

# DENSITY, RELATIVE DENSITY (SPECIFIC GRAVITY), OR API GRAVITY

## Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method

### ASTM Hydrometers

For density, relative density (specific gravity) or API gravity determination of crude petroleum, liquid petroleum products and mixtures of petroleum and non-petroleum products. For density of LPG and light hydrocarbons refer to page 103.

#### Specifications

Conforming to the specifications of: ASTM E100

#### Applicable Test Method Standards:

ASTM D287, D1298, D6074, D6158;

API MPMS Chapter 9.1; IP 160; ISO 3675; DIN 51757

### API Gravity Hydrometers

Standard temperature 60°F, subdivisions 0.1° API, length 330mm

Catalog No.	ASTM Hydrometer No.	Nominal API Gravity Range, deg.
251-000-01H	1H	-1 to +11
251-000-02H	2H	9 to 21
251-000-03H	3H	19 to 31
251-000-04H	4H	29 to 41
251-000-05H	5H	39 to 51
251-000-06H	6H	49 to 61
251-000-07H	7H	59 to 71
251-000-08H	8H	69 to 81
251-000-09H	9H	79 to 91
251-000-10H	10H	89 to 101

### Specific Gravity Hydrometers

Standard temperature 60/60°F, subdivisions 0.0005, length 330mm

Catalog No.	ASTM Hydrometer No.	Nominal Specific Gravity Range
251-000-82H	82H	0.650 to 0.700
251-000-83H	83H	0.700 to 0.750
251-000-84H	84H	0.750 to 0.800
251-000-85H	85H	0.800 to 0.850
251-000-86H	86H	0.850 to 0.900
251-000-87H	87H	0.900 to 0.950
251-000-88H	88H	0.950 to 1.000
251-000-89H	89H	1.000 to 1.050
251-000-90H	90H	1.050 to 1.100

*Calibrated hydrometers and thermohydrometers are available from Koehler with an ISO/IEC 17025 and ANSI/NCCL Z-540-1 Report of Calibration.*

*When inquiring about calibrated hydrometers and thermohydrometers, please refer to the catalog number for the corresponding hydrometer/thermohydrometer and replace the middle three zeros in the catalog number with 004. Example: 251-000-01H API Gravity Hydrometer would be 251-004-01H Certified API Gravity Hydrometer.*



### API Gravity Hydrometers

Standard temperature 60°F, subdivisions, 0.1° API, length 330mm

Catalog No.	ASTM Hydrometer No.	Nominal API Gravity Range, deg.
251-000-21H	21H	0 to 6
251-000-22H	22H	5 to 11
251-000-23H	23H	10 to 16
251-000-24H	24H	15 to 21
251-000-25H	25H	20 to 26
251-000-26H	26H	25 to 31
251-000-27H	27H	30 to 36
251-000-28H	28H	35 to 41
251-000-29H	29H	40 to 46
251-000-30H	30H	45 to 51
251-000-31H	31H	50 to 56
251-000-32H	32H	55 to 61
251-000-33H	33H	60 to 66
251-000-34H	34H	65 to 71
251-000-35H	35H	70 to 76
251-000-36H	36H	75 to 81
251-000-37H	37H	80 to 86
251-000-38H	38H	85 to 91
251-000-39H	39H	90 to 96
251-000-40H	40H	95 to 101

### API Gravity Thermohydrometers - Thermometer in Body

Standard temperature 60°F, subdivisions 0.1° API, length 380mm, thermometer scale °F 0-150 (designation L), 30 to 180 (designation M), 60 to 220 (designation H)

Catalog No.	ASTM Thermohydrometer No.	Nominal API Gravity Range, deg.
251-000-51HH	51HH	-1 to 11
251-000-51HL	51HL	-1 to 11
251-000-52HH	52HH	9 to 21
251-000-52HL	52HL	9 to 21
251-000-53HM	53HM	19 to 31
251-000-53HL	53HL	19 to 31
251-000-54HM	54HM	29 to 41
251-000-54HL	54HL	29 to 41
251-000-55HL	55HL	39 to 51
251-000-56HL	56HL	49 to 61
251-000-57HL	57HL	59 to 71
251-000-58HL	58HL	69 to 81
251-000-59HL	59HL	79 to 91
251-000-60HL	60HL	89 to 101

