SIEMENS Healthineers

# Free Triiodothyronine (FT3)

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| **Current Revision and Date**[a] | Rev. 03, 2020-06 | |
| **Product Name** | Atellica IM Free Triiodothyronine (FT3) | REF 10995585 (60 tests)<br>REF 10995584 (300 tests) |
| **Abbreviated Product Name** | Atellica IM FT3 | |
| **Test Name/ID** | FT3 | |
| **Systems** | Atellica IM Analyzer | |
| **Materials Required but Not Provided** | Atellica IM CAL A | REF 10995500 (2-pack)<br>REF 10995501 (6-pack) |
| **Optional Materials** | Atellica IM FT3 MCM | REF 10995586 |
| **Specimen Types** | Serum, EDTA plasma, lithium heparin plasma | |
| **Sample Volume** | 35 µL | |
| **Measuring Interval** | 0.20–20.00 pg/mL (0.31–30.80 pmol/L) | |

[a] A vertical bar in the page margin indicates technical content that differs from the previous version.

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## Intended Use

The Atellica® IM Free Triiodothyronine (FT3) assay is for *in vitro* diagnostic use in the quantitative determination of free triiodothyronine (FT3) in human serum and plasma (EDTA and lithium heparin) using the Atellica® IM Analyzer.

Measurements of free triiodothyronine are used in the diagnosis and treatment of thyroid disease.

## Summary and Explanation

Triiodothyronine (3,5,3'-L-triiodothyronine, $T_3$) is a hormone synthesized and secreted from the thyroid gland, and formed by peripheral deiodination of thyroxine ($T_4$). $T_3$ and $T_4$ are secreted into the circulation in response to thyroid-stimulating hormone (TSH) and play an important role in regulating metabolism. The $T_3$ and $T_4$ secretion are regulated by a negative feedback mechanism involving the thyroid gland, pituitary gland, and hypothalamus.

In the circulation, 99.7% of $T_3$ is reversibly bound to transport proteins, primarily thyroxine-binding globulin (TBG) and to a lesser extent albumin and prealbumin.[1] The remaining $T_3$ does not bind to transport proteins, but is free in circulation. This unbound fraction of the total $T_3$ concentration is free triiodothyronine (free $T_3$, $FT_3$). Unbound $T_3$ is metabolically active.[1-3]

Free $T_3$ levels correlate with T3 secretion and metabolism. In hypothyroidism and hyperthyroidism, free $T_3$ levels parallel changes in total $T_3$ levels.[2] However, measuring free $T_3$ is useful when altered levels of total $T_3$ occur due to changes in $T_3$ binding proteins, especially TBG. TBG levels remain relatively constant in healthy individuals, but certain conditions such as normal pregnancy and steroid therapy can alter these levels. In these conditions, free $T_3$ levels are unchanged, while total $T_3$ levels parallel the changes in TBG.

## Principles of the Procedure

The Atellica IM FT3 assay is a competitive immunoassay using direct chemiluminescent technology. $FT_3$ in the sample competes with a $T_3$ analog, which is covalently coupled to paramagnetic particles in the Solid Phase for a limited amount of acridinium-ester-labeled mouse monoclonal anti-$T_3$ antibodies in the Lite Reagent.

An inverse relationship exists between the amount of $FT_3$ present in the patient sample and the amount of relative light units (RLUs) detected by the system.

## Reagents

| Material Description | Storage | Stability[a] |
|---|---|---|
| **Atellica IM FT3 ReadyPack® primary reagent pack**<br>**Lite Reagent**<br>4.2 mL/reagent pack<br>Mouse monoclonal anti-$T_3$ antibodies (~8 ng/mL) labeled with acridinium ester in HEPES buffer; protein stabilizers; sodium azide (0.1%)<br>**Solid Phase**<br>18.9 mL/reagent pack<br>$T_3$ analog (~1.6 µg/mL) covalently coupled to paramagnetic particles in HEPES buffer; sodium azide (0.1%) | Unopened at 2–8°C<br><br>Onboard | Until expiration date on product<br><br>28 days |

[a] Refer to *Storage and Stability*.

### Warnings and Precautions

For *in vitro* diagnostic use.

