

SBS Proposed Microplate Specifications

Revised January 2001

Standard 1a: Microplate Footprint

Approved by Committee September 2000

Approved by SBS Council October 2000

Footprint

The outside dimension of the base footprint, measured within 12.7 mm (0.5000 inches) of the outside corners, shall be as follows:

- Length 127.76 mm \pm 0.25 mm (5.0299 inches \pm 0.0098 inches)
- Width 85.48 mm \pm 0.25 mm (3.3654 inches \pm 0.0098 inches)

The outside dimension of the base footprint, measured at any point along the side, shall be as follows:

- Length 127.76 mm \pm 0.5 mm (5.0299 inches \pm 0.0197 inches)
- Width 85.48 mm \pm 0.5 mm (3.3654 inches \pm 0.0197 inches)

The footprint must be continuous and uninterrupted around the base of the plate.

Corner Radius

The four outside corners of the plate's bottom flange shall have a corner radius to the outside of 3.18 mm \pm 1.6 mm (0.1252 inch \pm 0.0630 inches)

Standard 2a: Microplate Height - Standard Height

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Plate Height

The plate height, measured from Datum A (the resting plane) to the maximum protrusion of the perimeter wells, shall be $14.35 \text{ mm} \pm 0.25 \text{ mm}$ ($0.5650 \text{ inches} \pm 0.0098 \text{ inches}$)

The overall plate height, measured from Datum A (the resting plane) to the maximum protrusion of the plate, shall be $14.35 \text{ mm} \pm 0.76 \text{ mm}$ ($0.5650 \text{ inches} \pm 0.0299 \text{ inches}$)

Top Surface

The maximum allowable projection above the top-stacking surface is 0.76 mm (0.0299 inches). The top-stacking surface is defined as that surface on which another plate would rest when stacked one on another. When resting on a flat surface, the top surface of the plate must be parallel to the resting surface within 0.76 mm (0.0299 inches)

External Clearance to the Plate Bottom

The minimum clearance from Datum A (the resting plane) to the plane of the bottom external surface of the wells shall be 1 mm (0.0394 inches). This clearance is limited to the area of the wells.

Standard 3a: Bottom-Outside Flange Height - Short Flange

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Flange Height

The height of the bottom outside flange shall be 2.41 mm \pm 0.38 mm (0.0948 inches \pm 0.0150 inches).

This is measured from Datum A (the bottom-resting plane) to the top of the flange.

All four sides must have the same flange height.

Flange Width

The width of the bottom outside flange measured at the top of the flange shall be a minimum of 1.27 mm

(0.0500 inches).

Chamfers (Corner Notches)

The quantity and location of chamfer(s) is optional. If used, the chamfer must not include the flange.

Standard 3b: Bottom-Outside Flange Height- Medium Flange

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Flange Height

The height of the bottom outside flange shall be 6.1 mm \pm 0.38 mm (0.2402 inches \pm 0.0150 inches). This

is measured from Datum A (the bottom-resting plane) to the top of the flange.

All four sides must have the same flange height.

Flange Width

The width of the bottom outside flange measured at the top of the flange shall be a minimum of 1.27 mm

(0.0500 inches).

Chamfers (Corner Notches)

The quantity and location of chamfer(s) is optional. If used, the chamfer must not include the flange.

Standard 3c: Bottom-Outside Flange Height - Tall Flange

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Flange Height

The height of the bottom outside flange shall be 7.62 mm \pm 0.38 mm (0.3000 inches \pm 0.0150 inches).

This is measured from Datum A (the bottom-resting plane) to the top of the flange.

All four sides must have the same flange height.

Flange Width

The width of the bottom outside flange measured at the top of the flange shall be a minimum of 1.27 mm

(0.0500 inches).

Chamfers (Corner Notches)

The quantity and location of chamfer(s) is optional. If used, the chamfer must not include the flange.

