

CUTTING

- NELS-TEK™ can be cut like wood. Circular saws, jig saws, band saws, table saws, or any other tool commonly used for wood will work.
- Carbide-tipped blades are recommended; finer tooth metal-cutting blades should be avoided.

DRILLING

- Drill bits normally used for steel or wood are recommended. Bits ground specifically for normal rigid PVC drilling are unacceptable.
- Avoid excessive frictional heat build-up in the material and on the drill bit.

ROUTING

- NELS-TEK™ can be routed or machine finished with virtually any piece of equipment that is used for wood.
- Multi-fluted carbide bits are recommended.

FASTENING

- NELS-TEK™ can be fastened like wood. It can be hand nailed, power-nailed, or screwed.
- Nails: Smooth shank, stainless steel or hot dipped galvanized (6d, 7d, 8d).
- Screws: Stainless steel or hot dipped galvanized (6, 8, 10; 1-½" – 2" length).
- Fasteners must have sufficient tensile strength in the shank to resist bending during linear expansion and contraction.
- NELS-TEK™ should be face nailed whenever possible, using the following schedule:
 - Along the length of the board: no farther apart than 16" on center.
 - Within the width of the board: no farther apart than 4" on center.
 - No more than 2" from the end of the board.
- NELS-TEK™ should be fastened to a solid, flat substrate
- Pre-drilling may be required when installing in low temperatures, or when using a large fastener. A hole-size of one half of the diameter of the fastener should allow penetration without cracking.

GLUING

- NELS-TEK™ can be bonded to a variety of substrates, as well as itself. For best results, follow the manufacturers' guidelines, keep all material clean and dry, and allow adequate time for complete bonding.
- When gluing two smooth surfaces together, sanding or scuffing the facing surfaces is recommended.

PAINTING

- NELS-TEK™ does not need to be painted to retain its color or remain impervious to weather. However there are certain applications where it is desirable to finish NELS-TEK™ with a painted surface.
- Paint may be applied by any suitable method, such as brush, roller, or spray gun.
- Use only 100% acrylic paint.

- Light or pastel colors are recommended. Dark colors should be avoided.
- The use of primer may not be necessary for excellent adhesion, but may be required by the paint manufacturer to warranty the paint.
- Consult your paint supplier for specific manufacturers' paint warranty requirements.

HEAT FORMING

- NELS-TEK™ can be easily formed into a variety of shapes by utilizing heat to bend it.
- Convection air circulating ovens, strip heaters, or electric blanket heaters may be used.
- Heating times and temperatures should be controlled to prevent the surface temperature from exceeding 320°F for more than 10 minutes.
- Once NELS-TEK™ is pliable it should be formed around a template into a finished shape and firmly secured while cooling.

EXPANSION & CONTRACTION

- NELS-TEK™ is a thermodynamic material; it responds to changes in temperature by linear expansion with increased temperatures and contraction with decreased temperatures.
- Considering the temperature of the material, rather than the moisture content, at the time of installation is the major difference between working with NELS-TEK™ and working with wood.
- To minimize expansion and contraction, NELS-TEK™ should be properly fastened with the recommended nailing schedule.
- For best results, join pieces in length using a bevel joint. Butt joints should never be used to join pieces in length. Butt joints are acceptable where expansion and contraction are not a factor, such as corners or T-joints.
- NELS-TEK™ requires a temperature sensitive installation. A small gap may be required to accommodate linear expansion and contraction. To determine what size gap, if any, is required, refer to the chart and set of instructions on the reverse side.

SPANNING

- NELS-TEK™ products are non-structural and should not be used in load bearing situations.
- NELS-TEK™ should be installed using the same thickness to span ratios used for wood in non-load bearing applications.

TEMPERATURE RANGE CONSIDERATIONS

Understanding the effect that temperature changes have on NELS-TEK™ is critical to a quality installation. To calculate what the expansion and contraction will be for the length of the piece you are going to install, refer to the chart on back. Note that shorter pieces will not be affected by changes in temperature, because their movement is so small. Remember that various factors can increase expansion and contraction. Consider your nailing schedule, type of fastener, solar exposure, and finished color. Refer to the complete *How-To Manual* found at www.nelstek.com for help on determining if your installation requires additional consideration.

