
7530-4		75 to 81	0.1
7532-4		80 to 86	0.1
7534-4		85 to 91	0.1
7536-4		90 to 96	0.1
7539-4		89 to 101	0.2
7550-4	-----	-1 to 11	0.2
7552-4	-----	9 to 21	0.2
7554-4	-----	19 to 31	0.2
7556-4	-----	29 to 41	0.2
7558-4	-----	39 to 51	0.2
7560-4	-----	49 to 61	0.2
7562-4	-----	59 to 71	0.2
7564-4	-----	69 to 81	0.2
7566-4	-----	79 to 91	0.2

SHORT FORM THERMO-HYDROMETERS

Approximately 190mm (7 1/2") length. Thermometers in body.

Cat No	ASTM	API Range	Div	Temp Range	Div	Length
7600	-----	-1 to 11	0.2	0 to 130°F	2	190mm
7602	-----	9 to 21	0.2	0 to 130°F	2	190mm
7604	-----	19 to 31	0.2	0 to 130°F	2	190mm
7606	-----	29 to 41	0.2	0 to 130°F	2	190mm
7608	-----	39 to 51	0.2	0 to 130°F	2	190mm
7610	-----	49 to 61	0.2	0 to 130°F	2	190mm
7612	-----	59 to 71	0.2	0 to 130°F	2	190mm
7614	-----	69 to 81	0.2	0 to 130°F	2	190mm
7616	-----	79 to91	0.2	0 to 130°F	2	190mm
7618	-----	89 to 101	0.2	0 to 130°F	2	190mm

ASTM LPG (Liquefied Petroleum Gas) HYDROMETER

For testing of LPG in accordance with ASTM Methods.

Cat No	ASTM	Scale Range	Div	Temp Range	Div	Length
7830	310H	500 to 650 Kg/M3	1.0	0 to 35°C	0.5	355mm
8814	101H	-500 to -650 SG	.001	30 to 90°C	1.0	355mm

7608

API SCALE FOR PETROLEUM PRODUCTS

Manufactured strictly in accordance with all applicable ASTM specifications, these units have become the industry standard for close accurate readings. All instruments in this series are suitable for certification and as such serve as primary reference standards in many governmental and private laboratories.

API SCALE FOR PETROLEUM PRODUCTS

Without Thermometer

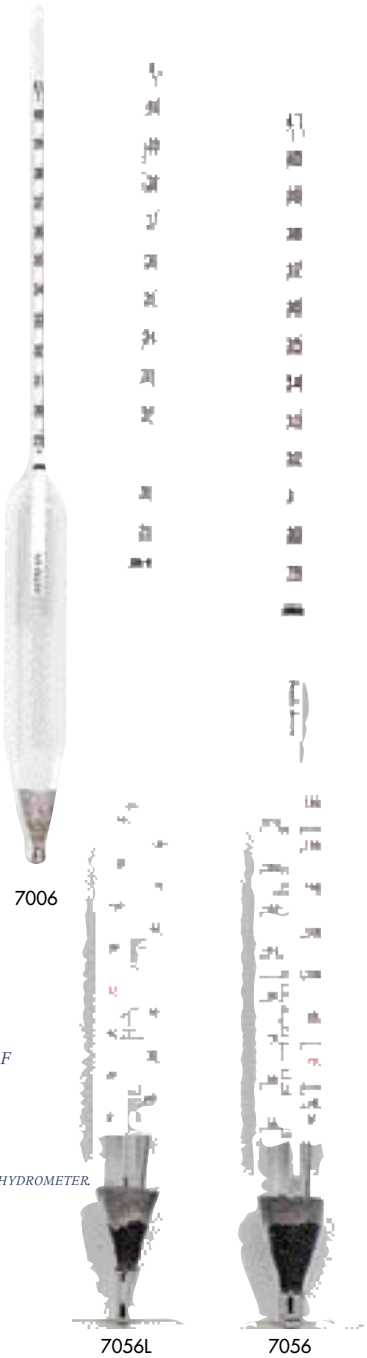
Cat No	ASTM	API Range	Div	Length
7000	1H	-1 to 11	0.1	330mm
7002	2H	9 to 21	0.1	330mm
7004	3H	19 to 31	0.1	330mm
7006	4H	29 to 41	0.1	330mm
7008	5H	39 to 51	0.1	330mm
7010	6H	49 to 61	0.1	330mm
7012	7H	59 to 71	0.1	330mm
7014	8H	69 to 81	0.1	330mm
7016	9H	79 to 91	0.1	330mm
7018	10H	89 to 101	0.1	330mm
7020		10 to 100	1.0	330mm

ASTM API THERMO-HYDROMETERS

380mm length - thermometer in body.

Cat No	ASTM*	API Range	Div	Temp Range	Div	Length
7050	51HH	-1 to 11	0.1	60 to 220°F	2	380mm
7050L	51HL	-1 to 11	0.1	0 to 150°F	2	380mm
7052	52HH	9 to 21	0.1	60 to 220°F	2	380mm
7052L	52HL	9 to 21	0.1	0 to 150°F	2	380mm
7054	53HM	19 to 31	0.1	30 to 180°F	2	380mm
7054L	53HL	19 to 31	0.1	0 to 150°F	2	380mm
7056	54HM	29 to 41	0.1	30 to 180°F	2	380mm
7056L	54HL	29 to 41	0.1	0 to 150°F	2	380mm
7058	55HL	39 to 51	0.1	0 to 150°F	2	380mm
7060	56HL	49 to 61	0.1	0 to 150°F	2	380mm
7062	57HL	59 to 71	0.1	0 to 150°F	2	380mm
7064	58HL	69 to 81	0.1	0 to 150°F	2	380mm
7066	59HL	79 to 91	0.1	0 to 150°F	2	380mm
7068	60HL	89 to 101	0.1	0 to 150°F	2	380mm
7076	------	10 to 30	0.2	0 to 150°F	2	380mm
7078	------	20 to 40	0.2	0 to 150°F	2	380mm
7080	------	30 to 50	0.2	0 to 150°F	2	380mm
7082	------	40 to 60	0.2	0 to 150°F	2	380mm
7084	------	50 to 70	0.2	0 to 150°F	2	380mm
7088	------	70 to 90	0.2	0 to 150°F	2	380mm
7092	------	29 to 45	0.1	0 to 150°F	2	380mm
7094	------	33 to 48	0.1	0 to 150°F	2	380mm
7096	------	19 to 45	0.1	0 to 150°F	2	380mm
7098	------	30 to 90	0.5	0 to 150°F	2	380mm

** ASTM designations for temperature ranges indicated: H (High) 60/220F, M (Medium) 30/180, L (low) 0/150F any of these ranges can be furnished with the hydrometers listed above upon request.*



ASTM API THERMO-HYDROMETERS WITH THERMOMETER IN STEM

Useful for testing of heavy oil where dark color prevents reading the thermometer in the body of a conventional thermohydrometer.

Cat No	ASTM*	API Range	Div	Temp Range	Div	Length
7100	71H	-1 to 11	0.1	30 to 220°F	2	380mm
7102	72H	9 to 21	0.1	30 to 220°F	2	380mm
7104	73H	19 to 31	0.1	30 to 220°F	2	380mm
7106	74H	29 to 41	0.1	30 to 220°F	2	380mm
7108	-----	39 to 51	0.1	30 to 220°F	2	380mm
7110	-----	49 to 61	0.1	30 to 220°F	2	380mm
7112	-----	59 to 71	0.1	30 to 220°F	2	380mm
7114	-----	69 to 81	0.1	30 to 220°F	2	380mm

Developed jointly with ISO (International Standards organization) standards to serve those users involved in their international transport of petroleum products, this series has been adopted by ASTM and their use sanctioned as the metric standard for petroleum hydrometers. All comply with the demanding specifications set forth in ASTM E-100-91

Graduated in Kg/M3 (Kilograms per cubic meter) @ 15 Degrees C for petroleum products.

ASTM METRIC DENSITY HYDROMETERS

Cat No	ASTM	Density Range	Div	Length
7702	311H	600 to 650	0.5	330mm
7704	312H	650 to 700	0.5	330mm
7706	313H	700 to 750	0.5	330mm
7708	314H	750 to 800	0.5	330mm
7710	315H	800 to 850	0.5	330mm
7712	316H	850 to 900	0.5	330mm
7714	317H	900 to 950	0.5	330mm
7716	318H	950 to 1000	0.5	330mm
7718	319H	1000 to 1050	0.5	330mm
7720	320H	1050 to 1100	0.5	330mm

ASTM METRIC THERMOHYDROMETERS

Thermometer in body.