For Professional Use.

**CAUTION**

Federal (USA) law restricts this device to sale by or on the order of a licensed healthcare professional.

Safety data sheets (SDS) available on siemens.com/healthineers.

**CAUTION**

This device contains material of animal origin and should be handled as a potential carrier and transmitter of disease.

Contains sodium azide as a preservative. Sodium azide can react with copper or lead plumbing to form explosive metal azides. On disposal, flush reagents with a large volume of water to prevent buildup of azides. Disposal into drain systems must be in compliance with prevailing regulatory requirements.

Dispose of hazardous or biologically contaminated materials according to the practices of your institution. Discard all materials in a safe and acceptable manner and in compliance with prevailing regulatory requirements.

**Note** For information about reagent preparation, refer to *Preparing the Reagents* in the *Procedure* section.

### Storage and Stability

Store reagents in an upright position. Protect the product from heat and light sources. Unopened reagents are stable until the expiration date on the product when stored at 2–8°C.

Do not use products beyond the expiration date printed on the product labeling.

### Onboard Stability

Reagents are stable onboard the system for 28 days. Discard reagents at the end of the onboard stability interval. Do not use products beyond the expiration date printed on the product labeling.

## Specimen Collection and Handling

Serum and plasma (EDTA and lithium heparin) are the recommended sample types for this assay.

### Collecting the Specimen

- Observe universal precautions when collecting specimens. Handle all specimens as if they are capable of transmitting disease.[4]
- Follow recommended procedures for collection of diagnostic blood specimens by venipuncture.[5]
- Follow the instructions provided with your specimen collection device for use and processing.[6]
- Allow blood specimens to clot completely before centrifugation.[7]
- Keep tubes capped at all times.[7]

### Storing the Specimen

- Do not use samples that have been stored at room temperature for longer than 8 hours.
- Tightly cap and refrigerate specimens at 2–8°C if the assay is not completed within 8 hours.
- Freeze samples at ≤ -20°C if the sample is not assayed within 48 hours.
- Freeze samples only 1 time and mix thoroughly after thawing.

The handling and storage information provided here is based on data or references maintained by the manufacturer. It is the responsibility of the individual laboratory to use all available references and/or its own studies when establishing alternate stability criteria to meet specific needs.

### Transporting the Specimen

Package and label specimens for shipment in compliance with applicable federal and international regulations covering the transport of clinical specimens and etiological agents.

## Preparing the Samples

This assay requires 35 µL of sample for a single determination. This volume does not include the unusable volume in the sample container or the additional volume required when performing duplicates or other tests on the same sample. For information about determining the minimum required volume, refer to the online help.

**Note** Do not use specimens with apparent contamination.

Before placing samples on the system, ensure that samples are free of:

- Bubbles or foam.
- Fibrin or other particulate matter.

**Note** Remove particulates by centrifugation according to CLSI guidance and the collection device manufacturer's recommendations.[7]

**Note** For a complete list of appropriate sample containers, refer to the online help.

# Procedure

## Materials Provided

The following materials are provided:

| REF | Contents | Number of Tests |
|---|---|---|
| 10995585 | 1 ReadyPack primary reagent pack containing Atellica IM FT3 Lite Reagent and Solid Phase<br>Atellica IM FT3 master curve and test definition MC TDEF | 60 |
| 10995584 | 5 ReadyPack primary reagent packs containing Atellica IM FT3 Lite Reagent and Solid Phase<br>Atellica IM FT3 master curve and test definition MC TDEF | 300 |

## Materials Required but Not Provided

The following materials are required to perform this assay, but are not provided:

| REF | Description | |
|---|---|---|
| | Atellica IM Analyzer[a] | |
| 10995500 | Atellica IM CAL A (calibrator) | 2 x 5.0 mL low calibrator CAL L<br>2 x 5.0 mL high calibrator CAL H<br>Calibrator lot-specific value sheet CAL LOT VAL |
| 10995501 | Atellica IM CAL A (calibrator) | 6 x 5.0 mL low calibrator CAL L<br>6 x 5.0 mL high calibrator CAL H<br>Calibrator lot-specific value sheet CAL LOT VAL |

[a] Additional system fluids are required to operate the system: Atellica IM Wash, Atellica IM Acid, Atellica IM Base, and Atellica IM Cleaner. For system fluid instructions for use, refer to the Document Library.

