

ASTM THERMOMETERS

KESSLER'S rigid manufacturing tolerances 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.

To order a copy of test method E-77, please use catalog number ASTM E-77.

PARTIAL IMMERSION

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

ACID HEAT

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

CLOUD AND POUR - LOW AND HIGH

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
5C +	1006	Cloud & Pour, High	-38 to 50C	1	230mm	108mm
5F +	1004	Cloud & Pour, High	-36 to 120F	2	230mm	108mm
-	1005	Cloud & Pour, High	-36 to 210F	2	295mm	108mm
-	1007	Cloud & Pour, Low	-70 to 70F	2	230mm	76mm
6C +	1010	Cloud & Pour, Low	-80 to 20C	1	230mm	76mm
6F +	1008	Cloud & Pour, Low	-112 to 70F	2	230mm	76mm

DISTILLATION - LOW AND HIGH

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

PENSKY-MARTENS - LOW AND HIGH

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

OPEN FLASH

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

DENSITY - WIDE RANGE (GRAVITY)

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

LOSS ON HEAT

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

PARAFFIN WAX MELTING POINT

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

SOFTENING POINT

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

+ ITEMS MARKED WITH + AVAILABLE IMMEDIATELY FROM STOCK WITH NIST TRACEABLE CERTIFICATION

Eva Petro-Marine Pte Ltd
2 Jurong East Street 21, #02-185 IMM Building,
Singapore 609601
Tel: (65) 6777 7778 Fax: (65) 6778 9270
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SAYBOLT VISCOSITY

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

ENGLER VISCOSITY

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

STABILITY TEST OF SOLUBLE NITROCELLULOSE

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

TURPENTINE DISTILLATION

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

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
28C +	1097G	Kinematic Viscosity	36.6 to 39.4C	0.05	305mm	total
28F +	1096G	Kinematic Viscosity	97.5 to 102.5F	0.1	305mm	total
29C +	10971	Kinematic Viscosity	52.6 to 55.4C	0.05	305mm	total
29F +	10961	Kinematic Viscosity	127.5 to 132.5F	0.1	305mm	total
30F +	1096M	Kinematic Viscosity	207.5 to 212.5F	0.1	305mm	total

REID VAPOR

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

ANILINE POINT

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

TITER TEST

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
36C	1272	Titer Test	-2 to 65C	0.2	405mm	45mm

SOLVENTS DISTILLATION

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

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

ASTM THERMOMETERS

KINEMATIC VISCOSITY

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
43C	1097B	Kinematic Viscosity	-51.6 to -34C	0.1	417mm	total
43F +	1096B	Kinematic Viscosity	-61 to -29F	0.2	417mm	total
44C +	1096Q	Kinematic Viscosity	18.5 to 21.5C	0.05	305mm	total
44F +	1096E	Kinematic Viscosity	66.5 to 71.5F	0.1	305mm	total
45C +	1096R	Kinematic Viscosity	23.6 to 26.4C	0.05	305mm	total
45F +	1096F	Kinematic Viscosity	74.5 to 79.5F	0.1	305mm	total
46C +	1096S	Kinematic Viscosity	48.6 to 51.4C	0.05	305mm	total
46F +	1096H	Kinematic Viscosity	119.5 to 124.5F	0.1	305mm	total
47C +	1096T	Kinematic Viscosity	58.6 to 61.4C	0.05	305mm	total
47F +	1096K	Kinematic Viscosity	137.5 to 142.5F	0.1	305mm	total
48C	1097L	Kinematic Viscosity	80.6 to 83.4C	0.05	305mm	total
48F	1096L	Kinematic Viscosity	177.5 to 182.5F	0.1	305mm	total

STORMER VISCOSITY

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

GAS CALORIMETER

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

BUTADINE BOILING POINT

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

BENZENE FREEZING POINT

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

CONGEALING POINT

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

BOMB CALORIMETER

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

TAG CLOSED TESTER

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

TANK GAUGING -- REFILL

(FOR COMPLETE UNITS AND CASES SEE GAUGING SECTION PAGE 27)