Cat No	ASTM*	Density Range	Div	Temp Range	Div	Length
7802	300HL	600 to 650	0.5	-20 to 65°C	1	380mm
7804	301HL	650 to 700	0.5	-20 to 65°C	1	380mm
7806	302HL	700 to 750	0.5	-20 to 65°C	1	380mm
7806M	302HM	700 to 750	0.5	0 to 85°C	1	380mm
7808	303HL	750 to 800	0.5	-20 to 65°C	1	380mm
7808M	303HM	750 to 800	0.5	0 to 85°C	1	380mm
7810	304HL	800 to 850	0.5	-20 to 65°C	1	380mm
7810M	304HM	800 to 850	0.5	0 to 85°C	1	380mm
7812L	305HL	850 to 900	0.5	-20 to 65°C	1	380mm
7812	305HM	850 to 900	0.5	0 to 85°C	1	380mm
7814L	306HL	900 to 950	0.5	-20 to 65°C	1	380mm
7814	306HM	900 to 950	0.5	0 to 85°C	1	380mm
7816L	307HL	950 to 1000	0.5	-20 to 65°C	1	380mm
7816	307HH	950 to 1000	0.5	+20 to 105°C	1	380mm
7818	308HH	1000 to 1050	0.5	+20 to 105°C	1	380mm
7818L	308HL	1000 to 1050	0.5	-20 to 65°C	1	380mm
7820	309HH	1050 to 1100	0.5	+20 to 105°C	1	380mm
7820L	309HL	1050 to 110	0.5	-20 to 65°C	1	380mm

7706

ASTM SPECIFIC GRAVITY SERIES

Specific Gravity hydrometers 60/60F as specified in ASTM E-100-91. (all suitable for certification).

Cat No	ASTM	Gravity Range	Div	Length
8001		.600 to .650	0.0005	330mm
8000	82H	.650 to .700	0.0005	330mm
8002	83H	.700 to .750	0.0005	330mm
8003		.650 to .750	---------	----------
8004	84H	.750 to .800	0.0005	330mm
8005		.750 to .850	---------	----------
8006	85H	.800 to .850	0.0005	330mm
8008	86H	.850 to .900	0.0005	330mm
8010	87H	.900 to .950	0.0005	330mm
8012	88H	.950 to 1.000	0.0005	330mm
8014	89H	1.000 to 1.050	0.0005	330mm
8016	90H	1.050 to 1.100	0.0005	330mm
8020	98H	.950 to 1.000	0.0005	330mm
8030	102H	.650 to .700	0.001	260mm
8032	103H	.700 to .750	0.001	260mm
8034	104H	.750 to .800	0.001	260mm
8036	105H	.800 to .850	0.001	260mm

8036

ASTM SPECIFIC GRAVITY SERIES (CONTINUED)

SPECIFIC GRAVITY HYDROMETERS 60/60F AS SPECIFIED IN ASTM E-100-91. (ALL SUITABLE FOR CERTIFICATION).

CAT NO	ASTM	GRAVITY RANGE	DIV	LENGTH
8038	106H	.850 to .900	0.001	260mm
8040	107H	.900 to .950	0.001	260mm
8042	108H	.950 to 1.000	0.001	260mm
8200	111H	1.000 to 1.050	0.0005	260mm
8202	112H	1.050 to 1.100	0.0005	260mm
8204	113H	1.100 to 1.150	0.0005	260mm
8206	114H	1.150 to 1.200	0.0005	260mm
8208	115H	1.200 to 1.250	0.0005	260mm
8210	116H	1.250 to 1.300	0.0005	260mm
8212	117H	1.300 to 1.350	0.0005	260mm
8214	118H	1.350 to 1.400	0.0005	260mm
8216	119H	1.400 to 1.450	0.0005	260mm
8218	120H	1.450 to 1.500	0.0005	260mm
8230	125H	1.000 to 1.050	0.001	260mm
8232	126H	1.050 to 1.100	0.001	260mm
8234	127H	1.100 to 1.150	0.001	260mm
8236	128H	1.150 to 1.200	0.001	260mm
8238	129H	1.200 to 1.250	0.001	260mm
8240	130H	1.250 to 1.300	0.001	260mm
8242	131H	1.300 to 1.350	0.001	260mm
8244	132H	1.350 to 1.400	0.001	260mm
8246	133H	1.400 to 1.450	0.001	260mm
8248	134H	1.450 to 1.500	0.001	260mm
8250	135H	1.500 to 1.550	0.001	260mm
8252	136H	1.550 to 1.600	0.001	260mm
8254	137H	1.600 to 1.650	0.001	260mm
8256	138H	1.650 to 1.700	0.001	260mm
8258	139H	1.700 to 1.750	0.001	260mm
8260	140H	1.750 to 1.800	0.001	260mm
8262	141H	1.800 to 1.850	0.001	260mm
8264	142H	1.850 to 1.900	0.001	260mm
8266	143H	1.900 to 1.950	0.001	260mm
8266	144H	1.950 to 2.000	0.001	260mm

8200

8230

SPECIFIC GRAVITY HYDROMETERS SEQUENTIAL RANGES (60/60F)

6″ HYDROMETERS IN - .070 SG RANGES

CAT NO	GRAVITY RANGE	DIV
8140	.590 to .660	0.001
8141	.650 to .710	0.001
8142	.700 to .770	0.001
8143	.760 to .830	0.001
8144	.820 to .890	0.001
8145	.880 to .950	0.001
8146	.940 to 1.010	0.001
8286	1.000 to 1.070	0.001
8287	1.060 to 1.130	0.001
8288	1.120 to 1.190	0.001
8289	1.180 to 1.250	0.001
8290	1.240 to 1.310	0.001

CAT NO	GRAVITY RANGE	DIV
8291	1.300 to 1.370	0.001
8292	1.360 to 1.430	0.001
8293	1.420 to 1.490	0.001
8294	1.480 to 1.550	0.001
8295	1.540 to 1.610	0.001
8296	1.600 to 1.670	0.001
8297	1.660 to 1.730	0.001
8298	1.720 to 1.790	0.001
8299	1.780 to 1.850	0.001
8301	1.840 to 1.920	0.001
8303	1.910 to 1.980	0.001

8144

6″ HYDROMETERS - .100 SG RANGES

CAT NO	GRAVITY RANGE	DIV
8100	.600 to .710	0.002
8102	.700 to .810	0.002
8104	.800 to .910	0.002
8106	.900 to 1.010	0.002
8300	1.000 to 1.110	0.002
8302	1.100 to 1.210	0.002
8304	1.200 to 1.310	0.002

CAT NO	GRAVITY RANGE	DIV
8306	1.300 to 1.410	0.002
8308	1.400 to 1.510	0.002
8310	1.500 to 1.610	0.002
8312	1.600 to 1.710	0.002
8314	1.700 to 1.810	0.002
8316	1.800 to 1.910	0.002
8318	1.900 to 2.010	0.002

8286

6″ HYDROMETERS - .200 SG RANGES

Cat No	Gravity Range	Div	Cat No	Gravity Range	Div
8320	1.000 to 1.220	0.005	8326	1.600 to 1.820	0.005
8322	1.200 to 1.420	0.005	8328	1.800 to 2.000	0.005
8324	1.400 to 1.620	0.005	8321	1.100 to 1.300	0.005

LONG SPECIFIC GRAVITY HYDROMETERS SEQUENTIAL RANGES (60/60F)

13″ HYDROMETERS - .070 SG RANGES

Cat No	Gravity Range	Div	Cat No	Gravity Range	Div
8147	.600 to .660	0.0005	8275	1.300 to 1.370	0.0005
8148	.650 to .710	0.0005	8276	1.360 to 1.430	0.0005
8149	.700 to .770	0.0005	8277	1.420 to 1.490	0.0005
8150	.760 to .830	0.0005	8278	1.480 to 1.550	0.0005
8151	.820 to .890	0.0005	8279	1.540 to 1.610	0.0005
8152	.880 to .950	0.0005	8280	1.600 to 1.670	0.0005
8153	.940 to 1.010	0.0005	8281	1.660 to 1.730	0.0005
8270	1.000 to 1.070	0.0005	8282	1.720 to 1.790	0.0005
8271	1.060 to 1.130	0.0005	8283	1.780 to 1.850	0.0005
8272	1.120 to 1.190	0.0005	8284	1.840 to 1.920	0.0005
8273	1.180 to 1.250	0.0005	8285	1.910 to 2.010	0.0005
8274	1.240 to 1.310	0.0005			

12″ HYDROMETERS - .100 SG RANGES

Cat No	Gravity Range	Div	Cat No	Gravity Range	Div
8130	.600 to .710	0.001	8356	1.300 to 1.410	0.001
8132	.700 to .810	0.001	8358	1.400 to 1.510	0.001
8134	.800 to .910	0.001	8360	1.500 to 1.610	0.001
8136	.900 to 1.010	0.001	8362	1.600 to 1.710	0.001
8350	1.000 to 1.110	0.001	8364	1.700 to 1.810	0.001
8352	1.100 to 1.210	0.001	8364	1.800 to 1.910	0.001
8354	1.200 to 1.310	0.001	8366	1.900 to 2.010	0.001

12″ HYDROMETERS - .200 SG RANGES

Cat No	Gravity Range	Div	Cat No	Gravity Range	Div
8369	.900 to 1.100	0.002	8378	1.800 to 2.010	0.002
8370	1.000 to 1.220	0.002	8382	2.000 to 2.200	0.002
8371	1.100 to 1.300	0.002	8384	2.200 to 2.400	0.002
8372	1.200 to 1.300	0.002	8386	2.400 to 2.600	0.002
8373	1.300 to 1.500	0.002	8388	2.600 to 2.800	0.002
8374	1.400 to 1.620	0.002	8386	2.800 to 3.000	0.002
8376	1.600 to 1.820	0.002			

12″ HYDROMETERS - SPINDLE (VERY LONG) RANGES

A spindle hydrometer allows the user to easily ascertain the gravity of an unknown solution, so that a more precise hydrometer can be used for the actual measurement.