## Optional Materials

The following materials may be used to perform this assay, but are not provided:

| REF | Description | |
|---|---|---|
| 10995586 | Atellica IM FT3 MCM (master curve material) | 7 x 1.0 mL levels of master curve material MCM |

## Assay Procedure

The system automatically performs the following steps:

1. Dispenses 35 µL of sample into a cuvette.
2. Dispenses 70 µL of Lite Reagent, then incubates for 6 minutes at 37°C.
3. Dispenses 315 µL of Solid Phase, then incubates for 6 minutes at 37°C.
4. Separates, aspirates, then washes the cuvette with Atellica IM Wash.
5. Dispenses 300 µL each of Atellica IM Acid and Atellica IM Base to initiate the chemiluminescent reaction.
6. Reports results.

## Preparing the Reagents

All reagents are liquid and ready to use. Before loading primary reagent packs onto the system, mix them by hand and visually inspect the bottom of the reagent pack to ensure that all particles are resuspended. For information about preparing the reagents for use, refer to the online help.

## Preparing the System

Ensure that the system has sufficient reagent packs loaded in the reagent compartment. The system automatically mixes reagent packs to maintain homogeneous suspension of the reagents. For information about loading reagent packs, refer to the online help.

### Master Curve Definition

Before initiating calibration on each new lot of reagent, load the assay master curve and test definition values by scanning the MC TDEF 2D barcodes. For loading instructions, refer to the online help.

## Performing Calibration

For calibration of the Atellica IM FT3 assay, use the Atellica IM CAL A. Use the calibrators in accordance with the calibrator instructions for use.

### Calibration Frequency

Perform a calibration if one or more of the following conditions exist:

- When changing lot numbers of primary reagent packs.
- At the end of the lot calibration interval, for a specified lot of calibrated reagent on the system.
- At the end of the pack calibration interval, for calibrated reagent packs on the system.
- When indicated by quality control results.
- After major maintenance or service, if indicated by quality control results.

At the end of the onboard stability interval, replace the reagent pack on the system with a new reagent pack. Recalibration is not required, unless the lot calibration interval is exceeded.

| Stability Interval | Days |
|---|---|
| Lot Calibration | 82 |
| Pack Calibration | 28 |
| Reagent Onboard Stability | 28 |

For information about lot calibration and pack calibration intervals, refer to the online help.

Follow government regulations or accreditation requirements for calibration frequency. Individual laboratory quality control programs and procedures may require more frequent calibration.

## Performing Quality Control

For quality control of the Atellica IM FT3 assay, use an appropriate quality control material of known analyte concentration with at least 2 levels (low and high) at least once during each day that samples are analyzed. Use the quality control material in accordance with the quality control instructions for use.

A satisfactory level of performance is achieved when the analyte values obtained are within the expected control interval for the system or within your interval, as determined by an appropriate internal laboratory quality control scheme. Follow your laboratory's quality control procedures if the results obtained do not fall within the acceptable limits. For information about entering quality control definitions, refer to the online help.

Follow government regulations or accreditation requirements for quality control frequency. Individual laboratory quality control programs and procedures may require more frequent quality control testing.

Test quality control samples after a successful calibration.

### Taking Corrective Action

If the quality control results do not fall within the assigned values, do not report results. Perform corrective actions in accordance with established laboratory protocol. For suggested protocol, refer to the online help.

# Results

## Calculation of Results

The system determines the result using the calculation scheme described in the online help. The system reports results in pg/mL (common units) or pmol/L (SI units), depending on the units defined when setting up the assay.

Conversion formula: 1 pg/mL (common units) = 1.54 pmol/L (SI units)

For information about results outside the specified measuring interval, refer to *Measuring Interval*.

## Interpretation of Results

Results of this assay should always be interpreted in conjunction with the patient's medical history, clinical presentation, and other findings.

