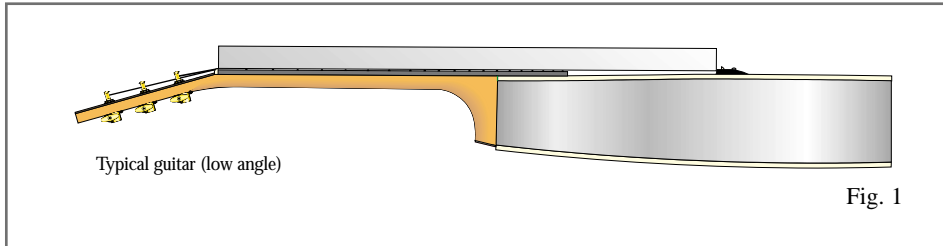


# HUMIDITY'S GREATEST HITS

A S P U B L I S H E D I N W O O D & S T E E L



Typical guitar (low angle)

Fig. 1

If you've been reading *Wood&Steel* since Volume 1 appeared in the summer of 1994 — or even if you jumped in somewhere along the way — the odds are good that you've read more about relative humidity than your local weatherperson did in Physical Sciences 101. We've been pounding the humidity stump pretty hard for three main reasons: 1) to help you maintain your quality instrument in peak playing condition, thereby increasing your enjoyment and prolonging its life; 2) to eliminate the need for us to repair guitars that have been unnecessarily damaged due to neglect or ignorance; and 3) to propagate a general appreciation of environmental effects on fine instruments and an awareness of proper guitar care.

We thought it would be helpful to distill many of the instructional essays that have appeared on these pages into several key, simplified points. The information has been culled from vari-

ous *Wood&Steel* articles and Taylor "Tech-Sheets," and in some cases updated to provide up-to-the-minute data.

### 1. Relative Humidity

Humidity is a state of (usually invisible) moisture in the air. *Relative humidity* (RH) is the amount of moisture in a given volume of air as compared to the amount that it is *capable* of holding, and measured as a percentage. So, if the RH is 30%, that means the air is holding 30% of the moisture it is capable of holding. As air temperature increases, so does the air's capacity to hold moisture. If the air temperature rises and its moisture content (humidity) stays the same, then the *relative* humidity becomes a lower percentage. When you raise the temperature inside a building, as many people do in the winter, the RH indoors will drop. The only way to re-establish the proper RH is to add moisture to the air. And that

is the function of a humidifier.

### 2. RH at the Factory

Taylor guitars are built in a controlled environment where the relative humidity is 47 percent. In fact, almost all quality acoustics are made in climate- and humidity-controlled indoor environments that enable the guitars to withstand reasonable variances in temperature and humidity once they leave the factory. Whereas some companies have no climate control, Taylor Guitars spends a lot of time, effort, and money to improve and fine-tune its manufacturing environment.

### 3. "Gauging" Your Taylor's Thirst with a Hygrometer

Many conscientious Taylor owners have made the modest investment in a small thermal hygrometer, which is designed to monitor changes in temperature and humidity in the vicinity of the instrument itself. You should be able to find one at your local Radio Shack, or at a good hardware or building-supplies store. Probably the best approach is to Velcro the hygrometer to the interior side of the accessory compartment, in the space between the compartment and the heel of your guitar. If you're using a hygrometer inside

your guitar case, remember to leave the case open when you remove your guitar, so both can acclimate equally to

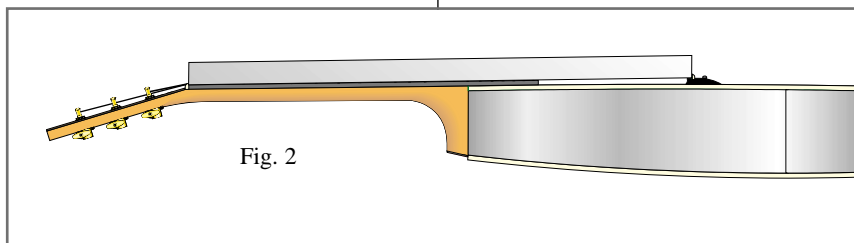


Fig. 2

"Taylor-esque" (steeper angle). Dip in front of bridge & bump behind bridge. Notice the straight edge touching the top of the bridge.