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
58C	1248	Tank, Refill, Low	-34 to 49C	0.5	300mm	total
58F +	1252	Tank, Refill, Low	-30 to 120F	1	300mm	total
59C +	1253	Tank, Refill, Medium	-18 to 82C	0.5	300mm	total
59F +	1256	Tank, Refill, Medium	0 to 180F	1	300mm	total
60C	1257	Tank, Refill, High	77 to 260C	1	300mm	total
60F +	1260	Tank, Refill, High	170 to 500F	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	Cat No	Application	Temp Range	Div	Length	Immersion
61C +	1053	Petrolatum Melt Pt	32 to 127C	0.2	380mm	79mm
61F +	1052	Petrolatum Melt Pt	90 to 260F	0.5	380mm	79mm

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

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.

*Thermometers 62 through 68 are manufactured of yellowback glass with PERMETCH, KESSLER's brand of permanent pigmentation of thermometer graduations.

* Thermometers 69 and 70 are fabricated of whiteback borosilicate type glass for extended high temperature bulb stability.

* Extensively aged and annealed for minimal scale error and extended life.

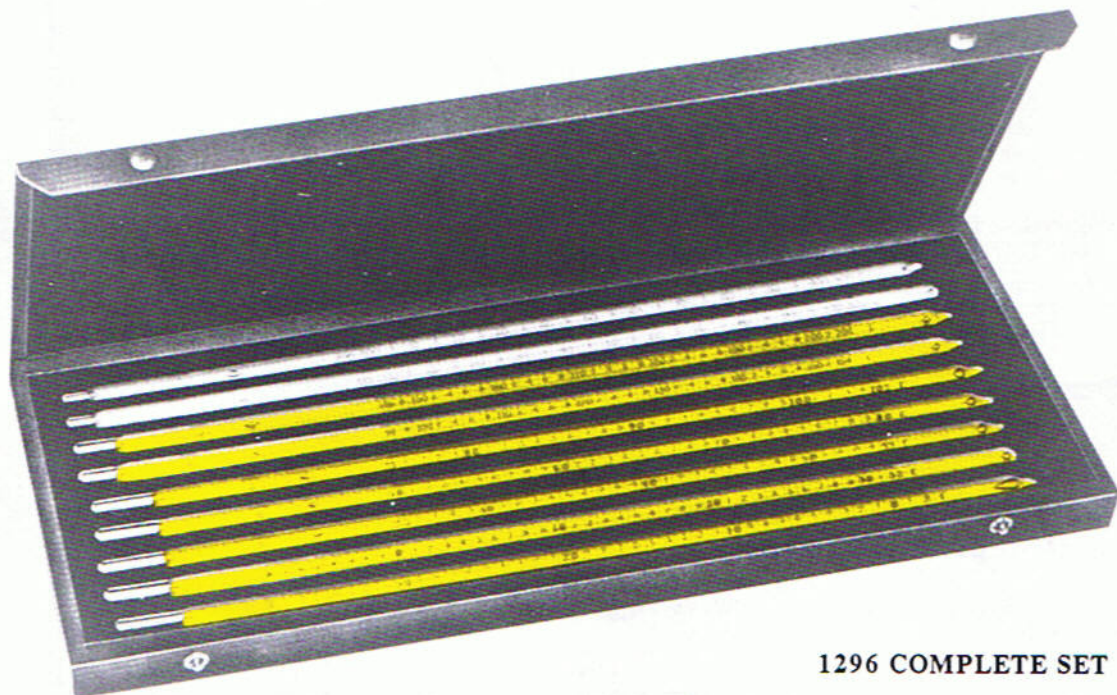
* Auxiliary ice point reference scale for verification of main scale corrections.