Standard 3d: Bottom-Outside Flange Height- Short Flange with Interruptions

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Flange Height

The height of the bottom outside flange shall be 2.41 mm \pm 0.38 mm (0.0948 inches \pm 0.0150es). This is measured from Datum A (the bottom-resting plane) to the top of the flange.

All four sides must have the same flange height except for an allowable interruption centered along the long side.

Interruptions

Each of the long sides of the plate shall be allowed to have a single interruption or projection on center. Each edge of the interruption shall be a minimum of 47.8 mm (1.8819 inches) from the nearest edge of the part.

The height of the flange at the interruption shall not exceed 6.85 mm (0.2697 inches)

Flange Width

The width of the bottom outside flange measured at the top of the flange shall be a minimum of 1.27 mm (0.0500 inches).

Chamfers (Corner Notches)

The quantity and location of chamfer(s) is optional. If used, the chamfer must not include the flange.

Standard 3e: Bottom-Outside Flange Height - Dual Flange Heights

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Flange Height

The height of the bottom outside flange shall be 2.41 mm \pm 0.38 mm (0.0948 inches \pm 0.0150 inches) along the short sides of the plate. This is measured from Datum A (the bottom-resting plane) to the top of the flange.

The height of the bottom outside flange shall be 7.62 mm \pm 0.38 mm (0.3000 inches \pm 0.0150 inches) along the long sides of the plate. This is measured from Datum A (the bottom-resting plane) to the top of the flange.

Flange Width

The width of the bottom outside flange measured at the top of the flange shall be a minimum of 1.27 mm (0.0500 inches).

Chamfers (Corner Notches)

The quantity and location of chamfer(s) is optional. If used, the chamfer must not include the flange.

Standard 4a: Well Positions - 96 Well Microplate

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Well Layout

The wells in a 96 well microplate should be arranged as eight rows by twelve columns.

Well Column Position

The distance between the left outside edge of the plate and the center of the first column of wells shall be 14.38 mm (0.5661 inches)

The left edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following column shall be an additional 9. mm (0.3543 inches) in distance from the left outside edge of the plate.

Well Row Position

The distance between the top outside edge of the plate and the center of the first row of wells shall be 11.24 mm (0.4425 inches)

The top edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following row shall be an additional 9. mm (0.3543 inches) in distance from the top outside edge of the plate.

Positional Tolerance

The positional tolerance of the well centers will be specified using so called "True Position". The center of each well will be within a 0.71 mm (0.0280 inches) diameter of the specified location. This tolerance will apply at "RFS" (regardless of feature size).

Well Markings

The top left well of the plate shall be marked in a distinguishing manner.

- The top left well of the plate can be marked with the letter A or numeral 1 located on the left-hand side of the well.
- The top left well of the plate can be marked with a numeral 1 located on the upper side of the well.

Additional markings may be provided.

Standard 4b: Well Positions - 384 Well Microplate

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Well Layout

The wells in a 384 well microplate should be arranged as sixteen rows by twenty-four columns.

Well Column Position

The distance between the left outside edge of the plate and the center of the first column of wells shall be 12.13 mm (0.4776 inches)

The left edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following column shall be an additional 4.5 mm (0.1772 inches) in distance from the left outside edge of the plate.

Well Row Position

The distance between the top outside edge of the plate and the center of the first row of wells shall be 8.99 mm (0.3539 inches)

The top edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following row shall be an additional 4.5 mm (0.1772 inches) in distance from the top outside edge of

Positional Tolerance

The positional tolerance of the well centers will be specified using so called "True Position". The center of each well will be within a 0.71 mm (0.0280 inches) diameter of the specified location. This tolerance will apply at "RFS" (regardless of feature size).

Well Markings

The top left well of the plate shall be marked in a distinguishing manner.

- The top left well of the plate can be marked with the letter A or numeral 1 located on the left-hand side of the well.
- The top left well of the plate can be marked with a numeral 1 located on the upper side of the well.