USING THE EXPANSION & CONTRACTION GUIDELINES CHART





First, determine the **Overall Temperature Range** for the geographic area where you are working. This value is the difference between your area's highest and lowest temperatures during a typical year. Note that the **Overall Temperature Range** values here and on the chart refer to a range. They do not refer to a single temperature, such as a region's highest or lowest annual temperature, or the actual current temperature.

Second, establish the temperature of the material. Note that it may or may not be the same as the temperature of the air. Material that has been stored in the shade or under ground level may be significantly different. The temperature of the material is the important factor in the installation.

Third, determine the **Actual Temperature Range** within your **Overall Temperature Range** by moving from left to right on the chart. Here you must decide if the temperature of the material is in the upper third, middle third, or lower third of your **Overall Temperature Range**. The temperature of the material, relative to your overall temperature range, will establish your installation techniques.

Fourth, determine how tightly you can join pieces, and what size gap, if any, is required. To find this value, move further to the right on the chart until you match the appropriate length of your board. Printed below is an explanation of how to use these values and guidelines. Understanding the nature of the material enables the installer to avoid unsightly buckling and excessive spacing at joints.

NELS-TEK Installation Guidelines*

Overall Temperature Range (°F)	Actual Temperature Range	Length of Board (feet)						
		20'	18'	16'	14'	12'	10'	8'
 120° for example: -20° to 100°	Upper Third	1/8"	1/16"	1/32"	1/64"	0"	0"	0"
	Middle Third	5/32"	1/8"	1/16"	1/32"	1/64"	0"	0"
	Lower Third	3/16"	5/32"	1/8"	1/16"	1/32"	0"	0"
 100° for example: -5° to 95°	Upper Third	1/16"	1/32"	1/64"	0"	0"	0"	0"
	Middle Third	1/8"	1/16"	1/32"	1/64"	0"	0"	0"
	Lower Third	3/16"	1/8"	1/16"	1/32"	1/64"	0"	0"
 80° for example: 15° to 95°	Upper Third	1/32"	1/64"	0"	0"	0"	0"	0"
	Middle Third	1/16"	1/32"	1/64"	0"	0"	0"	0"
	Lower Third	1/8"	1/16"	1/32"	1/64"	0"	0"	0"
 60° for example: 35° to 95°	Upper Third	1/64"	0"	0"	0"	0"	0"	0"
	Middle Third	1/32"	1/64"	0"	0"	0"	0"	0"
	Lower Third	1/16"	1/32"	1/64"	0"	0"	0"	0"

* Note: The information in this table is furnished as a guideline only and is based on following the recommended fastening schedule. Please refer to the complete How-To-Manual found at www.nels-tek.com for additional Expansion and Contraction considerations for your specific application.

Upper Temperature Range. When installing NELS-TEK™ in the upper third of your **Overall Temperature Range**, the material should be expanded. Contraction becomes your major concern. Pieces can be joined together tightly, with little to no gap. Beveled joints should always be used, even where no gap is required. In areas that may be subject to extreme contraction forces (two long pieces meeting on an outside corner) you may consider a bevel joint 3 to 4 feet away from the corner to relieve the forces of contraction while keeping the outside corner tight.

Middle Temperature Range. When installing NELS-TEK™ in the middle third of your **Overall Temperature Range**, your material will not be completely contracted or expanded. You must allow for the linear expansion that will occur when the temperature rises. Use the guideline chart to determine the size of the gap required for your

region's temperature range. When temperatures rise, there will be space for the material to expand. When temperatures fall and the material contracts, the space left will be minimal.

Lower Temperature Range. When installing NELS-TEK™ in the lower third of your **Overall Temperature Range**, the material should be contracted. Expansion becomes your major concern. You must leave an appropriate sized gap to allow for linear expansion. When the temperature rises, the material will expand and fill the gap you have left. This is a small compromise for a quality installation and long lasting performance.

For additional information, call your local Nels-tek Trimboard dealer or distributor.

For more detailed instructions on working with Nels-Tek, please visit our website at www.nelstek.com