

# Chapter 12: Designing Box Styles

## Introduction

TOPS Pro contains a number of pre-defined box styles in its database, but also allows you to design box styles to meet your unique needs. When you design a box style, you'll use one of 10 basic box drawing styles:

- ❖ Display Case
- ❖ HSC
- ❖ HSC with Top
- ❖ RSC
- ❖ Shrinkwrap
- ❖ Shroud
- ❖ Solid
- ❖ Strap Bundle
- ❖ Tray
- ❖ Tray/HSC
- ❖ Tuck
- ❖ Wrap Around

These basic box drawing styles are your starting point. Every box style in TOPS Pro is drawn as a variation of one of these nine box drawing types. However, note that thicknesses and export name are common to all box drawing styles. You'll design a new box style primarily by revising the thicknesses built into the box style. This chapter provides guidelines for working with the nine basic box drawing styles.

# General Guidelines

As you design box drawing styles in TOPS Pro, use the following guidelines:

❖ **Understand the assumed caliper of flutes.**

TOPS Pro calculates the allowance between inside dimensions (ID) and outside dimensions (OD) as the number of thicknesses of board times the caliper of the board.

The various flutes shipped with TOPS Pro and their corresponding calipers are listed in the table to the right. So, for a standard RSC there would be two thicknesses added along the length and width of a case, and four thicknesses added to the height of the case.

Shipped Flute Calipers

Flute	Caliper
A	0.18750
B	0.12500
C	0.15625
E	0.06300
F	0.06300
C/B	0.26700
A/C	0.26700
A/B	0.26700
E/B	0.00000

Assuming the case was constructed of C-flute material, this would result in an ID-to-OD adjustment of 5/16" (2 × 5/32") along the length and width, and 5/8" (4 × 5/32") added to the height.

**Note:** If your company assumes that the ID/OD allowance for a C-flute RSC is 3/8", 3/8" and 3/4" instead of 5/16", 5/16" and 5/8", then you will most likely want to adjust the default caliper of C-flute from 5/32" to 3/16".

To do so, enter the TOPS Pro Configuration program, open the Define menu and select Flutes. On the Define Flute dialog box, change the thickness field to 3/16". All newly created work will use 3/16" for the caliper of the C-flute.

❖ **Calculate thicknesses for a standard box style.**

For box styles that use only one type of material (a standard container), count the number of thicknesses in each direction – length, width and height. You'll enter the number of thicknesses for each direction on the Define Case Styles dialog box. TOPS Pro will calculate the inside/outside thickness adjustment as the number of thicknesses × the caliper of the material.

### ❖ Calculate thicknesses for a non-standard container

For a non-standard container (one that mixes materials), you'll have to make some adjustments. For example, a telescoping box style with mixed material – a C-flute bottom and a B-flute top. The thicknesses in this box style are non-standard, with different calipers for the top and bottom box material. In this case, calculate the thicknesses as follows:

1. Measure the inside/outside dimensions of the box.
2. Calculate the difference between the inside/outside dimensions for all three directions – length, width and height.
3. Divide each direction by the thickness of the flute you plan to use for this box. (TOPS recommends the B-flute in that it is a nice round 1/8<sup>th</sup> of an inch thick.)
4. The resulting value, including decimals, is the number of thicknesses along the length, width and height for the box drawing style.

If you need assistance with this process, please contact TOPS Technical Support.

### ❖ Calculate thicknesses for a non-corrugated material.

Suppose you're designing a milk crate, which in this example has an open top and wall made of one-inch thick plastic. The difference between inside and outside dimensions is two inches along length and width, and one inch along the height. Assume you'll use a B-flute when you use this box style. Calculate how many B-flutes will be big enough to account for the walls of the milk crate. Therefore, you'll design the box with 16 thicknesses along the length and width and eight thicknesses along the height.