# Limitations

The following information pertains to limitations of the assay:

- Performance of this assay has not been established with neonatal specimens.
- Patient samples may contain heterophilic antibodies that could react in immunoassays to give falsely elevated or depressed results. This assay is designed to minimize interference from heterophilic antibodies.[8,9] Additional information may be required for diagnosis.

# Expected Values

The reagent formulations used on the Atellica IM Analyzer are the same as those used on the ADVIA Centaur® and ACS:180™ systems. Expected values were established using the ADVIA Centaur and ACS:180 systems and confirmed by assay comparison. Refer to *Assay Comparison*.

The reference interval was established using samples from 594 apparently healthy adult individuals using the ACS:180™ system. Ninety-five percent of the $FT_3$ values for these individuals fell in the range of 2.3–4.2 pg/mL (3.5–6.5 pmol/L).

Based on a pediatric population (infants, children, and adolescents), reference intervals were established in accordance with the CLSI guideline C28-A3c using the ADVIA Centaur system.[10,11] Samples were collected prospectively from apparently healthy (euthyroid) pediatric subjects, using predefined inclusion criteria.

The reference interval for infants was calculated by a robust measure of location and spread as developed by Horn and Pesce.[12] A non-parametric approach based on the CLSI guideline was used to establish the reference intervals for children and adolescents. The 2.5th and 97.5th percentiles of the distribution of values were calculated for each age group. Based on this population, the following reference intervals were established:

| | | Reference Intervals | |
|---|---|---|---|
| **Pediatric Age Group** | **Number of Samples** | **(pg/mL)** | **(pmol/L)** |
| Infants (1–23 months) | 72 | 3.3–5.2 | 5.1–8.0 |
| Children (2–12 years) | 190 | 3.3–4.8 | 5.1–7.4 |
| Adolescents (13–20 years) | 129 | 3.0–4.7 | 4.7–7.2 |

As with all *in vitro* diagnostic assays, each laboratory should determine its own reference interval for the diagnostic evaluation of patient results.[11] Consider these values as guidance only.

# Performance Characteristics

The reagent formulations used on the Atellica IM Analyzer are the same as those used on the ADVIA Centaur® and ACS:180 systems. Some performance characteristics for the Atellica IM assay were established using the ADVIA Centaur or ACS:180 systems.

## Measuring Interval

The Atellica IM FT3 assay provides results from 0.20–20.00 pg/mL (0.31–30.80 pmol/L). The lower end of the measuring interval is defined by the analytical sensitivity. Report results below the measuring interval as < 0.20 pg/mL (< 0.31 pmol/L).

## Specificity

Specificity was determined in accordance with CLSI Document EP07-A2.[13] The cross-reactivity of the FT3 assay with a substance is expressed as the ratio of:

- the amount of $T_3$ required to displace 50% of the labeled $T_3$ analog from anti-$T_3$, and
- the amount of cross-reacting substance to give the same 50% displacement.

| Cross-Reactant | % Cross-Reactivity |
|---|---|
| Thyroxine | < 1.0 |
| Diiodothyronine | < 1.0 |
| Diiodotyrosine | < 1.0 |
| Monoiodotyrosine | < 1.0 |
| Reverse $T_3$ | < 1.0 |

Results were established using the Atellica IM Analyzer. Assay results obtained at individual laboratories may vary from the data presented.

## Detection Capability

Detection capability was determined in accordance with CLSI Document EP17-A2.[14] The assay is designed to have an analytical sensitivity of ≤ 0.20 pg/mL (0.31 pmol/L), a limit of blank (LoB) of ≤ 0.20 pg/mL (0.31 pmol/L), and a limit of detection (LoD) of ≤ 0.40 pg/mL (0.62 pmol/L).

Representative detection capability data are shown below. Assay results obtained at individual laboratories may vary from the data presented.

Analytical sensitivity is defined as the concentration of $FT_3$ that corresponds to the RLUs that are 2 standard deviations less than the mean RLUs of 20 replicate determinations of the FT3 zero standard. This response is an estimate of the minimum detectable concentration with 95% confidence. The analytical sensitivity for the Atellica IM FT3 assay is 0.06 pg/mL (0.09 pmol/L).

The LoB corresponds to the highest measurement result that is likely to be observed for a blank sample. The LoB of the Atellica IM FT3 assay is 0.00 pg/mL (0.00 pmol/L).