### API Gravity Thermohydrometers - Thermometer in Stem

Standard temperature 60°F, subdivisions 0.1° API, length 380mm, temperature scale °F 30-220

Catalog No.	ASTM Thermohydrometer No.	Nominal API Gravity Range, deg.
251-000-71H	71H	-1 to 11
251-000-72H	72H	9 to 21
251-000-73H	73H	19 to 31
251-000-74H	74H	29 to 41

# DENSITY, RELATIVE DENSITY (SPECIFIC GRAVITY), OR API GRAVITY

## Specific Gravity Hydrometers

Standard temperature 60/60°F, subdivisions 0.001 length 260mm

Catalog No.	ASTM Hydrometer No.	Nominal Specific Gravity Range
251-000-102H	102H	0.650 to 0.700
251-000-103H	103H	0.700 to 0.750
251-000-104H	104H	0.750 to 0.800
251-000-105H	105H	0.800 to 0.850
251-000-106H	106H	0.850 to 0.900
251-000-107H	107H	0.900 to 0.950
251-000-108H	108H	0.950 to 1.000
251-000-125H	125H	1.000 to 1.050
251-000-126H	126H	1.050 to 1.100
251-000-127H	127H	1.100 to 1.150
251-000-128H	128H	1.150 to 1.200
251-000-129H	129H	1.200 to 1.250
251-000-130H	130H	1.250 to 1.300
251-000-131H	131H	1.300 to 1.350
251-000-132H	132H	1.350 to 1.400
251-000-133H	133H	1.400 to 1.450
251-000-134H	134H	1.450 to 1.500
251-000-135H	135H	1.500 to 1.550
251-000-136H	136H	1.550 to 1.600
251-000-137H	137H	1.600 to 1.650
251-000-138H	138H	1.650 to 1.700
251-000-139H	139H	1.700 to 1.750
251-000-140H	140H	1.750 to 1.800
251-000-141H	141H	1.800 to 1.850

## ASTM Metric Thermohydrometers

Standard temperature 15°C, subdivisions 0.5kg/m<sup>3</sup>, length 380mm, thermometer scale °C: -20 to +65 (designation L), 0 to 85 (designation M), 20 to 105 (designation H).

Catalog No.	ASTM Thermohydrometer No.	Density, Range kg/m <sup>3</sup>
251-000-300HL	300HL	600 to 650
251-000-301HL	301HL	650 to 700
251-000-302HL	302HL	700 to 750
251-000-302HM	302HM	700 to 750
251-000-303HL	303HL	750 to 800
251-000-303HM	303HM	750 to 800
251-000-304HL	304HL	800 to 850
251-000-304HM	304HM	800 to 850
251-000-305HL	305HL	850 to 900
251-000-305HM	305HM	850 to 900
251-000-306HL	306HL	900 to 950
251-000-306HM	306HM	900 to 950
251-000-307HL	307HL	950 to 1000
251-000-307HH	307HH	950 to 1000
251-000-308HH	308HH	1000 to 1050
251-000-308HL	308HL	1000 to 1050
251-000-309HH	309HH	1050 to 1100
251-000-309HL	309HL	1050 to 1100

## Hydrometer Cylinders\*

- Wide base for maximum stability
- Convenient pour-out lip
- Choice of glass or metal construction



K26300 Brass Hydrometer Cylinder

## Ordering Information

Catalog No.	Construction	Dimensions dia.xh.
K26300	Brass	2½x12" (64x305mm)
K26390	Brass	2x15" (51x381mm)
332-002-011	Glass	2x15½" (51x394mm)

\*Not suitable for use with K26400 series baths

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For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.