### ❖ Select a drawing style.

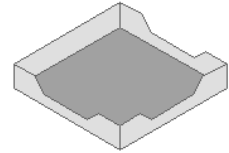
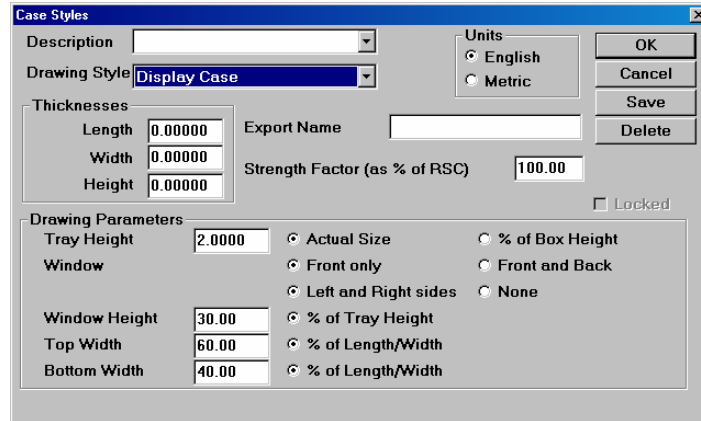
As you design a box drawing style, the g.o.d. feature draws the box as you design it. You want the picture to be as accurate as possible to your finished product. On the Define Case Styles dialog box, go through the drawing styles and find the existing box style that best matches your needs.

Once you've selected the box style that comes closest to being drawn the way you would like, examine its box drawing style and parameters and use them as a base for creating your new style. When designing a new box style, TOPS recommends that you give it a new description, different than those shipped by TOPS. That way, when you upgrade, it will be possible to determine whether TOPS changed its data or you did.

**Note:** TOPS has provided Appendix E, Box Styles, to assist you in selecting a drawing style. You may also print the current database of box styles through the File menu, selecting Print Databases, then Box Styles. TOPS Pro will print all the box drawing styles in the database.

# Display Case

The Display Case drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Display Case, work with the following parameters:

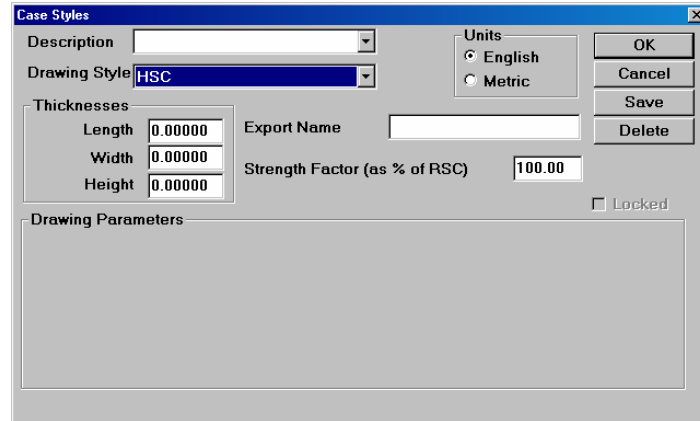
- ❖ **Thickenesses Length/Width/Height:** Enter the number of thickenesses along the length, width and height of the box.
- ❖ **Export Name:** Enter the export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Tray Height:** Select either Actual Size or % of Box Height, then enter a value to define the size of the tray height.
- ❖ **Window:** Select Front only, Front and Back, Left and Right sides or None to define which sides will be lowered for display purposes.
- ❖ **Window Height:** Defines what portion of the sides will be lowered.
- ❖ **Top Width:** Defines what the top width of the side.
- ❖ **Bottom Width:** Defines the bottom width of the side .

# HSC

The HSC box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.