Cat No	Gravity Range	Div	Cat No	Gravity Range	Div
8379	1.000 to 1.600	0.005	8396	.650 to 1.000	0.1
8380	1.000 to 2.000	0.010	8398	.700 to 1.000	0.005
8392	2.000 to 3.000	.010			

8382

8369

DUAL SCALE - SPECIFIC GRAVITY & BAUME

Specific Gravity, perhaps the most commonly used scientific scale, is expressed as the ratio of the mass (weight) of a given volume of liquid to the identical volume of water, both liquids usually at an equal temperature, most often 60F (15.56C).

BAUME is most often used in the chemical industry. The Baume scale is expressed as 'Light' for liquids with a gravity below 1.000 SG, or 'Heavy' for liquids with a gravity heavier than 1.000 SG. In the absence of the designation 'light' or 'heavy', it is assumed to be heavy. Baume Light (BL) is defined as BL = (140/SG) - 130. Baume Heavy (BH) is defined as BH = 145 - (145/SG).

SPECIFIC GRAVITY & BAUME LIGHT

Cat No	Specific Gravity	Baume Light	Div, SG	Div, Baume	Length
8799.6	.600 to 1.000	100 to 10	.005	1.0	12″
8799.8	.650 to 1.000	85 to 10	.005	1.0	12″
8800	.700 to .810	70 to 45	.001	0.5	12″
8801	.700 to .860	70 to 35	.002	0.5	12″
8805	.700 to 1.000	70 to 10	.005	1.0	12″
8804	.800 to 1.000	45 to 10	.005	1.0	12″
8802	.800 to .910	45 to 25	.001	0.2	12″
8802.5	.840 to 1.000	37 to 10	.002	0.5	12″
8803	.900 to 1.010	25 to 10	.001	1.0	12″

SPECIFIC GRAVITY & BAUME HEAVY

Cat No	Specific Gravity	Baume Heavy	Div, SG	Div, Baume	Length
8806-6	1.000 to 1.220	0 to 26	.005	0.5	6″
8807-6	1.200 to 1.420	24 to 43	.005	0.5	6″
8808-6	1.400 to 1.620	42 to 55	.005	0.5	6″
8809-6	1.600 to 1.820	54 to 65	.005	0.5	6″
8810-6	1.800 to 2.020	64 to 73	.005	0.5	6″
8810.5-6	1.000 to 1.400	0 to 41	.010	1.0	6″
8812-6	1.400 to 2.000	40 to 72	.010	1.0	6″
8813-6	1.000 to 2.000	0 to 70	.020	1.0	6″
8806	1.000 to 1.220	0 to 26	.002	0.2	12″
8807	1.200 to 1.420	24 to 43	.002	0.2	12″
8808	1.400 to 1.620	42 to 55	.002	0.2	12″
8809	1.600 to 1.820	54 to 65	.002	0.2	12″
8810	1.800 to 2.020	64 to 73	.002	0.2	12″
8810.5	1.000 to 1.450	0 to 45	.005	0.5	12″
8811	1.000 to 1.600	0 to 55	.010	1.0	12″
8812	1.400 to 2.000	40 to 72	.010	0.5	12″
8813	1.000 to 2.000	0 to 70	.010	1.0	12″

8806-6

SPINDLE HYDROMETER (Very Long) RANGE

A spindle hydrometer allows the user to easily ascertain the gravity of an unknown solution, so that a more precise hydrometer can be used for the actual measurement.

Cat No	Specific Gravity	Baume Heavy	Div, SG	Div, Baume	Length
8815	.700 to 2.000	70 Lt to 70 Hvy	.010	1.0	18″

SPINDLE THERMOHYDROMETERS (Very Long) RANGES

A spindle hydrometer allows the user to easily ascertain the gravity of an unknown solution, so that a more precise hydrometer can be used for the actual measurement.

Cat No	Specific Gravity	Baume Heavy	Div, SG	Div, Baume	Temp Range
8819	.600 to 1.000	85 Lt to 10 Lt	.005	0.5	0 to 120°F
8820	1.000 to 2.000	0 to 72	.010	1.0	0 to 120°F
8821	1.000 to 2.000		.010		0 to 120°F
8822	.650 to 1.000		.005		0 to 120°F

BAUME HYDROMETERS (Modulus 145, Temperature 60F)

12″ BAUME HEAVY HYDROMETERS

Cat No	Range, Baume	Div	Cat No	Range, Baume	Div
8500	0 to 50	0.5	8511.5	33 to 37	0.05
8501	0 to 70	1.0	8517	35 to 45	0.1
8502	0 to 25	0.5	8517.5	35 to 70	0.5
8503	0 to 35	0.5	8512	39 to 51	0.1
8506	-5 to +5	0.1	8518	45 to 55	0.1
8508	-1 to 11	0.1	8513	49 to 61	0.1
8508.5	5 to 15	0.1	8519	55 to 65	0.1
8509	9 to 21	0.1	8514	59 to 71	0.1
8515	15 to 25	0.1	8514.5	64 to 66.5	0.05
8510	19 to 31	0.1	8520	69 to 81	0.1
8516	25 to 35	0.1	8522	79 to 91	0.1
8511	29 to 41	0.1	8524	89 to 101	0.1

6″ BAUME HEAVY HYDROMETERS

Cat No	Range, Baume	Div	Cat No	Range, Baume	Div
8550	0 to 20	0.5	8565	19 to 31	0.2
8551	20 to 40	0.5	8566	29 to 41	0.2
8552	40 to 60	0.5	8567	39 to 51	0.2
8557	0 to 70	1.0	8568	49 to 61	0.2
8563	-1 to 11	0.2	8569	59 to 71	0.2
8564	9 to 21	0.2			

12″ BAUME LIGHT HYDROMETERS

Cat No	Range, Baume	Div	Cat No	Range, Baume	Div
8508LT	-1 to 11	0.1	8512LT	39 to 51	0.1
8509LT	9 to 21	0.1	8513LT	49 to 61	0.1
8510LT	19 to 31	0.1	8514LT	59 to 71	0.1
8511LT	29 to 41	0.1			

TWADDLE SCALE HYDROMETERS

Cat No	Range	Div	Length
8570	0 to 26	0.5	9″
8571	24 to 50	0.5	9″
8572	48 to 74	0.5	9″
8573	70 to 104	0.5	9″
8574	102 to 136	0.5	9″
8575	134 to 160	0.5	9″

ASTM SOIL HYDROMETERS

Cat No	ASTM	Gravity Range	Div	Length
8650	151H	.995 to 1.038	0.001	280mm

Cat No	ASTM	Range, Grms/Liter	Div	Length
8652	152H	-5 to +60	1 g/l	280mm

BRIX HYDROMETERS

Per cent sugar in aqueous solution @20C Length: 275mm to 330mm.

Cat No	Range	Div	Cat No	Range	Div
8698	-5 to +5	0.1	8706.8	36 to 42	0.1
8700	-1 to 11	0.1	8708	39 to 51	0.1
8698.2	0 to 30	0.5	8708.2	42 to 48	0.1
8698.4	0 to 6	0.1	8708.4	48 to 54	0.1
8698.8	6 to 12	0.1	8710	49 to 61	0.1

8504

8509

BRIX HYDROMETERS (CONTINUED)

PER CENT SUGAR IN AQUEOUS SOLUTION @20C LENGTH: 275MM TO 330MM.