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

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

62F	1320	Precision	-36 to 35F	0.2	379mm	total
63F	1322	Precision	18 to 89F	0.2	379mm	total
64F	1324	Precision	77 to 131F	0.2	379mm	total
65F	1326	Precision	122 to 176F	0.2	379mm	total
66F	1328	Precision	167 to 221F	0.2	379mm	total
67F	1330	Precision	203 to 311F	0.5	379mm	total
68F	1332	Precision	293 to 401F	0.5	379mm	total
69F	1334	Precision	383 to 581F	1.0	379mm	total
70F	1336	Precision	563 to 761F	1.0	379mm	total

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



1296 COMPLETE SET

ASTM THERMOMETERS

KESSLER

ASTM PRECISION SERIES PRIMARY REFERENCE STANDARDS CERTIFIED TRACEABLE TO NIST

*Thermometers as on facing page, CERTIFIED NIST (formerly NBS) traceable at the ice point and four points on the main scale, as specified by ASTM E-1. With Certificate of Calibration as shown.

*Ideal for use as primary laboratory reference standards.

ASTM	Cat No	Temperature Range	Corrections given at each temperature				
62C	1300C	-38 to 2C	-37,	-30,	-20,	-10,	0C
63C	1302C	-8 to 32C	-7,	0,	10,	20,	30C
64C	1304C	25 to 55C	0,	25,	35,	45,	55C
65C	1306C	50 to 80C	0,	50,	60,	70,	80C
66C	1308C	75 to 105C	0,	75,	85,	95,	105C
67C	1310C	95 to 155C	0,	100,	110,	130,	150C
68C	1312C	145 to 205C	0,	150,	170,	190,	205C
69C	1314C	195 to 305C	0,	200,	235,	270,	305C
70C	1316C	295 to 405C	0,	300,	335,	370,	400C
62F	1320C	-36 to 35F	-35,	-15,	0,	15,	32F
63F	1322C	18 to 89F	20,	32,	50,	70,	88F
64F	1324C	77 to 131F	32,	80,	95,	115,	130F
65F	1326C	122 to 176F	32,	125,	145,	160,	175F
66F	1328C	167 to 221F	32,	168,	185,	200,	220F
67F	1330C	203 to 311F	32,	205,	240,	275,	310F
68F	1332C	293 to 401F	32,	300,	340,	370,	400F
69F	1334C	383 to 581F	32,	400,	460,	520,	580F
70F	1336C	563 to 761F	32,	570,	640,	700,	760F

CALIBRATION CERTIFICATE

THERMOMETERS

KESSLER

HYDROMETERS

KESSLER INSTRUMENTS, INC.

CALIBRATION SERVICES

PHONE: 516 334 4063

160 HICKS STREET WESTBURY, NY 11590

FAX: 516 334 2689

This is to certify that the instrument listed below has been certified in our calibration laboratory using the most sensitive constant temperature equipment available. This calibration has been performed against National Institute for Standards and Technology (formerly NBS) certified master instruments in accordance with the procedures outlined by ASTM E77-92 and NIST (NBS) special publication 250-23, Liquid-in-glass Thermometer Calibration Services. This calibration meets all requirements of ISO 9000.

TESTED FOR:

ISO 9002 CERTIFIED CALIBRATION PERFORMED

THERMOMETER CAT# 1300C

ASTM E5C

RANGE: 50/80C

DIVISIONS: .1 DEG

IMMERSION: TOTAL

Instrument serial number: 882505

Date certified: 03-01-1999

Marked: KESSLER

RECALIBRATION RECOMMENDED 1 YEAR FROM ABOVE DATE

POINT(S) TESTED

READING OF THIS INSTRUMENT

CORRECTION

0.00C

0.00C

0.00C

50.00C

50.01C

-0.01C

60.00C

60.00C

0.00C

70.00C

69.98C

0.02C

80.00C

79.99C

0.01C

IF NO SIGN IS GIVEN ON THE CORRECTION, THE TRUE READING IS HIGHER THAN THE INDICATED READING.

IF THE SIGN GIVEN IS NEGATIVE, THE TRUE READING IS LOWER THAN THE INDICATED READING.

THE ABOVE READINGS WERE MADE UNDER 10X MAGNIFICATION AND RESOLVED TO THE NEAREST 0.01C

ESTIMATED UNCERTAINTIES IN THE ABOVE CORRECTIONS DO NOT EXCEED $\pm 0.00C$

FOR A DISCUSSION OF ACCURACIES ATTAINABLE WITH SUCH THERMOMETERS SEE NIST (NBS) SPECIAL PUBLICATION 250-23.

