# Main features

**1|** Supplied in a plastic case with sample pipettes, carrying case, screwdriver, blinkers and rubber handle.

**2|** A refractometer is a measuring instrument based on the refractive index of light passing through a sample placed on a prism. The Zuzi pocket refractometers with LED light allow you to instantly measure the concentration of your samples over a wide range of scales. You can measure your samples in a wide range of applications by determining sugar concentration, salinity or alcohol percentage, unaffected by ambient light, thanks to the built-in LED.

**3|** The portable light refractometer models are constructed with a robust metal body and a rubber handle and eyepiece. All have automatic temperature compensation between 10 and 30° C. In addition, they include the necessary elements for calibration: distilled water, sugar solution or test tube with naphthalene bromine.

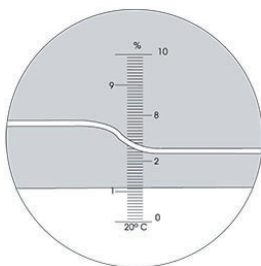**4|** Calibration is performed by zeroing with distilled water.

Plastic casing

Distilled water

Screwdriver

Sample pipette

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#REFRACTOMETERS

AUXILAB
Material de laboratorio
Laboratory supplies

labotienda
material de laboratorio

REFRACTOMETERS
[H] OPTICAL EQUIPMENTS

Note: manufacturer reserves the right to modify features and photographies of the goods

## Resume chart of refractometers

| Type | No CAT | CAT (10-30ºC) | LED | Range | Accuracy | Calibration |
|---|---|---|---|---|---|---|
| BRIX | | HPD012 | | 0 - 10% | 0.1 % | Distilled water |
| | | HPD013 | HPD026 | 0 - 20% | 0.1 % | Distilled water |
| | | HPD014 | HPD027 | 0 - 32% | 0.2 % | Distilled water |
| | | HPD015 | HPD028 | 28 - 62% | 0.2 % | Solution 28%sugar/water |
| | | HPD016 | HPD029 | 45 - 82% | 0.5 % | Solution 45%sugar/water |
| | | HPD017 | | 58-92% | 0.5 % | Solution 58%sugar/water |
| | | HPD018 | HPD030 | 58 - 92% Bx | 0.5 % Bx | Bromonaphtalene |
| | | | | 38 - 43 º Bé | 0.5 º Bé | + test piece |
| | | | | 12 - 27% Water | 0.5 % Water | |
| | | HPD019 | | 0 - 50% | 0.5 % | Distilled water |
| | | HPD020 | | 0 - 80% | 0.5 % | Distilled water |
| | | HPD010 | | 0 - 42% Bx | 0,2 % | Distilled water |
| | | | | 42-71% Bx | | |
| | | | | 41-90 % Bx | | |
| | | HPD011 | | 0 - 90% Bx | 0.5 % | Distilled water |
| SALINITY | | HPF004 | | 0 - 100‰ Salt | 1‰ | Distilled water |
| | | | | 1000-1070 g/mL | 0.001 g/mL | |
| | | HPF005 | | 0 - 28% Salt | 0.2 % | Distilled water |
| | | HPF007 | HPF010 | 0 - 100‰ Salt | 1 ‰ | Distilled water |
| | | | | 0 - 10% Bx | 0.1 % | |
| | | | | 1000-1070 g/mL | 0.001 g/mL | |
| | | HPF012 | | 0-4% Salt (0-40ppt) | ±0,1% Salt (1ppt) | |
| | | | | 1,000-1,030sg | ±0,001sg | |
| | | HPF013 | | -4% Salt (20-40ppt) | 0,1% Salt (1ppt) | |
| | | | | 1,015-1,030sg | ±0,001sg | |
| CLINICAL | | HPM002 | | 0 - 12 g/dl  Serum protein | 0.2 % g/dL | Distilled water |
| | | | | 1.000 - 1.050 Specific weight (sg) | 0.002 sg | |
| | | | | 1.333 - 1.360 nD (refractive index) | 0.005 nD | |
| VETERINARY | HPM003 | | | 2 - 14 g/100 mL Serum protein | 0.1 | |
| | | | | 1.000 - 1.060 Specific weight | 0.001 | |
| MUSTS AND SPIRITS | | HPP014 | | 0 - 80% Alcohol (w/w) | 1 % | Distilled water |
| | | HPH003 | HPH014 | 0 - 25% Alcohol probable | 0.2 % Alcohol probable | |
| | | | | 0-22º Bé | 0.2º Bé | Distilled water |
| | | | | 0-40% Bx | 1 % Bx | |
| | | HPH002 | HPH013 | 0 - 25% Alcohol probable | 0.2 % Alcohol probable | Distilled water |
| | | HPP017 | | 0-32% Brix | ±0,2% Brix | |
| | | | | Gravity must thickness: 1,000-1,130 | ±0,001 | |
| | | HPP018 | | 0-18 Plato | ±0,1 Plato | |
| FRUIT JUICE | | HPH015 | | 0-190º Oe | ±2º | |
| | | | | 0-38º KMW Babo | ±0,4º | |
| | | | | 0-44% Brix sacch | ±0,4% | |
| MILK | | HPP002 | | -1%-20% | 0.2% | Distilled water |
| | | HPP019 | | 0-25% Soya | ±0,5% Soya | |
| | | | | 0-32% Brix | ±0,2% Brix | |
| BATTERIES AND FREEZES | | HPK002 | | -50 a 0 ºC (EG/PG) | 5 ºC | Distilled water |
| | | | | 1.15 - 1.30 sg (Batteries | 0.01 sg | |
| | | | | -40 a 0 ºC (Cleaner) | 5ºC | |
| | | HPK004 | | -50 a 0 ºC (EG/PG) | 5 ºC | Distilled water |
| | | | | 1.15 - 1.30 sg (Batteries) | 0,01 kg/L | |
| | | | | -40 a 0 ºC (Cleaner) | 5º C | |
| | | HPK005 | | -50 a 0 ºC (EG/PG) | 5 ºC | Distilled water |
| | | | | 1.10 – 1.40 Kg/L (Batteries) | 0.01 Kg/L | |
| | | | | -40 a 0 ºC (Cleaner) | 10ºC | |
| | HPK008 | | | -50 a 0 ºC (EG/PG) | 5 ºC | Distilled water |
| | | | | 1.10 – 1.40 Kg/L (Batteries) | 0.01 Kg/L | |
| | | | | 30-35% (Cleaner) | 10ºC | |
| REFRACTIVE INDEX | HPP003 | | | 1.333-1.400 nD | 0.0005 nD | |
| | | | | 1.400-1.470 nD | | |
| | | | | 1.470-1520 nD | | |