CAT NO	RANGE	DIV	CAT NO	RANGE	DIV
8702	9 to 21	0.1	8710.2	53 to 58	0.1
8702.2	12 to 18	0.1	8710.4	54 to 60	0.1
8702.4	15 to 25	0.1	8712	59 to 71	0.1
8704	19 to 31	0.1	8712.2	60 to 66	0.1
8704.4	25 to 35	0.1	8712.4	60 to 90	0.5
8706	29 to 41	0.1	8712.6	66 to 72	0.1
8706.2	30 to 36	0.1	8714	69 to 81	0.1
8706.4	30 to 60	0.5	8716	79 to 91	0.1
8706.6	35 to 45	0.1			

BRIX THERMOHYDROMETERS

PER CENT SUGAR IN AQUEOUS SOLUTION @20C LENGTH; 305MM TO 386MM.

CAT NO	BRIX RANGE	DIV	LENGTH	TEMP RANGE
8748	-5 to +5	0.1	330mm	0 to 50°C
8750	-1 to 11	0.1	330mm	0 to 50°C
8748.2	0 to 30	0.5	305mm	0 to 50°C
8748.4	0 to 6	0.1	330mm	0 to 50°C
8748.6	5 to 11	0.1	330mm	0 to 50°C
8752	9 to 21	0.1	365mm	0 to 50°C
8752.2	10 to 16	0.1	385mm	0 to 50°C
8752.4	15 to 21	0.1	330mm	0 to 50°C
8752.6	-15 to 25	0.1	365mm	0 to 50°C
8754	19 to 31	0.1	365mm	0 to 50°C
8754.2	20 to 26	0.1	385mm	0 to 50°C
8754.4	25 to 31	0.1	385mm	0 to 50°C
8754.6	25 to 35	0.1	365mm	0 to 50°C
8756	29 to 41	0.1	365mm	0 to 50°C
8756.2	30 to 45	0.1	380mm	0 to 50°C
8756.4	30 to 60	0.5	305mm	0 to 50°C
8758	39 to 51	0.1	365mm	0 to 50°C
8760	49 to 61	0.1	365mm	0 to 50°C
8762	59 to 71	0.1	365mm	0 to 50°C
8762.2	60 to 90	0.5	305mm	0 to 50°C
8764	69 to 81	0.1	365mm	0 to 50°C
8766	79 to 91	0.1	380mm	0 to 50°C

8752

BALLING SCALE THERMOHYDROMETERS

FOR ALCOHOL TESTING. STANDARDIZED @68F (20C)

CAT NO	BALLING RANGE	DIV	LENGTH	TEMP RANGE
8770	0 to 32	0.5	385mm	30 to 120°F
8772	8 to 25	0.5	385mm	30 to 120°F

PROOF SCALE HYDROMETERS

FOR ALCOHOL TESTING. MEET NBS SPECIFICATIONS. STANDARDIZED @60/60F LENGTH 12" PROOF = % ALCOHOL BY VOLUME X 2.

CAT NO	PROOF RANGE	DIV
8843.5	0 to 20	0.2
8843.6	20 to 40	0.2
8843.7	40 to 60	0.2
8843.8	60 to 80	0.2
8843.9	80 to 100	0.2
8844	0 to 100	1.0
8845	80 to 120	0.5
8846	100 to 140	0.5
8847	130 to 170	0.5
8848	160 to 200	0.5
8850	185 to 206	0.2

8844

US CUSTOMS HOUSE HYDROMETERS

DUAL SCALE - PROOF & TRALLES. (TRALLES = % ALCOHOL BY VOLUME)

HYDROMETER

CAT NO	RANGE PROOF	DIV	RANGE TRALLES	DIV	LENGTH
8843	0 to 200	2.0	0 to 100	2.0	12"

THERMOHYDROMETER

With internal thermometer, range 0/120F

Cat No	Range Proof	Div	Range Tralles	Div	Length
8860	0 to 200	2.0	0 to 100	2.0	13″

TRALLES HYDROMETER

Tralles = % alcohol by volume @ 60F **Not for Wine**

Cat No	Tralles Range	Div	Length
8780	0 to 50%	0.5%	12″
8782	0 to 100% & Proof	1.0%	12″
8784	0 to 5%	0.1%	9″
8786	5 to 10%	0.1%	9″
8788	10 to 15%	0.1%	9″
8790	15 to 20%	0.1%	9″
8792	20 to 25%	0.1%	9″

POUNDS PER U.S. GALLON

Useful in determining the actual weight of a known volume of fuel. Used principally in aviation loading applications.

Cat No	Range, Lbs./U.S. Gal	Div	Length	Type of Fuel
8881	5.5 to 7.5	.02	12″	Full Range
8882	5.4 to 6.3	.01	12 1/2″	Gasoline
8883	6.0 to 7.1	.01	12 1/2″	JP-4 & Kerosene
8884	6.0 to 6.6	.01	12 1/2″	JP-4
8885	6.5 to 7.1	.01	12 1/2″	Kerosene

JET FUEL TESTING KIT

Thermohydrometer, API scale, range 40/75 API, temp range 0/130F, length 190mm for use in syringe kit. Scale is color coded as follows:
From 40 to 50 API - White - marked KEROSENE
From 50 to 65 API - Yellow - unmarked
From 65 to 75 API - Green - marked AVGAS

Cat No 700 - Thermohydrometer with syringe kit consisting of rubber bulb, glass cylinder, and BUNAN pickup tube,
Cat No 700-1 - Thermohydrometer only

Cat No 700-2 - Syringe kit as described above, without hydrometer.

SALINITY HYDROMETERS

Extremely sensitive hydrometers for determination of specific gravity.

Cat No	Range	Div	Length
8900	1.000 to 1.011	.0002	9″
8902	1.010 to 1.021	.0002	9″
8904	1.020 to 1.031	.0002	9″

SALT HYDROMETERS

PERCENT SATURATION - NACL IN WATER @ 60F

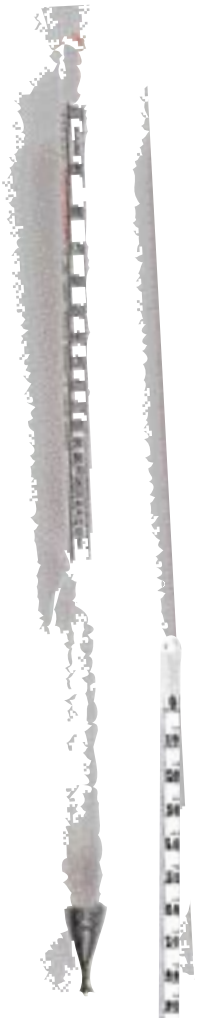
Cat No	Range	Div	Length
8920	0 to 15%	.2%	12″
8922	0 to 40%	.5%	13″
8924	40 to 70%	.5%	12″
8926	70 to 100%	.5%	12″
8928	0 to 100%	1.0%	12″

PERCENT NACL BY WEIGHT @ 60F

Cat No	Range	Div	Length
8940	0 to 26.5%	0.5%	12″
8942	0 to 26.5%	0.5% (20/120F)	12″

PERCENT SATURATION CACL IN WATER @ 60F

Cat No	Range	Div	Length
8945	0 to 120	1.0	12″



8843

8928

PEROXIDE HYDROMETER

In plastic graduated cylinder. Per cent hydrogen peroxide in water @70F

Cat No	Range	Div	Length
8950	0 to 100	2.0%	6″

MILK HYDROMETER

Cat No	Range	Div	Length	type
8400	14 to 42	1	10.5″	Quevennes
8402	14 to 42	1	12.5″	Quevennes - w/-10 to 40C thermometer in stem
8404	0 to 120	1	12″	Spence Lactometer
8406	29 to 35	0.2	6.5″	Stone Lactometer
8408	24 to 37	.01	12″	Lactometer
8410	0 to 120	1	12″	Spence Lactometer - w/0 to 120F thermometer

HYDROMETER JARS

Hydrometer jars of rugged borosilicate glass construction, free from mechanical defects and internal stain. the foot diameters have been chosen to secure maximum stability. the listed dimensions are approximate. With pour out spout.

Cat No	Size, mm	Size, Inches
F1038200	38 x 200	1.5 x 8
F1038300	38 x 300	1.5 x 12
F1038375	38 x 375	1.5 x 15
F1050375	50 x 375	2 x 15
F1063460	63 x 460	2.5 x 18

GRADUATED CYLINDERS

Calibrated on the basis of the true metric liter. Double scales.

Cat No	Capacity, ml
F450050	50
F450100	100
F450250	250
F450500	500
F4501000	1000

F450050

8402

Suggestions to assure accurate hydrometer readings.