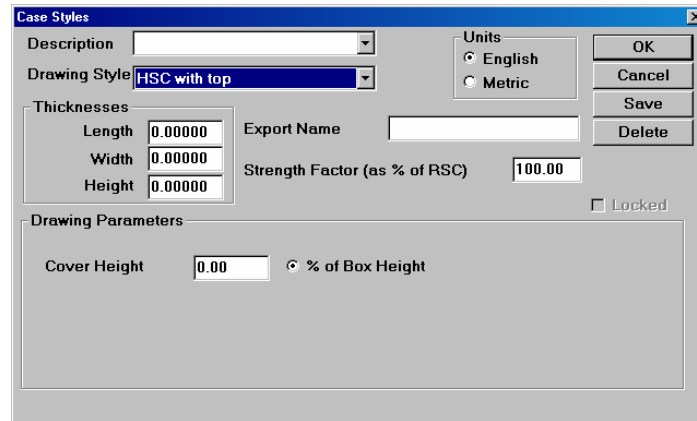


To use the HSC box, work with the following parameters:

- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter the export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

# HSC with Top

The HSC with Top box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the HSC with Top box, work with the following parameters:

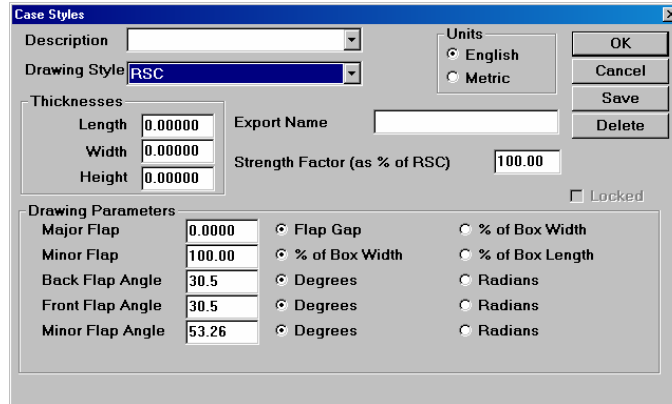
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter the export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Cover Height:** Enter the height of the cover as an overall percentage of the box.

# RSC

The RSC box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the RSC box, work with the following parameters:

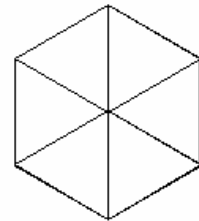
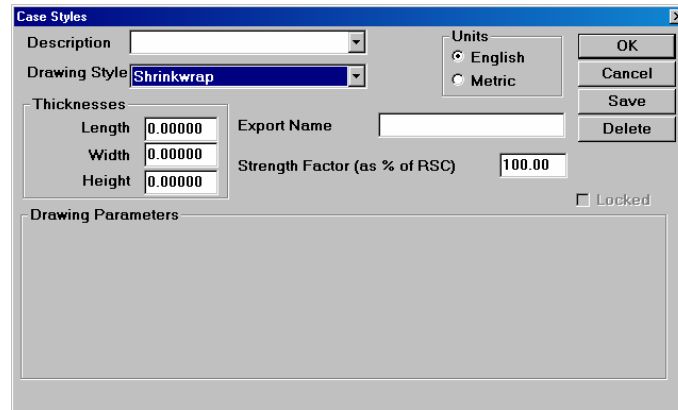
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter the export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Major Flap:** Select either % of Box Width or % of Box Length, then enter a value to define the size of the major flap.
- ❖ **Minor Flap:** Select either Flap Gap or % of Box Width, then enter a value to define the size of the minor flap.
- ❖ **Back Flap Angle:** Select either Degrees or Radians, then enter a value to define the back flap angle.
- ❖ **Front Flap Angle:** Select either Degrees or Radians, then enter a value to define the front flap angle.
- ❖ **Minor Flap Angle:** Select either Degrees or Radians, then enter a value to define the minor flap angle.

# Shrinkwrap

The Shrinkwrap box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.

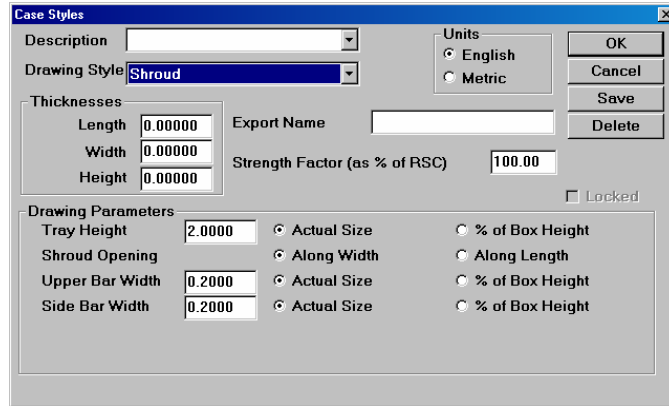


To use the Shrinkwrap box, work with the following parameters:

- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

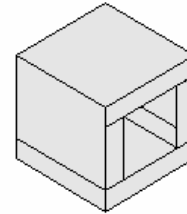
# Shroud

The Shroud box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



The screenshot shows the 'Case Styles' dialog box with the following settings:

- Description: (empty)
- Drawing Style: Shroud
- Units: English (selected), Metric
- Thicknesses: Length 0.00000, Width 0.00000, Height 0.00000
- Export Name: (empty)
- Strength Factor (as % of RSC): 100.00
- Locked: (unchecked)
- Drawing Parameters:
  - Tray Height: 2.0000, Actual Size (selected), % of Box Height
  - Shroud Opening: 0.2000, Along Width (selected), Along Length
  - Upper Bar Width: 0.2000, Actual Size (selected), % of Box Height
  - Side Bar Width: 0.2000, Actual Size (selected), % of Box Height



To use the Shroud box, work with the following parameters:

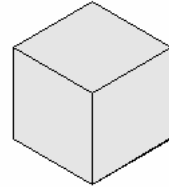
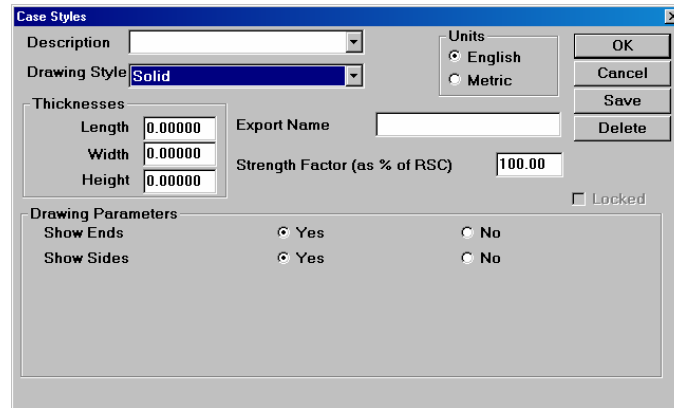
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Tray Height:** Select either Actual Size or % of Box Height, then enter a value to define the size of the tray height.
- ❖ **Shroud Opening:** Select either Along Width or Along Length to specify where the shroud opening will appear.
- ❖ **Upper Bar Width:** Select either Actual Size or % of Box Height, then enter a value to define the size of the upper bar width.
- ❖ **Side Bar Width:** Select either Actual Size or % of Box Height, then enter a value to define the size of the side bar width.

# Solid

The Solid box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Solid box, work with the following parameters:

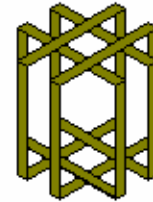
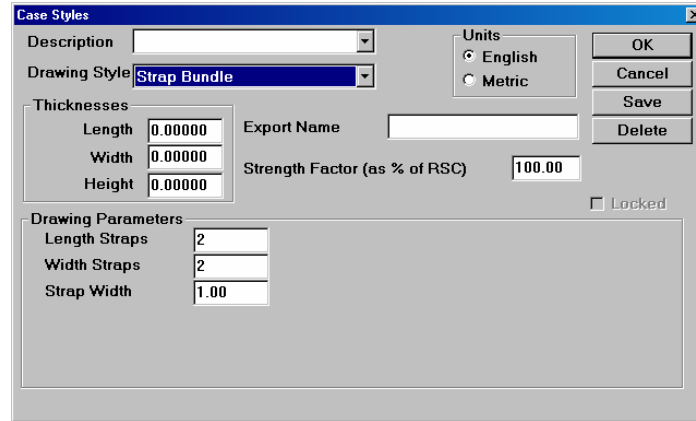
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Shows Ends:** Select Yes to display the ends of the box..
- ❖ **Show Sides:** Select Yes to display the sides of the box.