## DENSITY, RELATIVE DENSITY (SPECIFIC GRAVITY), OR API GRAVITY

### Constant Temperature Hydrometer Bath

- Holds 12 hydrometer cylinders
  - Can be used for Reid Vapor Pressure immersion type cylinders
  - Conforms to ASTM D323, D1298, D6074, D6158 and related specifications
- A versatile constant temperature bath designed for density/gravity determinations of petroleum products at temperatures of up to 195°F (90°C), and also for Reid Vapor Pressure determinations using immersion bombs. Microprocessor PID control provides quick temperature stabilization without overshoot and the unit is protected by an overtemperature control circuit that interrupts power should bath temperature exceed a programmed cut-off point. Dual LED displays provide actual and setpoint temperature values in °C/°F. *Communications software (RS232, etc.), ramp-to-set and other enhanced features are available as extra cost options. Contact your Koehler representative for information.*

*Also available—Special bath to accommodate both ASTM D323 (Vapor Pressure of Petroleum Products—Reid Method listed on page 93) and D942 (Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method listed on pages 152-153), as well as D525 (Oxidation Stability of Gasoline—Induction Method listed on pages 81-82). Please contact a Koehler Customer Service representative for additional information.*

**Dimensions** lwxh,in.(cm)  
30x14x28 (76x36x71)  
Net Weight: 64 Lbs (29.0kg)

**Shipping Information**  
Shipping Weight: 118 lbs (53.5kg)  
Dimensions: 11.4 Cu. ft.

### Specifications

Capacity: twelve (12) hydrometer cylinders (without base)  
or Reid Vapor Pressure one-opening type bombs  
Temperature Range: ambient to 250°F (121°C)  
Temperature Control Stability: ±0.2°F (±0.17°C)  
Heater Range: 0-2500W  
Bath Medium: 19 gal (71.9L) water  
Electrical Requirements: **CE**  
115V 60Hz, Single Phase, 22A  
230V 50/60Hz, Single Phase, 11A

### Ordering Information

Catalog No.		Order Qty
<b>K26400</b>	Constant Temperature Hydrometer Bath, 115V 60Hz	1
<b>K26490</b>	Constant Temperature Hydrometer Bath, 230V 50/60Hz	
<b>Accessories</b>		
<b>K26410</b>	Hydrometer Cylinder Borosilicate glass, 15½"lx2"dia. with 2½" lip	12
<b>250-000-61F</b>	ASTM 61F Thermometer Range: 90 to 260°F	1
<b>250-000-61C</b>	ASTM 61C Thermometer Range: 32 to 127°C	

*For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.*

## DENSITY, RELATIVE DENSITY (SPECIFIC GRAVITY), OR API GRAVITY

### Constant Temperature Hydrometer Bath

- Accommodates one standard 2"x15" (51x380mm) hydrometer cylinder with base
- Compact design saves space

Thermostatically controlled water bath with 500W copper immersion heater and hydraulic thermoregulator for operation at temperatures of up to 210 ±2°F (99±1°C). Holds one 2"x15" (51x381mm) hydrometer jar — top of jar extends 1½" (38mm) above the top of the bath for easy viewing of the hydrometer. Insulated double-wall construction with stainless steel tank and shelf and finished steel exterior. Has variable speed control for magnetic stirrer, temperature control dial, and on/off switches for motor and power.

### Specifications

Temperature Range: Ambient to 210°F (99°C)  
Temperature Control Stability: ±2°F (±1°C)  
Bath Medium: 2 gal (7.57L) water  
Electrical Requirements: **CE**  
115V 60Hz, Single Phase, 4.3A  
230V 50/60Hz, Single Phase, 2.2A

**Dimensions** dia.xh.(cm)  
Bath Interior: 6x16½(15x42)  
Overall: 9x22 (23x56)  
Net Weight: 20 lbs (9.1kg)

**Shipping Information**  
Shipping Weight: 35 lbs (15.9kg)  
Dimensions: 5 Cu. ft.

### Ordering Information

Catalog No.	
<b>K26200</b>	Constant Temperature Hydrometer Bath, 115V 60Hz
<b>K26290</b>	Constant Temperature Hydrometer Bath, 230V 50/60Hz