ALL TEMPERATURES IN THIS REPORT ARE BASED ON THE INTERNATIONAL TEMPERATURE SCALE OF 1990 (ITS-90)

PLEASE REFER TO ATTACHED SHEET FOR PROPER USAGE OF THIS THERMOMETER REGARDING IMMERSION.

SERIAL AND TEST NUMBERS OF KESSLER MADE, NATIONAL INSTITUTE OF STANDARDS & TECHNOLOGY CERTIFIED LIQUID-IN-GLASS THERMOMETERS REFERENCED IN CERTIFICATION OF THE INSTRUMENT LISTED ABOVE: (SHOWN AS STANDARD, TEST#)

769563, 217568 791544, 220391 791544, 220391 75A227, 219683 75A227, 219683

CALIBRATION TECHNICIAN: Barbara Plaza CALIBRATION SUPERVISOR: Frank Burghardt

KESSLER INSTRUMENTS, INC.

JANE WATKINS

Quality Control Manager

6/1/99

Test Number: 28020

Date completed: 03-01-1999

Available individually or in sets.

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 1296C

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 1298C

OIL IN WAX

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

KINEMATIC VISCOSITY

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

COOLANT FREEZING POINT

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

SAYBOLT VISCOSITY

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

FUEL RATING

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

VEGETABLE OIL FLASH

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

SOLIDIFICATION POINT

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

TANK GAUGING -- REFILL

(FOR COMPLETE UNITS AND CASES SEE GAUGING SECTION PAGE 27)

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

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

ASTM THERMOMETERS

KESSLER

WEATHERING TEST

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

SOLIDIFICATION POINT

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

SOLVENTS DISTILLATION

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

SAYBOLT VISCOSITY

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

KINEMATIC VISCOSITY

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

TAR ACID DISTILLATION

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

SOLIDIFICATION POINT OF BENZENE

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
112C	+ 1286	Solidification Benzene	4 to 6C	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 175C	0.5	406mm	total
113F	1288	Bit. Mat. Sftn. Pt.	30 to 350F	1	406mm	total

AVIATION FUELS FREEZING POINT

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

BOMB CALORIMETER

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

KINEMATIC VISCOSITY

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

COOLANT FREEZING POINT

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

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



1286

1290

KINEMATIC VISCOSITY

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

BROOKFIELD VISCOSITY

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

KINEMATIC VISCOSITY

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

TANK GAUGING -- REFILL

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

CALORIMETERS

ASTM	Cat No	Application	Temp Range	Div	Length	Immersion
--	1338	Emerson	18 to 32C	0.02	600mm	total
--	1340	Emerson	18 to 28C	0.01	600mm	total
--	1342	Junker Gas Inlet	45 to 100F	0.1	18"	total
--	1344	Junker Gas Outlet	60 to 110F	0.1	18"	total
--	1346	Parr	66 to 105F	0.05	24"	total
--	1348	Sargent Gas Inlet/Out	30 to 110F	0.1	18"	total
--	1350	Hortvet Cryoscope	-2 to +1C	0.01	630mm	total

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 care for extended accuracy 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	-35 to 50C	1	305mm
2050T	+ -20 to 110C	1	305mm
2052T	-20 to 150C	1	305mm
2054T	-10 to 210C	1	381mm
2056T	-10 to 250C	1	381mm
2058T	+ -10 to 310C	1	381mm
2060T	-10 to 360C	1	406mm
2062T	-10 to 400C	1	406mm
2064T*	-10 to 510C	2	406mm

76MM IMMERSION

Cat No	Range	Div	Length
2048	-35 to 50C	1	305mm
2050	+ -20 to 110C	1	305mm
2052	-20 to 150C	1	305mm
2053	-5 to 150C	0.5	381mm
2054	+ -10 to 210C	1	381mm
2056	-10 to 250C	1	381mm
2058	-10 to 310C	1	381mm
2060	-10 to 360C	1	406mm
2062	-10 to 400C	1	406mm
2064*	-10 to 510C	2	406mm

* Fabricated of White Back Borosilicate glass for accuracy and stability.