The LoD corresponds to the lowest concentration of $FT_3$ that can be detected with a probability of 95%. The LoD for the Atellica IM FT3 assay is 0.02 pg/mL (0.03 pmol/L), and was determined using 480 determinations, with 240 blank and 240 low-level replicates, and an LoB of 0.00 pg/mL (0.00 pmol/L).

## Precision

Precision was determined in accordance with CLSI Document EP05-A3.[15] Samples were assayed on an Atellica IM Analyzer in duplicate in 2 runs per day for 20 days. The assay was designed to have within-laboratory precision of ≤ 0.24 pg/mL (0.37 pmol/L) SD for samples < 2 pg/mL (3.08 pmol/L), ≤ 12% CV for samples from 2.00–3.00 pg/mL (3.08–4.62 pmol/L), ≤ 10% CV for samples from 3.10–4.40 pg/mL (4.77–6.78 pmol/L), ≤ 15% CV for samples from 4.50–5.50 pg/mL (6.93–8.47 pmol/L), and ≤ 15% CV for samples > 5.50 pg/mL (8.47 pmol/L).

| | | Mean | | Repeatability | | | Within-Laboratory Precision | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | SD[b] | | CV[c] | SD | | CV |
| Sample Type | N[a] | (pg/mL) | (pmol/L) | (pg/mL) | (pmol/L) | (%) | (pg/mL) | (pmol/L) | (%) |
| Serum A | 80 | 0.79 | 1.22 | 0.06 | 0.09 | 7.59 | 0.07 | 0.11 | 9.14 |
| Serum B | 80 | 2.87 | 4.42 | 0.03 | 0.05 | 0.94 | 0.05 | 0.08 | 1.78 |
| Serum C | 80 | 3.24 | 4.99 | 0.03 | 0.05 | 1.06 | 0.05 | 0.08 | 1.48 |
| Serum D | 80 | 4.96 | 7.64 | 0.03 | 0.05 | 0.67 | 0.05 | 0.08 | 1.07 |
| Serum E | 80 | 8.71 | 13.41 | 0.07 | 0.11 | 0.78 | 0.10 | 0.15 | 1.13 |
| Serum F | 80 | 18.13 | 27.92 | 0.36 | 0.55 | 1.96 | 0.55 | 0.85 | 3.05 |
| Control 1 | 80 | 2.58 | 3.97 | 0.03 | 0.05 | 1.24 | 0.04 | 0.06 | 1.71 |
| Control 2 | 80 | 6.34 | 9.76 | 0.08 | 0.12 | 1.27 | 0.10 | 0.15 | 1.56 |
| Control 3 | 80 | 11.59 | 17.85 | 0.32 | 0.49 | 2.72 | 0.35 | 0.54 | 3.04 |

[a] Number of samples tested.
[b] Standard deviation.
[c] Coefficient of variation.

Assay results obtained at individual laboratories may vary from the data presented.

## Assay Comparison

The Atellica IM FT3 assay is designed to have a correlation coefficient of ≥ 0.98 and a slope of 1.0 ±0.1 compared to the ADVIA Centaur FT3 assay. Assay comparison was determined using the Passing-Bablok regression model in accordance with CLSI Document EP09-A3.[16] The following results were obtained:

| Specimen | Comparative Assay (x) | Regression Equation | Sample Interval | N[a] | r[b] |
|---|---|---|---|---|---|
| Serum | ADVIA Centaur FT3 | y = 0.99x + 0.007 pg/mL<br>(y = 0.99x + 0.011 pmol/L) | 0.65–19.70 pg/mL<br>(1.00–30.34 pmol/L) | 139 | 0.99 |

[a] Number of samples tested.
[b] Correlation coefficient.

The relationship between the ADVIA Centaur and ACS:180 FT3 assays is described by this equation:

| Specimen | Comparative Assay (x) | Regression Equation | Sample Interval | N[a] | r[b] |
|---|---|---|---|---|---|
| Serum | ACS:180 FT3 | y = 0.99x + 0.014 pg/mL<br>(y = 0.99x + 0.022 pmol/L) | 1.76–17.57 pg/mL<br>(2.71–27.06 pmol/L) | 239 | 0.99 |

[a] Number of samples tested.
[b] Correlation coefficient.