# 0-10% Brix

1| Suitable for samples with low concentration of dissolved solids (lower than 10%) as
for example tomatoes, low concentrated juices and industrila oils.
2| Calibration is performed with distilled water adjusting to zero.

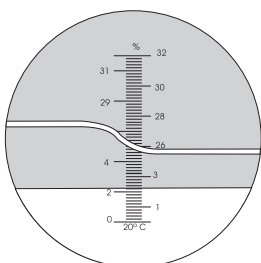| Code | Range | Accuracy |
| --- | --- | --- |
| HPD012 | 0-10% Bx | 0.1% |
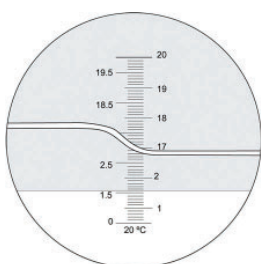
# 0-20% Brix

1| Suitable for low concentrations (juices of fruits, alcohol-free beverages) except grape juice.
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
| --- | --- | --- |
| HPD013 | 0-20% Bx | 0.1% |
| HPD026* | 0-20% Bx | 0.1% |

*LED refractometer

# 0-32% Brix

1| Suitable for low concentrations usually used for fruits, juices, beverages, dairy products, milk products, industrial oils…
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
| --- | --- | --- |
| HPD014 | 0-32% Bx | 0.2% |
| HPD027* | 0-32% Bx | 0.2% |

*LED refractometer
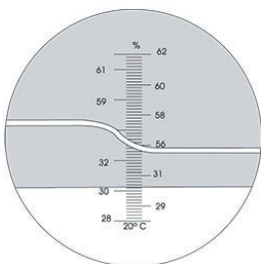
# 28-62% Brix

1| Suitable for low concentrations usually used for fruits, juices, beverages, dairy products, milk products, industrial oils…
2| Calibration is performed with a 28% sugar solution in distilled water, that means 28 g of sugar in a 100 ml of solution.