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

THERMOMETERS

KESSLER

MERCURY THERMOMETERS - yellow glass (continued)

FAHRENHEIT RANGES

TOTAL IMMERSION				3" IMMERSION			
Cat No	Range	Div	Length	Cat No	Range	Div	Length
2000T	0 to 120F	1	12"	2000	0 to 120F	1	12"
2001T	-30 to 120F	1	12"	2001	-30 to 120F	1	12"
2002T	0 to 150F	1	12"	2002	0 to 150F	1	12"
2003T	-4 to 230F	2	12"	2003	-4 to 230F	2	12"
2004T	30 to 220F	1	15"	2004 +	30 to 220F	1	15"
2005T	0 to 300F	2	12"	2005	0 to 300F	2	12"
2006T	30 to 300F	1	15"	2006 +	30 to 300F	1	15"
2007T	0 to 400F	2	12"	2007	0 to 400F	2	12"
2008T	30 to 400F	2	15"	2008	30 to 400F	2	15"
2010T	30 to 500F	2	15"	2010	30 to 500F	2	15"
2012T	30 to 600F	2	15"	2012	30 to 600F	2	15"
2016T	30 to 750F	2	16"	2016	30 to 750F	2	16"
2022T*	30 to 1000F	5	16"	2022*	30 to 1000F	5	16"

* Fabricated of White Back Borosilicate for accuracy and stability.

DUAL SCALE - CELSIUS & FAHRENHEIT

TOTAL IMMERSION				3" (76MM) IMMERSION			
Cat No	Range	Div	Length	Cat No	Range	Div	Length
3050T	-20/110C & 0/230F	1C 2F	12"	3050	-20/110C & 0/230F	1C 2F	12"
3052T	-20/150C & 0/300F	1C 2F	12"	3052	-20/150C & 0/300F	1C 2F	12"
3056T	-10/260C & 30/500F	1C 2F	15"	3056	-10/260C & 30/500F	1C 2F	15"
3060T	-10/360C & 30/700F	1C 2F	16"	3060	-10/360C & 30/700F	1C 2F	16"
3062T	-10/400C & 30/750F	1C 2F	16"	3062	-10/400C & 30/750F	1C 2F	16"

NON-MERCURIAL SAFETY LAB THERMOMETERS

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 mineral spirits filling. See article located in back of catalog "The New Non-Mercurial Thermometers - Just How Good are They?"

NON-MERCURIAL CELSIUS RANGES

Cat No	Medium	Glass	Temp Range	Div	Length	Immersion
3136	Pentane	White	-200 to 30C	1	350mm	Total
3134	Alcohol	White	-100 to 50C	1	305mm	Total
3134-3	Alcohol	White	-100 to 50C	1	305mm	76mm
3130	Alcohol	White	-50 to 50C	1	305mm	Total
3130-3	Alcohol	White	-50 to 50C	1	305mm	76mm
3300T	Alcohol	White	-35 to 50C	1	305mm	Total
3300	Alcohol	White	-35 to 50C	1	305mm	76mm
3302T	Min spirits	White	-20 to 110C	1	305mm	Total
3302	Min spirits	White	-20 to 110C	1	305mm	76mm
3304T	Min spirits	White	-20 to 150C	1	305mm	Total
3304	Min spirits	White	-20 to 150C	1	305mm	76mm
3306T	Min spirits	White	-10 to 210C	1	381mm	Total
3306	Min spirits	White	-10 to 210C	1	381mm	76mm
3308	Min spirits	White	-10 to 250C	1	381mm	76mm

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

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3130-3 2056T

TANK GAUGING

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 - (see photo 1254) Long accepted favorite for gauging as specified in ASTM Method D270.