1 *- Be sure Hydrometer is clean and dry.*

2 *- Smooth clear cylinder or jar for liquid tested; should be dry or well rinsed with portion of sample.*

3 *- Sample must be thoroughly mixed before testing. Preferably by a stirrer which reaches bottom of sample container.*

4 *- Immerse Hydrometer slowly in liquid to a point below which it naturally sinks (not over 1/8″)*

5 *- Do not make reading till the hydrometer and liquid are at rest and free from air bubbles.*

6 *- The temperatures of the hydrometer and liquid tested should be equal.*

7 *- More accurate readings result when the temperature of the liquid approaches that of the surrounding atmosphere. When differences of temperature are necessary and vary from the standard, the reading can be approximated by use of corrected tables.*

8 *- Surface tension of the liquid affects hydrometer observations. The liquid for which a hydrometer is intended must be specified since it will indicate differently in two liquids having the same density but different surface tensions.*

9 *- Hydrometers of equivalent dimensions may be compared with each other even if the liquid used differs in surface tension from the specified liquid, but comparisons of dissimilar instruments, in such a liquid, must be corrected for the effect of surface tension.*

10 *- To avoid errors due to spontaneous changes in surface tension skimming and formation of surface films of impurities from apparatus, liquid or air, overflow the cylinder immediately before taking the reading.*

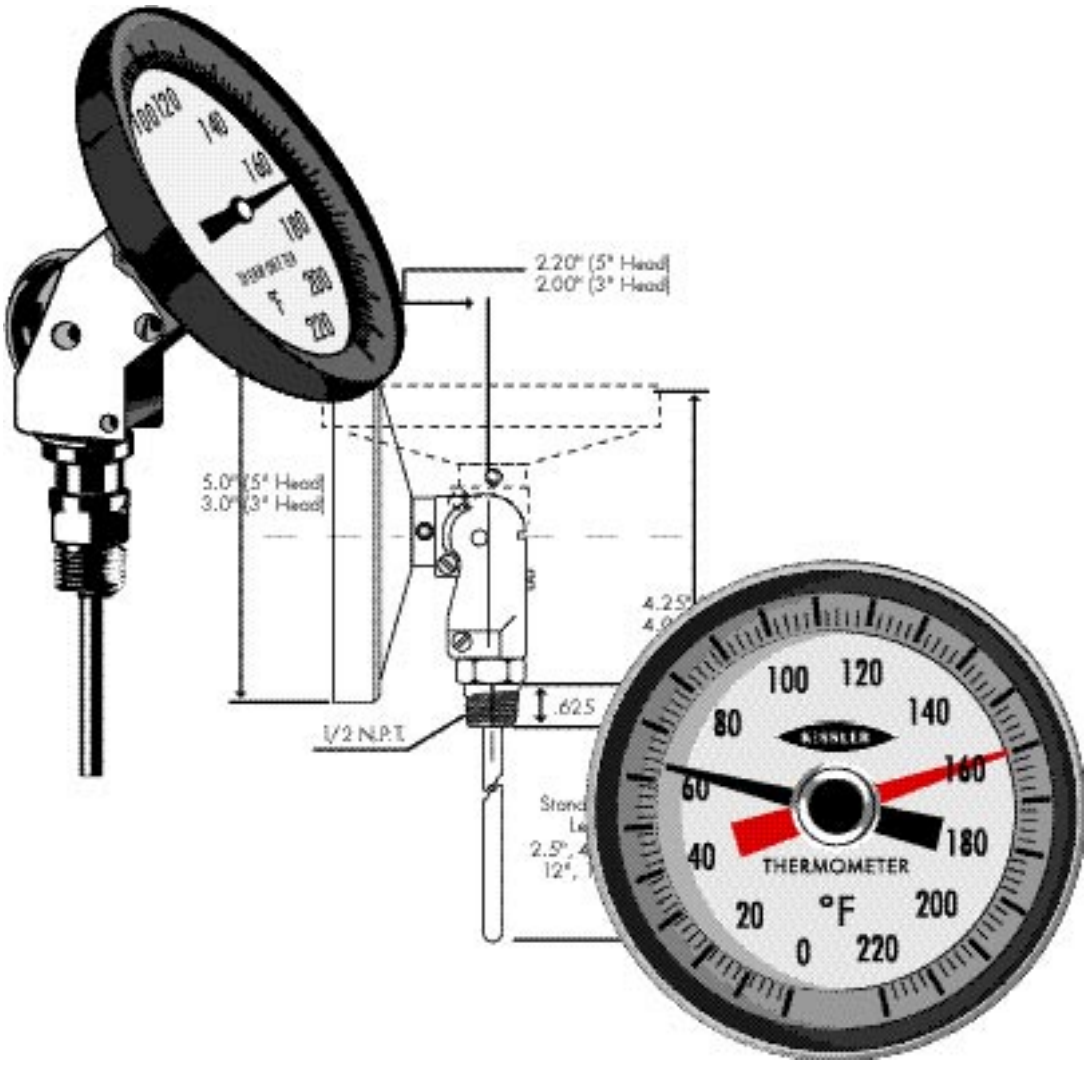
11 *- To read the hydrometer bring the eye, preferably from below, to the level of the plane surface of the liquid. Read the point where the scale is cut by the surface line.*

12 *- Errors of parallax when reading thermometer scale can be avoided by aligning the near end of the mercury column. The portions on either side of the stem and those seen through the capillary so they appear to be a straight line. When the eye is in this position the line of sight is normal to the stem.*

** Condensed largely from Bureau of Standards Circular No. 16.*

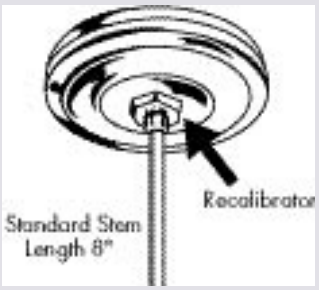
BIMETAL

THERMOMETERS



LABORATORY AND GENERAL TEST THERMOMETERS

1 ¾" AND 2" DIAL SIZE



FEATURES

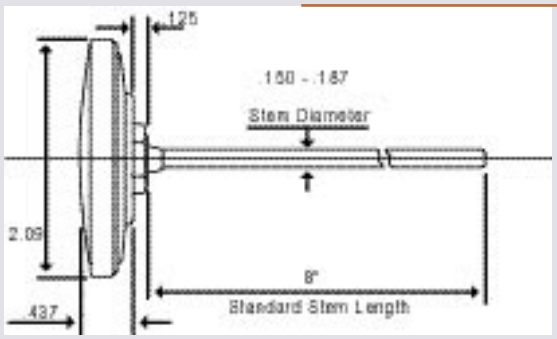
- Models GT-100R & LT-225R easy to recalibrate using wrench on hex surface on back of dial.
- Type 304 stainless steel in stem and case.
- Head diameter: GT-100R 1.75"; LT-225R 2".
- Stem diameter: .150 Standard; GT-100R available .142, LT-225R Series available .187.
- Corrosion resistant to most chemicals.
- Rustproof - Dustproof - Leakproof - Hermetically sealed.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Adjustable clamp for tank and tray mounting.
- Guaranteed accurate within 1/2 of 1% around entire dial range.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Durable - non-fragile - safe to handle.
- Over range protection is 50% up to 500°F and 10% over 500°F.

STANDARD DIAL RANGES

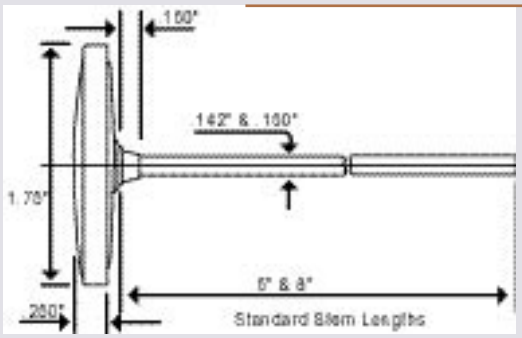
Fahrenheit	°/Div	Centigrade	Div
-100 to 100°	2°	-50 to 100°	1°
-40 to 160°	2°		
0 to 140°	2°	-10 to 110°	1°
0 to 180°	2°	**0 to 50°	1/2°
0 to 220°	2°	0 to 100°	1°
*25 to 125°	1°	0 to 150°	1°
20 to 240°	2°		
50 to 250°	2°	0 to 250°	2°
50 to 300°	2°	0 to 300°	5°
50 to 400°	5°	100 to 400°	5°
50 to 500°	5°		
150 to 750°	10°		
*200 to 1000°	10°		

** Not recommended for continuous use above 800° F.*

Model LT-225R



Model GT-100R



BACK CONNECTED INDUSTRIAL THERMOMETERS

1 ¾" AND 2" SIZE

FEATURES

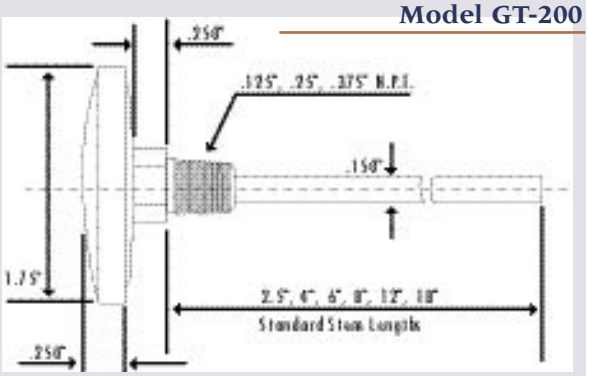
- Model LN-250R easy to recalibrate by loosening a socket head screw above hex connecting nut.
- Model numbered GT-200 supplied without recalibration device.
- Connection Nut: 1/4" N.P.T. standard, other sizes available at extra charge.
- Type 304 stainless steel in stem and case.
- All welded construction.
- Head diameter: GT-200 1 3/4"; LN-250 Series 2".
- Rustproof - Dustproof - Leakproof - Hermetically sealed.
- Stem diameter: LN-250R 1/4". Standard stem lengths: 2 1/2", 4", 6", 9", 12", 18", 24", including threads. Available in stem lengths up to 72".
- GT-200: Standard stem length 2 1/2", 4", 6". Available 8", 12", 18".
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer
- Guaranteed accurate with 1% around entire dial range.
- over-range protection 50% up to 500°F, 10% above 500°F.