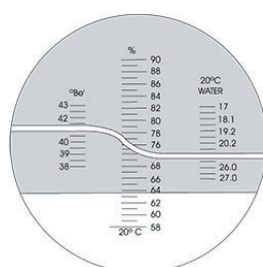| Code | Range | Accuracy |
| --- | --- | --- |
| HPD015 | 28-62% Bx | 0.2% |
| HPD028* | 28-62% Bx | 0.2% |

*LED refractometer
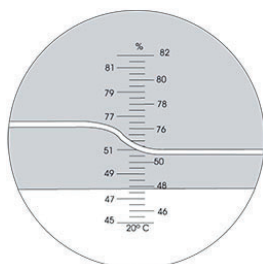
# 45-82% Brix

1| Model suitable for high concentration as for example condensed milk, liquid caramel, high concentrated juices, jams,etc.

2| Calibration is performed with a 45% sugar solution in distilled water, that means 45 g of sugar in a 100 ml of solution.

| Code | Range | Accuracy |
|---|---|---|
| HPD016 | 45-82% Bx | 0.5% |
| HPD029* | 45-82% Bx | 0.5% |

*LED refractometer*

# 58-92% Brix

1| Model for high concentrations of sugar in honey.

2| Calibration is performed with 58% sugar solution in distilled water, that means 58 g of sugar in a 100 ml of solution.

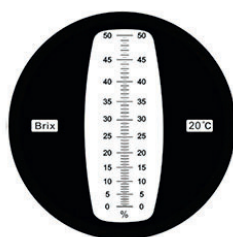| Code | Range | Accuracy |
|---|---|---|
| HPD017 | 58-92% Bx | 0.5% |
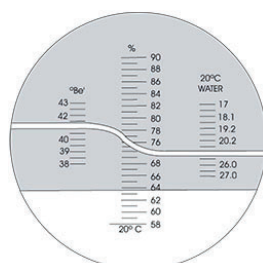
# 58-92% Brix | 38-43 º Baume | 12-27% Water

1| This refractometer is specially suited for analyzing the three main values in honey;

sugar content, Baumé degrees and water content.

2| Calibration is performed with a test piece and bromonaphtalene, both included.

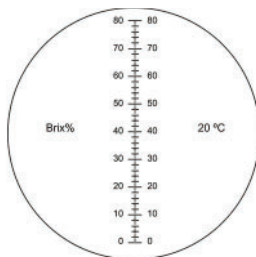| Code | Range | Accuracy |
|---|---|---|
| HPD018 | 58-92% Bx | 0.5% |
| | 38-43 ºBé | 0.5º |
| | 12-27% Water | 0.5% |
| HPD030* | 58-92% Bx | 0.5% |
| | 38-43 ºBé | 0.5º |
| | 12-27% Water | 0.5% |

*LED refractometer*

# 0-50% Brix

1| Model used for concentrated solutions of grape juice.

2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
|---|---|---|
| HPD019 | 0-50% Bx | 0.5% |

# 0-80% Brix | 0-80% Brix (2 escalas)

1| This refractometer has a wide range 0-80% Brix, suitable for analyzing very different types of samples.
2| The line in this model is in blue or white.
3| It is used for fruit juices, alcohol-free beverages or even industrial oils.
4| Calibration of models HPD009 and HPD020 is performed with distilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPD020 | 0-80% Bx | 0.5% |

# 0-90% Brix | 0-90% Brix (3 scales)

1| Has a wide range 0-80% Brix, it allows the measurement of very different types of samples.
2| Calibration is performed with distilled water (model HPD011)

| Referencia | Rango | Precisión | CAT (10-30ºC) |
|------------|-------|-----------|---------------|
| HPD011 | 0-90% Bx | 0.5% | Sí |
| HPD010 | 0-90% Bx (0-42% ; 42-71%; 41-90%) | 0.2% | Sí |
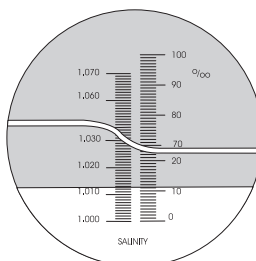
# 0-100‰ Salt

1| Refractómetro de Accuracypara concentraciones medias de Salt bien en agua de mar natural o artificial, preparados alimenticios, etc. Dispone de escala de peso específico.
2| La calibración se realiza conDistilled water.