Additional markings may be provided.

Standard 4c: Well Positions - 1536 Well Microplate

Well Layout

The wells in a 1536 well microplate should be arranged as thirty-two rows by forty-eight columns.

Well Column Position

The distance between the left outside edge of the plate and the center of the first column of wells shall be 11.005 mm (0.4333 inches)

The left edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following column shall be an additional 2.25 mm (0.0886 inches) in distance from the left outside edge of the plate.

Well Row Position

The distance between the top outside edge of the plate and the center of the first row of wells shall be 7.865 mm (0.3096 inches)

The top edge of the part will be defined as the two 12.7 mm areas (as measured from the corners) as specified in SBS-1

Each following row shall be an additional 2.25 mm (0.0886 inches) in distance from the top outside edge of

Positional Tolerance

The positional tolerance of the well centers will be specified using so called "True Position". The center of each well will be within a 0.25 mm (0.0098 inches) diameter of the specified location. This tolerance will apply at "RFS" (regardless of feature size).

Well Markings

The top left well of the plate shall be marked in a distinguishing manner.

- The top left well of the plate can be marked with the letter A or numeral 1 located on the left-hand side of the well.
- The top left well of the plate can be marked with a numeral 1 located on the upper side of the well.

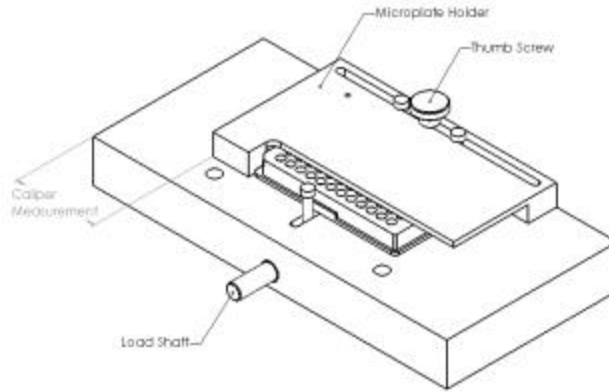
Additional markings may be provided.

Standard 5: Side Wall Rigidity

Rigidity

Using the apparatus described in Appendix XXX, the plate shall not deflect more than YYY mm when 3 pounds of force is applied.

Description of Test Instrument



Testing Protocol

Test Objective:

This test provides a method for determining microplate rigidity through the measurement of sidewall deflection under two applied load conditions. The test result is the deflection difference between the two load conditions. As such, the deflection result correlates to the microplate's rigidity.

Materials Required:

- Calipers
- Dial Indicator
- Force Gauge
- Microplate Rigidity Test Fixture
- Thermometer

Test Procedure:

1. Use the thermometer to verify that the air temperature of the test room is $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$.
2. Move the load shaft of the test fixture with your hand to insure that it moves freely.
3. Load a microplate into the test fixture such that the back, left corner seats securely into the corresponding corner of the microplate holder.
4. Slide the microplate holder and microplate left or right to align the pin with the sidewall test point of interest.
5. Lock the microplate holder into position using the thumbscrew.
6. Use calipers to measure the distance from the fixture's left-most surface to the microplate holder's left-most surface. Note that the left-most surface faces east when viewing the test fixture from above with the dial indicator in the North position.
7. Record the position of the microplate holder.
8. Use the positioning stage to move the force gauge so that 0.1 kg is applied to the microplate.
9. Record the dial indicator measurement of deflection at this load.
10. Use the positioning stage to move the force gauge so that 1.0 kg is applied to the microplate.
11. Record the dial indicator measurement of deflection at this load.
12. Remove the force gauge or load from the load shaft.
13. Calculate the microplate's sidewall rigidity by taking the absolute value of the difference in deflection measurements.

Measured Rigidity

The differential displacement between an applied load of 0.1 kg and an applied load of 1.0 kg be no greater than 0.375 mm at any point along the sidewalls.