Agreement of the assays may vary depending on the study design, comparative assay, and sample population used. Assay results obtained at individual laboratories may vary from the data presented.

## Specimen Equivalency

Specimen equivalency was determined with the Deming linear regression model in accordance with CLSI Document EP09-A3.[16] The following results were obtained:

| Tube (y) vs. Serum (x) | N[a] | Sample Interval | Slope | Intercept | r[b] |
|---|---|---|---|---|---|
| EDTA plasma | 86 | 0.57–15.18 pg/mL (0.88–23.38 pmol/L) | 1.02 | -0.13 pg/mL (-0.20 pmol/L) | 0.99 |
| Lithium heparin plasma | 86 | 0.57–15.18 pg/mL (0.88–23.38 pmol/L) | 1.04 | -0.24 pg/mL (-0.37 pmol/L) | 0.99 |

[a] Number of samples tested.
[b] Correlation coefficient.

The assay is designed to have a slope of 0.90–1.10 for alternate tube types versus serum.

Agreement of the specimen types may vary depending on the study design and sample population used. Assay results obtained at individual laboratories may vary from the data presented.

## Interferences

Interference testing was performed in accordance with CLSI Document EP07-A2[13] using the Atellica IM Analyzer.

The following substances were added to serum samples with low concentrations of $FT_3$. These samples were tested against an appropriate control, and the observed change was noted. The observed change is presented in the following table:

| Substance | Substance Test Concentration | Analyte Concentration pg/mL (pmol/L) | Observed Change (pmol/L) |
|---|---|---|---|
| Propylthiouracil | 40 µg/mL | 0.54 (0.83) | -0.06 |
| Methimazole | 4 µg/mL | 0.54 (0.83) | 0.03 |
| Sodium salicylate | 500 µg/mL | 0.70 (1.08) | 0.03 |
| Diphenylhydantoin | 40 µg/mL | 0.62 (0.95) | 0.11 |
| L-3,5-diiodothyronine | 50 pg/mL | 0.48 (0.74) | 0.02 |
| Diiodotyrosine | 0.8 pg/mL | 0.45 (0.69) | 0.06 |
| Monoiodotyrosine | 0.8 pg/mL | 0.49 (0.75) | -0.02 |
| Reverse $T_3$ | 2000 pg/mL | 3.43 (5.28) | 0.06 |

Interference testing was performed in accordance with CLSI Document EP07-ed3.[17] The following results were obtained:

| Substance | Substance Test Concentration | Analyte Concentration pg/mL (pmol/L) | Bias (%) |
|---|---|---|---|
| EDTA | 9.0 mg/mL | 2.69 (4.14) | -6 |
| | | 16.71 (25.73) | -5 |
| Heparin | 75 U/mL | 2.75 (4.24) | -1 |
| | | 13.65 (21.02) | 2 |

Assay results obtained at individual laboratories may vary from the data presented.

### Hemolysis, Icterus, and Lipemia (HIL)

The Atellica IM FT3 assay is designed to have ≤ 10% interference from hemoglobin, bilirubin, and lipemia. Interfering substances at the levels indicated in the table below were tested in accordance with CLSI Document EP07-A2[13] using the Atellica IM FT3 assay.

Bias is the difference in the results between the control sample (does not contain the interferent) and the test sample (contains the interferent) expressed in percent. Analyte results should not be corrected based on this bias.

| Substance | Substance Test Concentration Common Units (SI Units) | Analyte Concentration pg/mL (pmol/L) | Bias (%) |
|---|---|---|---|
| Hemoglobin | 500 mg/dL (0.3 mmol/L) | 1.67 (2.57) | 3 |
| | 500 mg/dL (0.3 mmol/L) | 3.22 (4.96) | 2 |
| Bilirubin, conjugated | 20 mg/dL (341 µmol/L) | 1.69 (2.60) | 2 |
| | 20 mg/dL (341 µmol/L) | 3.42 (5.27) | 0 |
| Bilirubin, unconjugated | 20 mg/dL (341 µmol/L) | 1.73 (2.66) | 3 |
| | 20 mg/dL (341 µmol/L) | 3.38 (5.21) | 5 |
| Lipemia (Intralipid®) | 1000 mg/dL (11.3 mmol/L) | 1.70 (2.62) | -1 |
| | 1000 mg/dL (11.3 mmol/L) | 3.21 (4.94) | 0 |

Assay results obtained at individual laboratories may vary from the data presented.