STANDARD DIAL RANGES

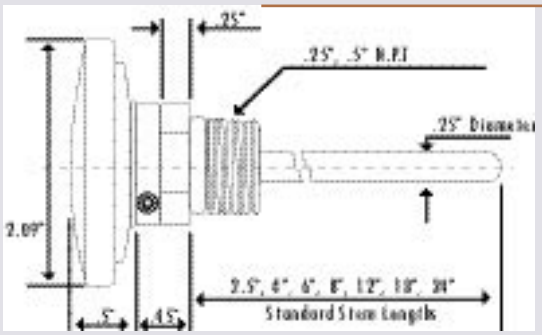
Fahrenheit	°/Div	Centigrade	Div
-100 to 100°	2°	-50 to 100°	1°
-40 to 160°	2°	-50 to 25°	1°
0 to 140°	2°	-10 to 110°	1°
0 to 180°	2°	**0 to 50°	1/2°
0 to 220°	2°	0 to 100°	1°
25 to 125°	1°	0 to 150°	1°
20 to 240°	2°		
50 to 250°	2°	0 to 250°	2°
50 to 300°	2°	0 to 300°	5°
50 to 400°	5°	100 to 400°	5°
50 to 500°	5°		
150 to 750°	10°		
*200 to 1000°	10°		

** Not recommended for continuous use above 800° F.*

Model GT-200

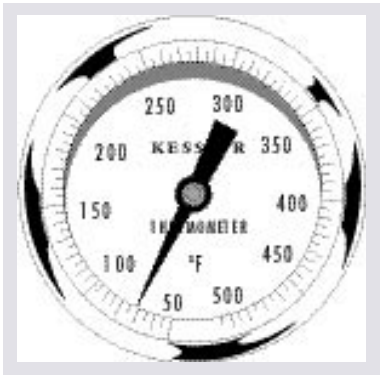


Model LN-250R



BACK CONNECTED INDUSTRIAL THERMOMETERS

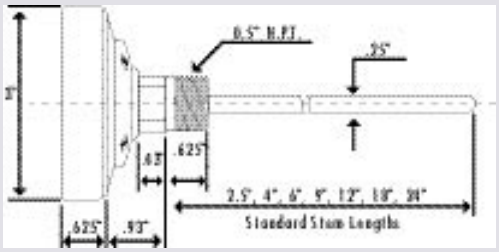
AVAILABLE IN 3″ AND 5″ DIAL SIZES



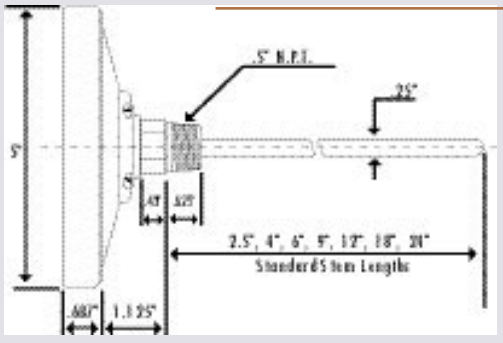
FEATURES

- 18-8 Type 304 stainless steel.
- Model numbered GT-300R and GT-500R easy to recalibrate with Hex Screw.
- Connection Nut: 1/2″ N.P.T. standard, can be supplied in other sizes at extra charge.
- Anti-Parallax dial avoids reading errors. White dial with large Black numbers and graduations on raised ring for surest, sharpest, easiest readability.
- All welded construction.
- Head diameters: 3″ and 5″.
- Rustproof - Dustproof - Leakproof - Hermetically sealed.
- Stem diameter: 1/4″. Standard stem lengths: 2 1/2″, 4″, 6″, 9″, 12″, 18″, 24″, including threads. Available in stem lengths up to 72″.
- Extra-heavy glass crystal. Plastic or tempered crystal can be supplied at extra charge.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Guaranteed accurate with 1% around entire dial range.
- Over-range protection 50% up to 500°F, 10% above 500°F.

Model GT-300R



Model GT-500R

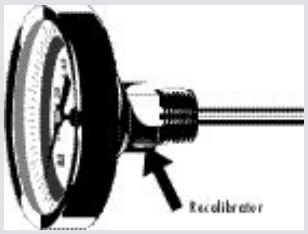


STANDARD DIAL RANGES

Fahrenheit	°/Div	Centigrade	Div
-100 to 100°	2°	-50 to 100°	1°
-40 to 160°	2°	-50 to 25°	1°
0 to 140°	2°	-10 to 110°	1°
0 to 180°	2°	**0 to 50°	1/2°
0 to 220°	2°	0 to 100°	1°
25 to 125°	1°	0 to 150°	1°
20 to 240°	2°		
50 to 250°	2°	0 to 250°	2°
50 to 300°	2°	0 to 300°	5°
50 to 400°	5°	100 to 400°	5°
50 to 500°	5°		
150 to 750°	10°		
*200 to 1000°	10°		

** Not recommended for continuous use above 800° F.*

Special Dial Ranges and Stem Lengths Available at Extra Charge.



BOTTOM CONNECTED INDUSTRIAL THERMOMETERS

AVAILABLE IN 3″ AND 5″ DIAL SIZES

FEATURES

- 18-8 Type 304 stainless steel.
- Model numbered BC350R and BC550R easy to recalibrate with Hex Screw.
- Connection Nut: 1/2″ N.P.T. standard, can be supplied in other sizes at extra charge.
- Anti-Parallax dial avoids reading errors. White dial with large Black numbers and graduations on raised ring for surest, sharpest, easiest readability.
- All welded construction.
- Head diameters: 3″ and 5″.
- Rustproof - Dustproof - Leakproof - Hermetically sealed.
- Stem diameter: 1/4″. Standard stem lengths: 2 1/2″, 4″, 6″, 9″, 12″, 18″, 24″, including threads. Available in stem lengths up to 72″.
- Extra-heavy glass crystal. Plastic or tempered crystal can be supplied at extra charge.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Guaranteed accurate with 1% around entire dial range.
- Over-range protection 50% up to 500°F, 10% above 500°F.

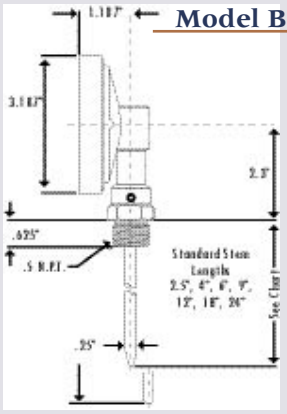
STANDARD DIAL RANGES

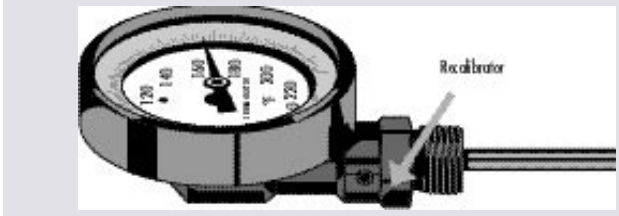
Fahrenheit	°/Div	Centigrade	Div
-100 to 100°	2°	-50 to 100°	1°
-40 to 160°	2°	-50 to 25°	1°
0 to 140°	2°	-10 to 110°	1°
0 to 180°	2°	**0 to 50°	1/2°
0 to 220°	2°	0 to 100°	1°
25 to 125°	1°	0 to 150°	1°
20 to 240°	2°		
50 to 250°	2°	0 to 250°	2°
50 to 300°	2°	0 to 300°	5°
50 to 400°	5°	100 to 400°	5°
50 to 500°	5°		
150 to 750°	10°		
*200 to 1000°	10°		

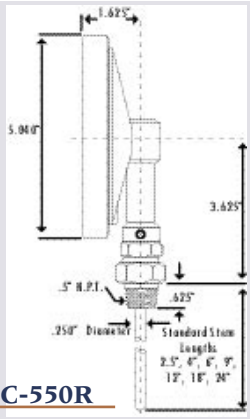
** Not recommended for continuous use above 800° F.*

Special Dial Ranges and Stem Lengths Available at Extra Charge.

