

# Redwood

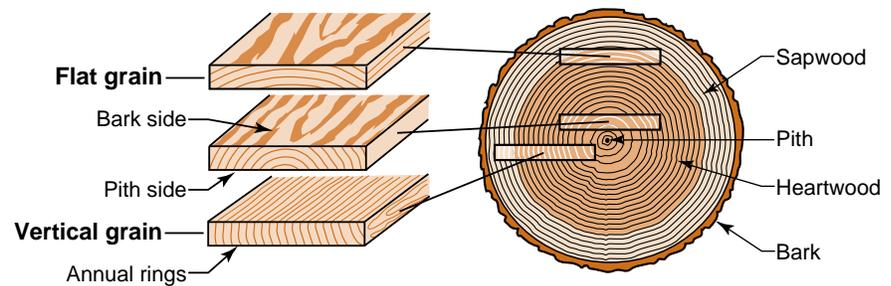
TECHNICAL DATA SHEET

## Enhancing the Performance of Flat Grain Lumber

The use of smaller diameter logs from vigorous young growth forests results in an increasing proliferation of flat grain lumber products in today's marketplace. Flat grain lumber results from sawing approximately parallel to the annual growth rings so that all or some of the rings form an angle of less than 45 degrees with the surface of the wood (Figure 1).

*Understand grain properties for best performance. . .*

**Fig. 1. Grain orientation of lumber**



Flat grain lumber generally does not provide the same level of performance as vertical grain lumber. Several properties of flat grain lumber differ from vertical grain lumber. These include: appearance or figure, dimensional stability, potential for grain raising and grain separation, and ability to hold film-forming finishes such as paints and stains.

Where the absolute premium performance is required, for example on the most severe exposures, vertical grain lumber should be specified and used. Vertical grain products are more expensive, however, and may not always be readily available. If flat grain lumber is to be used, its characteristics and limitations should be clearly understood.

*Use flat grain lumber with realistic expectations of performance. . .*

The surface of flat grain lumber has greatly enhanced figure when compared to the uniform parallel lines visible on the surface of vertical grain lumber (Figure 1). For exterior applications where the wood is exposed to alternating wet/dry cycles, flat grain lumber must be used with realistic expectations as to how the wood will perform. With a few precautions and proper care, flat grain products can provide a lifetime of excellent service.

Flat grain lumber tends to exhibit grain raising. When the grain separates on the face of flat grain lumber, it occurs on the pith

**Install flat grain lumber  
“bark-side-out” and specify  
saw-textured surfaces. . .**

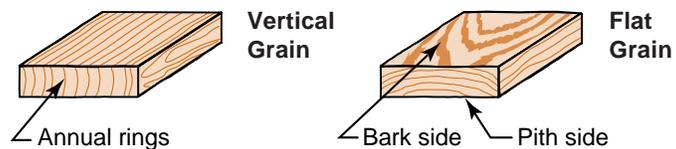
**Specify Certified Kiln Dried  
lumber for minimal  
dimensional changes. . .**

**Fig. 2. Grain separation on the pith side of flat grain lumber**



or “heart” face of the board (Figure 2). To prevent grain raising problems, the most important consideration is to orient boards so that the bark side will be exposed to the weather. Deck boards should always be installed “bark-side-up” and siding should be installed “bark-side-out” whenever possible.

**Fig. 3 Vertical and flat grain**



Another important consideration with flat grain siding is to specify saw-textured surfaces. With saw-textured surfaces, even if the pith side is exposed to the weather, it will be much less prone to grain separation. Not only will saw-textured or re-sawn surfaces rarely exhibit grain-raising, but finish performances will be dramatically improved as well.

Flat grain lumber can be expected to shrink and swell across its face to a somewhat greater degree than vertical grain lumber. The wider the lumber, the greater is the potential for noticeable dimensional changes. The use of properly kiln dried or air-seasoned lumber will significantly reduce any shrinkage-related problems such as cupping and warping.

As with any lumber product, proper handling, storage, finishing and maintenance are required to ensure maximum performance. Storing lumber under clean, dry conditions is required to reduce moisture content changes and surface weathering which can promote grain raising and separation. Protecting siding and decking with high quality finish systems immediately after installation is also necessary.

### **How To Reduce Grain Raising**

1. Specify vertical grain lumber for the most severe exposures.
2. Install siding patterns “bark-side-out”.
3. Install deck boards “bark-side-up”.
4. Specify saw-textured or re-sawn surfaces for siding, trim and fascia.
5. Specify Certified Kiln Dried siding, trim and fascia.
6. Properly handle and store all lumber products.
7. Immediately protect exposed kiln dried products with quality finish systems.



405 Enfrente Drive, Suite 200  
Novato, California 94949  
Telephone 415-382-0662  
Fax 415-382-8531

**Redwood—our renewable resource**