## Standardization

The Atellica IM FT3 assay is traceable to an internal standard manufactured using U.S.P. (United States Pharmacopeia) material. Assigned values for calibrators are traceable to this standardization.

# Technical Assistance

For customer support, contact your local technical support provider or distributor.

siemens.com/healthineers

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12. Horn PS, Pesce AJ. *Reference Intervals: A User's Guide,* Washington, DC: AACC Press; 2005.
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14. Clinical and Laboratory Standards Institute. *Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline—Second Edition*. Wayne, PA: Clinical and Laboratory Standards Institute; 2012. CLSI Document EP17-A2.
15. Clinical and Laboratory Standards Institute. *Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline—Third Edition*. Wayne, PA: Clinical and Laboratory Standards Institute; 2014. CLSI Document EP05-A3.
16. Clinical and Laboratory Standards Institute. *Measurement Procedure Comparison and Bias Estimation Using Patient Samples; Approved Guideline—Third Edition*. Wayne, PA: Clinical and Laboratory Standards Institute; 2013. CLSI Document EP09-A3.
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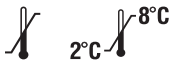
# Definition of Symbols

The following symbols may appear on the product labeling:

| Symbol | Symbol Title and Description |
|---|---|
|  | Consult instructions for use |
|   | Version of instructions for use |
|   | Internet URL address to access the electronic instructions for use |
|   | Revision |
|  | Caution<br>Consult instructions for use or accompanying documents for cautionary information such as warnings and precautions that cannot, for a variety of reasons, be presented on the medical device. |
|  | Biological risks<br>Potential biological risks are associated with the medical device. |
|  | Corrosive |
|  | Dangerous to environment |
|  | Irritant<br>Oral, dermal, or inhalation hazard |
|  | Inhalation hazard<br>Respiratory or internal health |
|  | Flammable<br>Flammable to extremely flammable |
|  | Oxidizing |
|  | Explosive |
|  | Toxic |
|  | Compressed gas |
|  | Keep away from sunlight<br>Prevent exposure to sunlight and heat. |

| Symbol | Symbol Title and Description |
|---|---|
|  | Up<br>Store in an upright position. |
|  | Do not freeze |
|  | Temperature limit<br>Upper and lower limits of temperature indicators are adjacent to the upper and lower horizontal lines. |
|  | Handheld barcode scanner |
|  | *In vitro* diagnostic medical device |
|  | Contains sufficient for <n> tests<br>Total number of IVD tests the system can perform with the IVD kit reagents appears adjacent to the symbol. |
| **RxOnly** | Prescription device (US only)<br>Applies only to United States-registered IVD assays.<br>CAUTION: Federal (USA) law restricts this device to sale by or on the order of a licensed healthcare professional. |
|  | Mixing of substances<br>Mix product before use. |
|  | Reconstitute and mix lyophilized product before use. |
|  | Target |
|  | Interval |
|  | Legal Manufacturer |
|  | Authorized Representative in the European Community |
|  | Use-by date<br>Use by the designated date. |
|  | Batch code |
|  | Catalog number |
|  | Recycle |
|  | Printed with soy ink |
|  | CE Mark |

| Symbol | Symbol Title and Description |
|---|---|
| CE 0088 | CE Mark with notified body ID number<br>Notified body ID number can vary. |
| YYYY-MM-DD | Date format (year-month-day) |
| CHECKSUM | Variable hexadecimal number that ensures the Master Curve and Calibrator definition values entered are valid. |
| UNITS C | Common Units |
| UNITS SI | International System of Units |
| MATERIAL | Material |
| MATERIAL ID | Unique material identification number |
| CONTROL NAME | Name of control |
| CONTROL TYPE | Type of control |

# Legal Information



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