Model BC-350R







Model BC-550R

ADJUSTABLE ANGLE INDUSTRIAL THERMOMETERS

AVAILABLE IN 3″ AND 5″ DIAL SIZES

FEATURES

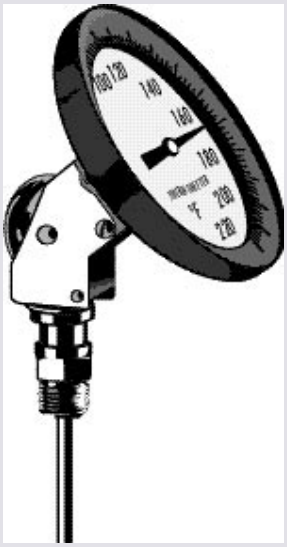
- 18-8 Type 304 stainless steel.
- Model numbered AA-375R and AA-575R easy to recalibrate with Hex Screw.
- Connection Nut: 1/2″ N.P.T. standard, can be supplied in other sizes at extra charge.
- Anti-Parallax dial avoids reading errors. White dial with large Black numbers and graduations on raised ring for surest, sharpest, easiest readability.
- All welded construction.
- Head diameters: 3″ and 5″.
- Rustproof - Dustproof - Leakproof - Hermetically sealed.
- Stem diameter: 1/4″. Standard stem lengths: 2 1/2″, 4″, 6″, 9″, 12″, 18″, 24″, including threads. Available in stem lengths up to 72″.
- Extra-heavy glass crystal. Plastic or tempered crystal can be supplied at extra charge.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Guaranteed accurate with 1% around entire dial range.
- Over-range protection 50% up to 500°F, 10% above 500°F.

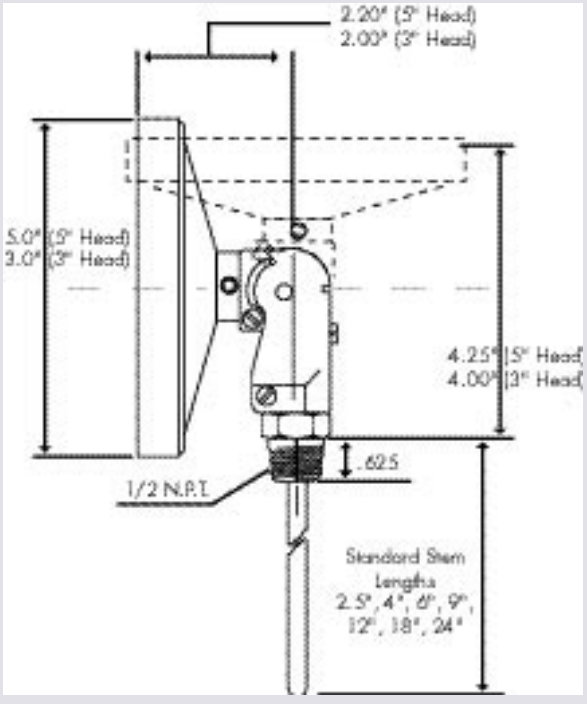
STANDARD DIAL RANGES

Fahrenheit	°/Div	Centigrade	Div
-100 to 100°	2°	-50 to 100°	1°
-40 to 160°	2°	-50 to 25°	1°
0 to 140°	2°	-10 to 110°	1°
0 to 180°	2°	**0 to 50°	1/2°
0 to 220°	2°	0 to 100°	1°
25 to 125°	1°	0 to 150°	1°
20 to 240°	2°		
50 to 250°	2°	0 to 250°	2°
50 to 300°	2°	0 to 300°	5°
50 to 400°	5°	100 to 400°	5°
50 to 500°	5°		
150 to 750°	10°		
*200 to 1000°	10°		

** Not recommended for continuous use above 800° F.*

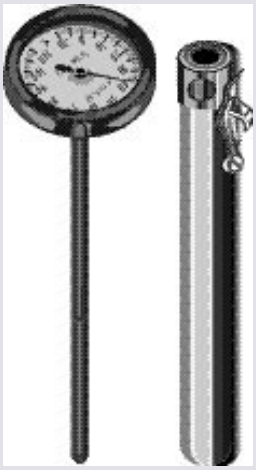
Special Dial Ranges and Stem Lengths Available at Extra Charge.





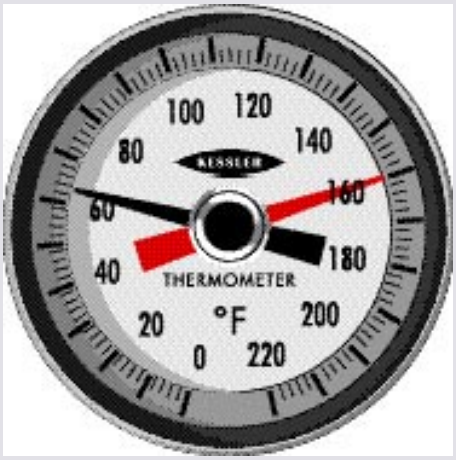
Immerse Stem at least 2″ in Liquids, 4″ in gases

SPECIAL USE DIAL THERMOMETERS



MODEL PT50R

Recalibrator



MODEL MX325

FEATURES

- 18-8 Type 304 stainless steel construction.
- Corrosion resistant to most chemicals.
- Rustproof - Dustproof - Leakproof.
- Head diameter 1″ - Stem 5″ long by .150″ diameter.
- White dial with large numbers and graduations - easy to read from any angle.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Guaranteed accurate within 1/2 of 1% around dial range.
- Durable - Non-Fragile - Safe to Handle.
- Over range protection is 50% up to 500°F, and 10% over 500°F.
- Lucite unbreakable crystal - no glass to break.
- Glass crystal used for temperatures over 220°F.
- Available Fahrenheit or Centigrade.
- Hard rubber carrying case with attached pencil clip.
- Hermetically Sealed.

STANDARD DIAL RANGES

Fahrenheit	°/Div	Centigrade	Div
25 to 125°	1°	0 to 150°	1°
-40 to 160°	2°	0 to 250°	2°
0 to 220°	2°	-10 to 110°	1°
50 to 500°	5°		

The red manually operated reset pointer is turned by the center knob against either the high or low side of the permanent indicating pointer.

The manual reset pointer will move up or down the range remaining at maximum or minimum temperature reading. At a glance gives present temperature together with maximum or minimum temperature since last reset. Avoid uses subject to excessive vibration.

FEATURES

- 18-8 Type 304 stainless steel.
- All welded construction.
- Model MX 325R easy to recalibrate by loosening 3 screws on back.
- Anti-Parallax dial avoids reading errors. White dial with large, black numbers and graduations on raised ring for surest, sharpest, easiest readability.
- Head diameter 3″.
- Rustproof - Dustproof - Leakproof.
- Connection Nut: 1/2″ N.P.T. standard, can be supplied in other sizes at extra charge.
- Stem diameter: 1/4″. Standard stem lengths: 2 1/2″, 4″, 6″, 9″, 12″, 18″, 24″, including threads. Available in stem lengths up to 72″.
- Actuated by super-sensitive bi-metallic Helix Coil - No Liquids.
- Bi-metallic element dampened with silicone for minimum pointer vibration and maximum heat transfer.
- Normal temperature indication accurate within 1% around entire dial range. Max. or Min. temperature indication accurate within 1 1/2%
- over-range protection 50% up to 500°F, 10% above 500°F.
- Extra-heavy glass crystal. Plastic or tempered crystal can be supplied at extra charge.

SURFACE TEMPERATURE BIMETAL DIAL THERMOMETERS

2" diameter dual magnet surface temperature thermometers are designed to measure temperatures of many different surfaces. The base of the unit is placed on the surface to be measured. The sensing element then directly contacts the surface; expansion or contraction of the bimetal element results in dial readout.
Height: 1/2" Accuracy: +/-2% full scale range.