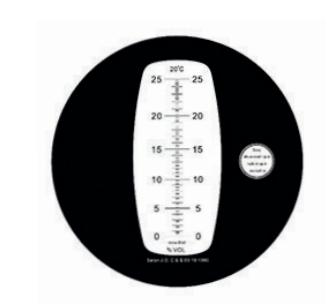| Code | Range | Accuracy |
|------|-------|----------|
| HPF004 | 0-100‰ Salt 1000-1070 g/L | 1‰ 0.001 g/L |
| HPF007 | 0-100‰ Salt 0-10% Bx;1000-1070 g/L | 1‰ 0.1%; 0.001 |
| HPF010* | 0-100‰ Salt 1000-1070 g/L | 1‰ 0.001 g/L |

*LED refractometer*
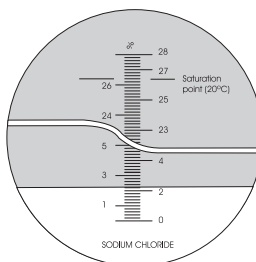
# 0-28% Salt

1| Suitable to measure Saltt concentration of sea water, fish farms, aquariums, brines…
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPF005 | 0-28% Salt | 0.2% |

# 0-4% and 2-4% Salt (2 scales)

| Code | Range | Resolution | Accuracy |
|------|-------|------------|----------|
| HPF012 | 0-4% Salt (0-40ppt) | 0,1% Salt (1ppt) | ±0,1% Salt(1ppt) |
| | 1,000-1,030sg | 0,001sg | ±0,001sg |
| HPF013 | 2-4% Salt (20-40ppt) | 0,1% Salt (1ppt) | ±0,1% Salt(1ppt) |
| | 1,015-1,030sg | 0,001sg | ±0,001sg |

# 0-25% probable alcohol - oenology

1| Refractómetro especialmente diseñado para medición del probable alcohol en uva.
2| Dispone de Compensación Automática de Temperatura (Range10-30ºC).
3| La calibración se realiza conDistilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPH002 | 0-25% probable alcohol | 0.2% |
| HPH013* | 0-25% probable alcohol | 0.2% |

*LED refractometer
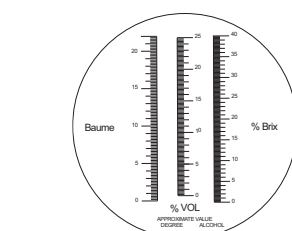
# 3 scales - oenology

1| Suitable to measure alcohol content in grape juice, Baumé degrees and Brix degrees, thus allowing to check the ripening level of grapes before and during the harvest.
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPH003 | 0-25% probable alcohol | 0.2% |
| | 0-22º Bé; | 0.2º |
| | 0-40% Bx | 1% |
| HPH014* | 0-25% probable alcohol | 0.2% |
| | 0-22º Bé; | 0.2º |
| | 0-40% Bx | 1% |
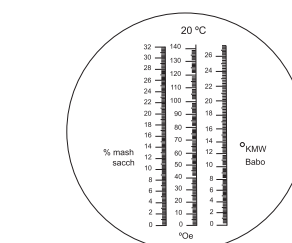
*LED refractometer

# 3 scales - oenology

1| Suitable to measure alcohol content in grape juice, Baumé degrees and Brix degrees, thus allowing to check the ripening level of grapes before and during the harvest.
2| Calibration is performed with distilled water.

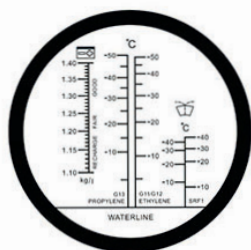| Code | Range | Accuracy |
|------|-------|----------|
| HPH015 | 0-190º Oe | ±2º |
| | 0-38º KMW Babo | ±0,4º |
| | 0-44% Brix sacch | ±0,4% |
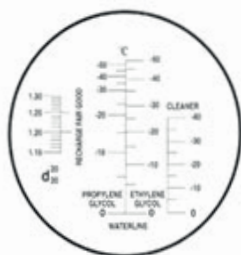
# Refractómetro baterías

1| Suitable for measuring the freezing point of antifreezes based on propylene glycol and ethylene glycol, as well as the state of electrolytic solutions of batteries and cleaning liquids.
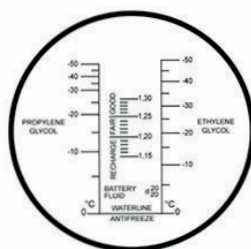
2| Calibration is performed with distilled water.