# Strap Bundle

The Strap Bundle box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Strap Bundle box, work with the following parameters:

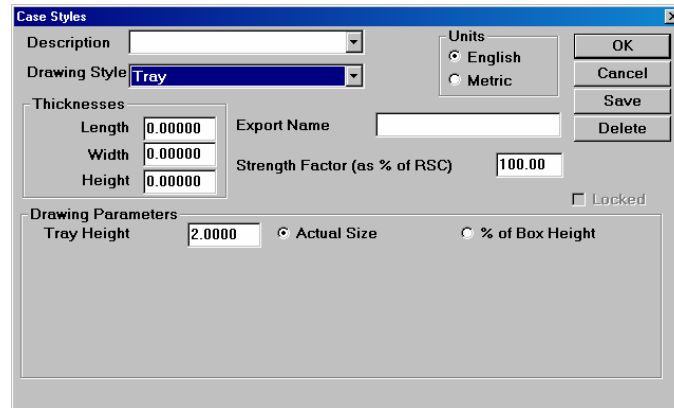
- ❖ **Thickenesses Length/Width/Height:** Enter the number of thickenesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Length Straps:** Enter a value to define number of straps along the length of the box.
- ❖ **Width Straps:** Enter a value to define the number of straps along the width of the box.
- ❖ **Strap Width:** Enter a value to define the width of the straps.

# Tray

The Tray box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Tray box, work with the following parameters:

- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

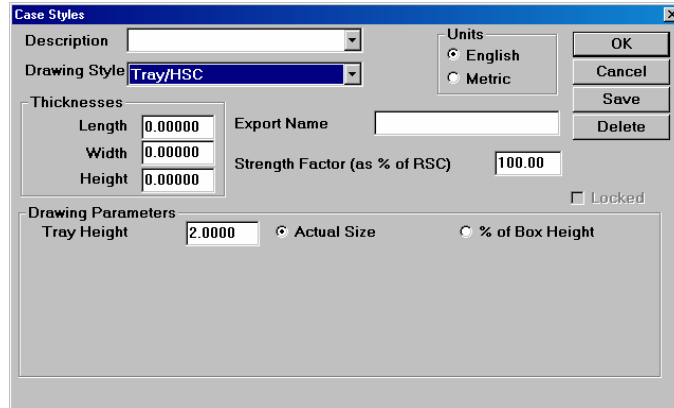
- ❖ **Tray Height:** Select either Actual Size or % of Box Height, then enter a value to define the size of the tray height.

**Note:** When filling trays designed with this box drawing style, TOPS Pro will automatically size the height of the tray to match the height of the product within the tray, plus the thicknesses along the tray height.

Also, if the resulting height of the tray being designed is smaller than the specified height of the tray walls, TOPS Pro will reduce the drawn height of the walls. That is, if you put a two-inch-high product into a three-inch-high tray, the walls will be only two inches high – actually two inches plus the number of thicknesses of the material at the chosen caliper.

# Tray/HSC

The Tray/HSC box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Tray/HSC box, work with the following parameters:

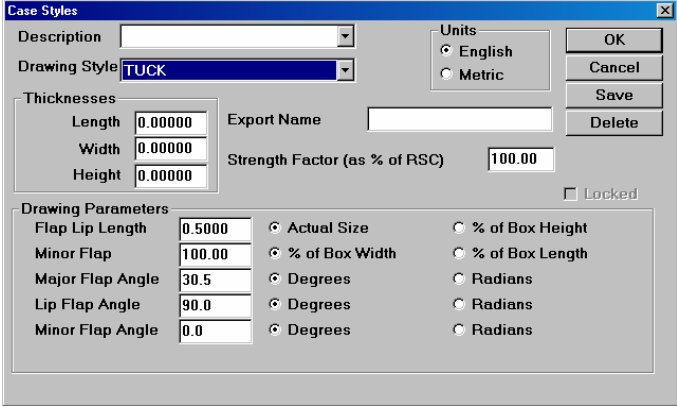
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameter is a drawing parameter only; it is not used in to construct the box style.