Cat No	Temp Range, Fahrenheit
312F	0 to 250°F
313F	0 to 500°F
314F	50 to 750°F
315F	0 to 150°F
330F	-110 to 160°F

Cat No	Temp Range, Celsius
312C	-20 to 120°C
313C	-20 to 250°C
314C	10 to 400°C
315C	-20 to 65°C
330C	-70 to 70°C

RANGES AND ORDERING INFORMATION

STANDARD DIAL RANGES

Fahrenheit	°/Div	Centigrade	°/Div
-100 to 100°	2°	-75 to 175° (B)	5°
-40 to 160°	2°	-50 to 100°	1°
0 to 140°2°	-50 to 25°	1°	
0 to 180°2°	-10 to 110° (a)	1°	
0 to 220° (a)	2°	0 to 50°	1/2°
20 to 240°	2°	0 to 100°	1°
25 to 125° (a)	1°	0 to 150° (a)	1°
50 to 250°	2°	0 to 200°	2°
50 to 300°	2°	0 to 250° (a)	2°
50 to 400°	5°	0 to 300°	5°
50 to 500° (a)	5°	100 to 400°	5°
150 to 750°	10°		
*200 to 1000°	10°		

** Not recommended for continuous use above 800°F.*

(a) model PT-50 available in these ranges only.

(b) 3" industrial size only.

ORDERING INSTRUCTIONS

Create catalog number by combining the following:
(Model No.) + (Top Range of Thermometer) + ('F' or 'C') + (Stem Length)

Example: GT100R 50 to 500F 8 in. Stem
(GT100R) + (500) + (F) = (8) = GT100R500F8

Example: BC350R 0 to 140F 2-1/2 (2.5") in. Stem
(BC350R) + (140) + (F) = (2.5) = BC350R140F2

**Be sure to specify any unusual application such as overrange, high pressure or corrosive conditions. Give Details.*
** If head is to be subjected to temperatures in excess of 300F, state temperature.*

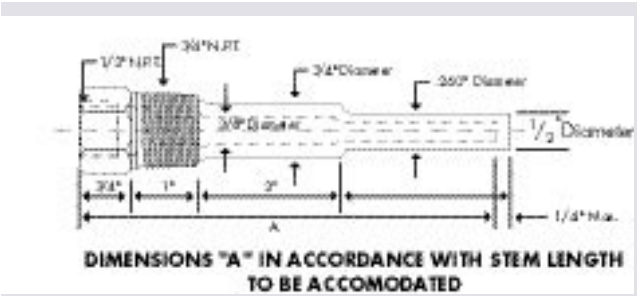
Special Quotation on Request for:

- Special stem lengths
- Plastic crystals (standard on PT50R, GT100R, LT225R)
- Special connection nut sizes.

BIMETAL DIAL THERMOMETER WELLS

- Designed and manufactured to assure a perfect alignment of thermometer and sensing element.
- Industry Standard will fit the thermometers of all manufacturers.
- Machined from solid bar stock-304 Stainless steel.
- high quality of material and workmanship.

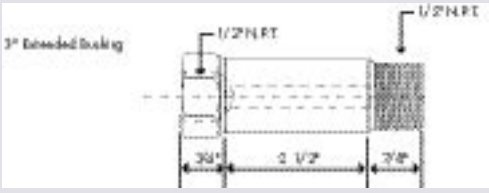
STANDARD THERMOWELL



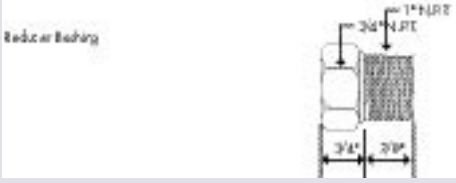
DIMENSIONS "A" IN ACCORDANCE WITH STEM LENGTH TO BE ACCOMODATED

THERMOMETER STEM LENGTH	THERMOWELL # 304 SS 3/4" NTP
2 1/2"	TW02.5
4"	TW04
6"	TW06
9"	TW09
12"	TW12
18"	TW18
24"	TW24
36"	TW36

BUSHINGS FOR THERMOWELLS



CATALOG # TWEX
EXTENSION BUSHING ALLOWS LAGGING CLEARANCE BEHIND THERMOMETER HEAD.



CATALOG # TWRED
REDUCER BUSHING PERMITS INSTALLATION OF 3/4" WELL IN EXISTING 1" NPT OPENING.

COMMENTARY

The non-mercurial thermometers: Just how Good are they?

Spirit thermometers, whether alcohol or mineral spirit filled, have a reputation for being inaccurate which is not entirely deserved. Excellent accuracy and repeatability can be obtained with spirit thermometers provided the manufacturer recognizes the differing characteristics of the media - and how each differs from mercury - and adjusts his manufacturing and calibration procedures accordingly.

EXACTLY WHAT IS.... SPIRIT?

Firstly, the media: the terms 'alcohol' and 'mineral spirits' (as well as toloul, butanol and pentane) are often referred to simply as 'spirit' with little or no distinction. Each material, however, has different characteristics and is appropriate for differing temperature applications. In our opinion, alcohol is an excellent medium for low temperature applications within the temperature limits of approximately -100C to +50C. We use butanol for temperatures below -100C down to approximately -200C. We discontinued the use of Tuloul and Tolune altogether a number of years ago when these items were placed on the suspected carcinogen list. Mineral spirits have a workable range from -30C to +200C under normal circumstances and up to 250C if correctly pressurized.

Secondly, cleanliness: Thermometers in general must be CLEAN to function well and have a long, accurate life. Clean in this context means not just the absence of dirt and visible impurities but also the absence of moisture and oxygen in the sealed instrument.

CALIBRATION (charting the curve of expansion of the medium) IS OF PARAMOUNT IMPORTANCE

Thirdly, proper calibration: Let me use an illustration. Calibration in this context means to subject an ungraduated thermometer to a known, carefully controlled temperature under correct conditions of immersion, allow it to come to equilibrium and mark the stem where the liquid column ends. Performing this procedure over a series of temperatures results in a series of reference marks on the thermometer stem which allows definition and placement of the graduations which make up the scale. Let us suppose the example of a -10/250C range thermometer. De facto industry standardsfor a mercury thermometer would suggest defining the 'points' of 0 and 200C; by interpolation and extrapolation a graduated scale can be devised which will yield satisfactory accuracy assuming:

1) a linear curve of expansion (mercury is very linear) and
2) a perfectly uniform capillary tubing within the thermometer.

MULTIPLE CALIBRATION POINTS ARE NEEDED

KESSLER has always been cautious on assumptions which affect the accuracy of the instrument. Accordingly our procedures call for three, not two, calibrations points on a -10/250C mercury thermometer.

SPECIALIZED GRADUATING EQUIPMENT IS A MUST

A mineral spirits thermometer is entirely another challenge. We have determined that in order to obtain acceptable accuracy, we must calibrate this thermometer at 0, 50, 100, 150, 200 and 250C; spacing of the graduations changes somewhat between each pair of points, while adjusting for the non-linear expansion curve of the medium. This type of adjusted spacing requires that the manufacturer has the graduating equipment needed and that the traditional acid etching procedure for marking the glass be utilized. It would be virtually impossible for a high volume producer who uses decals and/or silk screening procedures for his thermometer markings to produce thermometers of this caliber.

SO WHAT ARE THE NEGATIVES TO CONSIDER?

A weakness, even of well-designed and well-made non-mercurial thermometers, relates to those designed for partial immersion. Since the volume of the capillary must be somewhat larger than that of a similar mercury thermometer, there is more liquid exposed to ambient temperatures which can vary widely. The influence of this ambient temperature can affect the indication of the thermometer, perhaps markedly. Partial immersion thermometers are calibrated anticipating indoor, climate controlled conditions (25C (77F) is often cited as the standard). Consider that partial immersion thermometer being used for outdoor testing during a frigid Alaskan winter or during midday in July in Arizona. Conditions of use are a consideration for ALL partial immersion thermometers; 'spirit' thermometers are simply more sensitive to changes in ambient temperatures that their mercury counterparts.

HOW ABOUT SEPARATIONS IN THE COL-

UMN?

The second downside to spirit thermometers is the tendency for the liquid column to separate. This separation of the liquid column is a condition and NOT a defect. Separations occur primarily in shipping or when stored for long periods of time in a horizontal position. The preferred storage mode is in a vertical position (such as in our thermometer rack) when not in use.

Complete instructions for rejoining separations are included with all **KESSLER** thermometers; as ever, if you experience difficulty, please phone us for no charge technical service.

HOW ABOUT RESPONSE TIME?

A third (potentially negative) characteristic to consider is response time. Typically non-mercurial thermometers take longer to come to equilibrium than their mercury counterparts, normally by a factor of approximately 50%. While this is not significant is most applications, certain procedures which require an extremely quick response time (such as a melt point index) may not be good candidates for use of a non-mercurial thermometer.

It is in consideration of all above concerns that **KESSLER** has defined the following accuracy requirements for our non-mercurial thermometers:

Total Immersion:
+/- one scale division, full scale.

Partial Immersion:
+/- one scale division low scale.

+/- 1.5 scale division high scale

ie. on a -10/250C partial immersion thermometer we would call 0 degrees low scale, 125 degrees mid scale, 250C high scale.

FOR TECHNICAL INFORMATION PLEASE CONSULT FACTORY.

For more information, please contact us:

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