| Code | Solution | Range | Accuracy |
|---|---|---|---|
| HPK002 | Antifreeze | -50 a 0 ºC (EG/PG) | 5 ºC |
| | Electrolytic solution | 1.15-1.30  sg | 0.01 sg |
| | Cleaning liquid | -40 a 0 ºC | 5ºC |
| HPK004* | Antifreeze | -50 a 0 ºC (EG/PG) | 10º C |
| | Electrolytic solution | 1.15-1.30  sg | 0,01 kg/L |
| | Cleaning liquid | -40 a 0 ºC | 5º C |

*reference available while stocks lasts*

| Code | Solution | Range | Accuracy |
|---|---|---|---|
| HPK005 | Antifreeze | -50 a 0 ºC (EG/PG) | 5ºC |
| | Electrolytic solution | 1.10-1.40  Kg/L | 0.01Kg/L |
| | Cleaning liquid | -40 a 0 ºC | 10ºC |
| HPK008 | Antifreeze | -50 a 0 ºC (EG/PG) | 5ºC |
| | Electrolytic solution | 1.10-1.40  Kg/L | 0.01 Kg/L |
| | Cleaning liquid | -40 a 0 ºC | 10ºC |
| | UreaAddblue | 30-35 % | 0.2% |

| Code | Solution | Range | Accuracy |
|---|---|---|---|
| HPK006 | Antifreeze | -50 a 0 ºC (EG/PG) | 5 ºC |
| | Electrolytic solution | 1.15-1.30 sg | 0.01 sg |
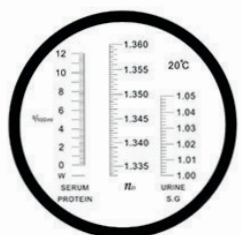
# Hand, clinical 3 scales

1| It has three scales; proteins in serum, urine specific gravity and refractive index.

2| Calibration is performed with distilled water (the separating line must match the value 1.333 of the refractive index scale).
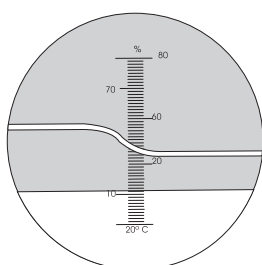
| Code | Range | Accuracy |
|---|---|---|
| HPM002 | 0 - 12 g/dl | 0.2 % g/dL |
| | 1.000-1.050 sg | 0.002 sg |
| | 1.333-1.360 nD | 0.005 nD |

# Hand, clinical URIVET

1| Designed for veterinary use, especially for the analysis of cats and dogs serum. Simple, easy and fast, only with a drop it gives you a result.

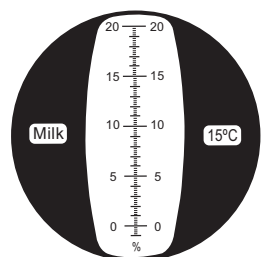| Code | Range | Accuracy |
|------|-------|----------|
| HPM003 | 2-14 g/100 mL | 0.1 g/100 mL |
| | 1.000-1.060 sg | 0.001 sg |

# Hand refractometer

1| Suitable to measure the alcohol degree in a solution, it can be used for wines and spirits taking into consideration other parameters.
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPP014 | 0-80% Alcohol (w/w) | 1% |

# Refractometer for milk

1| Suitable for measuring the water content in milk.
2| Calibration is performed with distilled water.

| Code | Range | Accuracy |
|------|-------|----------|
| HPP002 | -1%-20% | 0.2% |
| HPP019 | 0-25% Soya | ±0,5% Soya |
| | 0-32% Brix | ±0,2% Brix |

# Refractometer 1.333-1.520 nD, 3 scales

1| For measuring the dissolved solid concentration (%Brix) or refractive index (nD) of aqueous solutions.
2| Allow the analysis of a large variety of samples since they are provided with 3 scales that cover a wide range of measurement.

| Code | Range | Accuracy |
|------|-------|----------|
| HPP003 | 1.333-1.515 nD (3 scales) | 0.0005 nD |
| | (1.333-1.400 nD | |
| | 1.400-1.470 nD | |
| | 1.470-1520 nD) | |

# Hand beer refractometer

| Code | Range | Accuracy |
|------|-------|----------|
| HPP017 | 0-32% Brix | ±0,2% Brix |
| | Specific gravity of must: 1,000-1,130 | ±0,001 |
| HPP018 | 0-18 Plato | ±0,1 Plato |

# Accesories for hand refractometer

| Reference | Description |
|-----------|-------------|
| HPP004 | Cover prism plate, two pieces |
| HPP005 | Blinker for hand refractometers |
| HPP008 | Digital thermometer f/refractometer 325 |
| HPP015 | Carrying case for hand refractometer |