MARINE CASE - (see photo) 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 - (see photo) 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 heat 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	WITH STANDARD CASE	WITH MARINE CASE	WITH TANKMASTER CASE	REFILL ONLY
58F	-30	to 120F	1	1250	1252CM	1252TM	1252
97F	0	to 120F	1	1262C	1262CM	1262TM	1262
	0	to 120F	0.5	1263C	1263CM	1263TM	1263
59F	0	to 180F	1	1254	1256CM	1256TM	1256
98F	60	to 180F	1	1264C	1264CM	1264TM	1264
	60	to 180F	0.5	1265C	1265CM	1265TM	1265
	0	to 220F	1	1240C	1240CM	1240TM	1240
130F	20	to 220F	1	1261C	1261CM	1261TM	1261
	20	to 260F	1	1294C	1294CM	1294TM	1294
60F	170	to 500F	2	1258	1260CM	1260TM	1260

CELSIUS RANGES YELLOW LENS TUBING STANDARD*

ASTM	Temp	Range	Div	WITH STANDARD CASE	WITH MARINE CASE	WITH TANKMASTER CASE	REFILL ONLY
	-50	to 50C	0.5	1247C	1247CM	1247TM	1247
58C	-34	to 49C	0.5	1248C	1248CM	1248TM	1248
97C	-18	to 49C	0.5	1244C	1244CM	1244TM	1244
98C	16	to 82C	0.5	1246C	1246CM	1246TM	1246
59C	-18	to 82C	0.5	1253C	1253CM	1253TM	1253
130C	-7	to 110C	0.5	1271C	1271CM	1271TM	1271
	0	to 150C	1	1242C	1242CM	1242TM	1242
60C	77	to 260C	1	1257C	1257CM	N/A	1257

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

CASES ONLY: STANDARD WOODBACK CASE Cat No 1259

MARINE CASE Cat No 1259CM

TANKMASTER CASE Cat No 1259TM

SMALL CUP & WOODBACK TANK THERMOMETERS

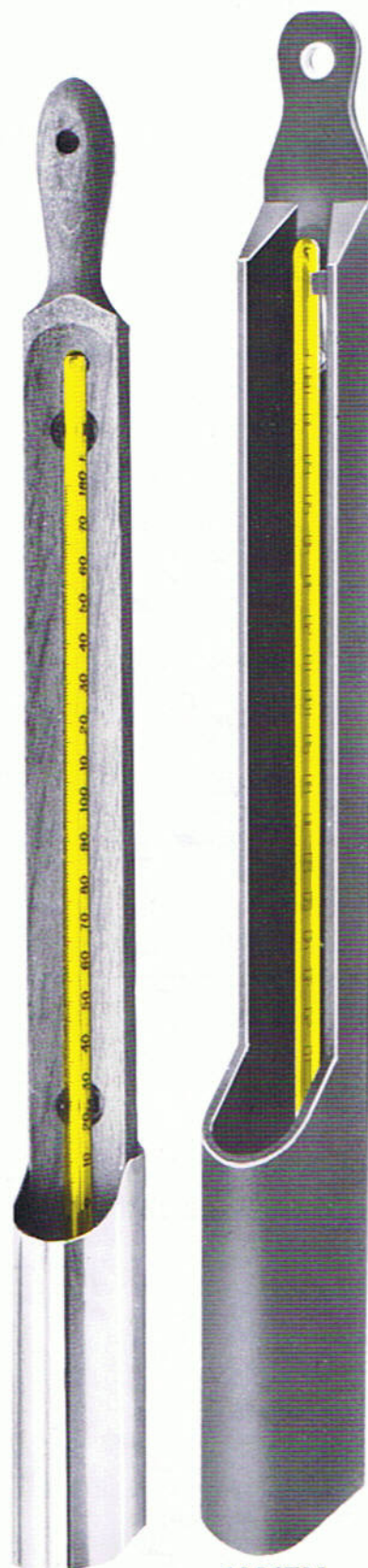
Similar in appearance and construction to ASTM thermometers above but with smaller cup, shorter overall length. Narrow OD allows passage through 1-1/2 fillpipe.

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



1254

1256TM

TEMPERATURE CONVERSION TABLE

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	-0.6	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	138	280	536	343	650	1202	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:

- To convert Fahrenheit readings to Centigrade:
Subtract 32 degrees and divide the remainder by 1.8.
- To convert Centigrade readings to Fahrenheit:
Multiply by 1.8 and add 32 degrees to the result.