- ❖ **Tray Height:** Select either Actual Size or % of Box Height, then enter a value to define the size of the tray height.

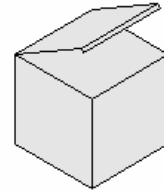
# Tuck

The Tuck box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



The screenshot shows the 'Case Styles' dialog box with the following parameters:

Parameter	Value	Unit/Option
Description		
Drawing Style	TUCK	
Units	English	English / Metric
Thicknesses Length	0.00000	
Thicknesses Width	0.00000	
Thicknesses Height	0.00000	
Export Name		
Strength Factor (as % of RSC)	100.00	
Locked	<input type="checkbox"/>	
Drawing Parameters		
Flap Lip Length	0.5000	Actual Size / % of Box Height
Minor Flap	100.00	% of Box Width / % of Box Length
Major Flap Angle	30.5	Degrees / Radians
Lip Flap Angle	90.0	Degrees / Radians
Minor Flap Angle	0.0	Degrees / Radians



To use the Tuck box, work with the following parameters:

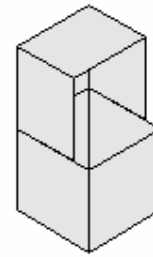
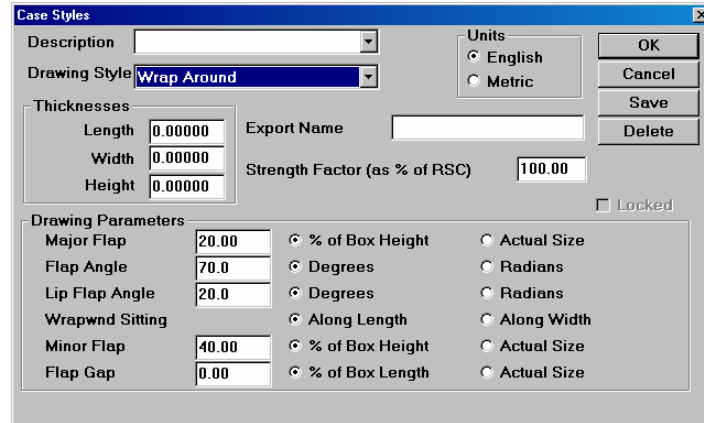
- ❖ **Thicknesses Length/Width/Height:** Enter the number of thicknesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Flap Lip Length:** Select either Actual Size or % of Box Height, then enter a value to define the size of the flap lip length.
- ❖ **Minor Flap:** Select either % of Box Width or % of Box Length, then enter a value to define the size of the minor flap.
- ❖ **Major Flap Angle:** Select either Degrees or Radians, then enter a value to define the major flap angle.
- ❖ **Lip Flap Angle:** Select either Degrees or Radians, then enter a value to define the lip flap angle.
- ❖ **Minor Flap Angle:** Select either Degrees or Radians, then enter a value to define the minor flap angle.

# Wrap Around

The Wrap Around box drawing style, pictured below, is designed with the parameters displayed in the Case Styles dialog box.



To use the Wrap Around box, work with the following parameters:

- ❖ **Thickenesses Length/Width/Height:** Enter the number of thickenesses along the length, width and height of the box.
- ❖ **Export Name:** Enter an export name for the new box style. (This is optional.)
- ❖ **Strength Factor (as % of RSC):** Enter the stacking strength of the box, as a percentage, in relation to an RSC box.

**Note:** The following parameters are drawing parameters only; they are not used in to construct the box style.

- ❖ **Flap Lip Length:** Select either Actual Size or % of Box Height, then enter a value to define the size of the flap lip length.
- ❖ **Flap Angle:** Select either Degrees or Radians, then enter a value to define the flap angle.
- ❖ **Lip Flap Angle:** Select either Degrees or Radians, then enter a value to define the lip flap angle.
- ❖ **Wrapwnd Sitting:** Select either Along Length or Along Width to specify the wraparound sitting.