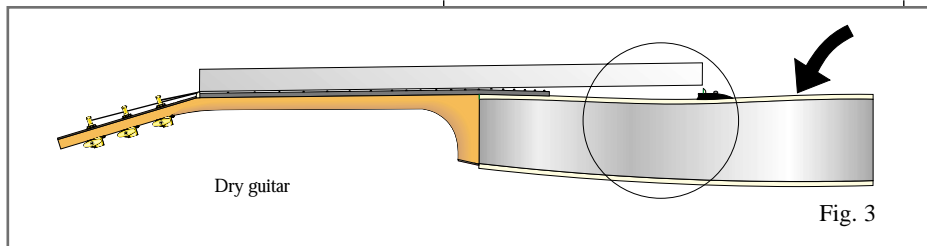


Fig. 3

external conditions. Leaving your case closed when it's empty will give you a false reading of the amount of humidity to which the guitar itself is being subjected.

Also, digital-readout hygrometers are the best; a needle-readout type tends to go out of calibration every six to 12 months, requiring a sling psychrometer to re-calibrate it. If you have several quality guitars, or are planning to collect guitars, you might consider building a special "music room," complete with a room humidifier and a good hygrometer to monitor the air's moisture.

**4. Symptoms of Dryness: The Incredible Shrinking Acoustic Guitar**

Because the tonewood used on a quality guitar is an organic, moisture-bearing material, a severe loss of that moisture will cause the wood to shrink. The top will sink (and, possibly, crack) taking the bridge down with it, resulting in low action and string buzzing. The fingerboard will shrink, leaving the fret ends to protrude past the edge. Your guitar will not play or sound like a quality instrument until the moisture has been restored.

**5. Where I Live: Our House is a Very, Very, Very Dry House**

In most areas of the country, the onslaught of winter generally is followed by low RH levels, mostly due to the effects of artificially heating our buildings. However, many areas experi-

ence naturally low humidity all year long. The entire Rocky Mountain region, for example, has notoriously low RH levels. Phoenix, Reno, Las Vegas, Tucson, and a number of other cities also suffer from extremely low humidity. Also, one year's winter season can be very different from the next. For example, the winter of 1994-95 was very mild, and consequently we had few reported problems with dry guitars, while the 1995-96 winter was extremely cold, and problems arose accordingly. Whether seasonal or perennial, the existence of low RH levels necessitates extra measures to protect your guitar from damage, to keep it in peak playing condition, and to ensure its long, healthy life. If you're not sure about your area, check the local weather reports.

**6. "Reading" Your Guitar**

In addition to the more obvious signs of drying (see "Symptoms"), one reliable indication that a fairly new Taylor guitar is drying out is the pitch of the neck angle to the body. To check the neck angle on a Taylor: 1) set the guitar on a counter or bench; 2) lift the peghead and look down the plane of the neck (make sure the neck is adjusted straight from the first to the 14th fret with the truss rod); 3) using the plane of the frets as your straight line, aim the neck at the thickness of the black ebony bridge on the body, just like aiming the barrel of a gun at a tar-

get (ignore the saddle). If the plane of the frets is pointed *over* the thickness of the bridge, the guitar's top has sunk from drying out, and the strings will be lower. Our neck angles are set to line up no higher than the thickness of the bridge. It is impossible for the string height to lower for any reason *other* than low humidity. This neck-angle method is the one true way to *know* if your relative humidity level is sufficiently high.

**7. Is My Taylor Too Sensitive?**

Over the years, our conspicuous, persistent emphasis on humidification, and our ongoing efforts to educate guitarists about it, have led some people to the mistaken conclusion that Taylors are structurally less sound than other guitars; that Taylors are "lightly built" or "delicate"; that humidity, or the lack thereof, affects only Taylor guitars; and that they therefore need to take "special" precautions with their Taylors that are unnecessary with other makes. Of course, these assumptions are entirely untrue. The sheer number of available humidifying products, many of which pre-date Taylor's existence (the Dampit brand of soundhole humidifier came into being around 1967, seven years before Taylor opened its first shop) indicates a real *need* for such care, no matter *who* makes the guitar.

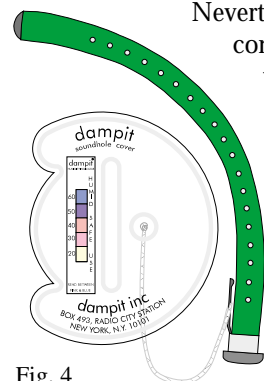
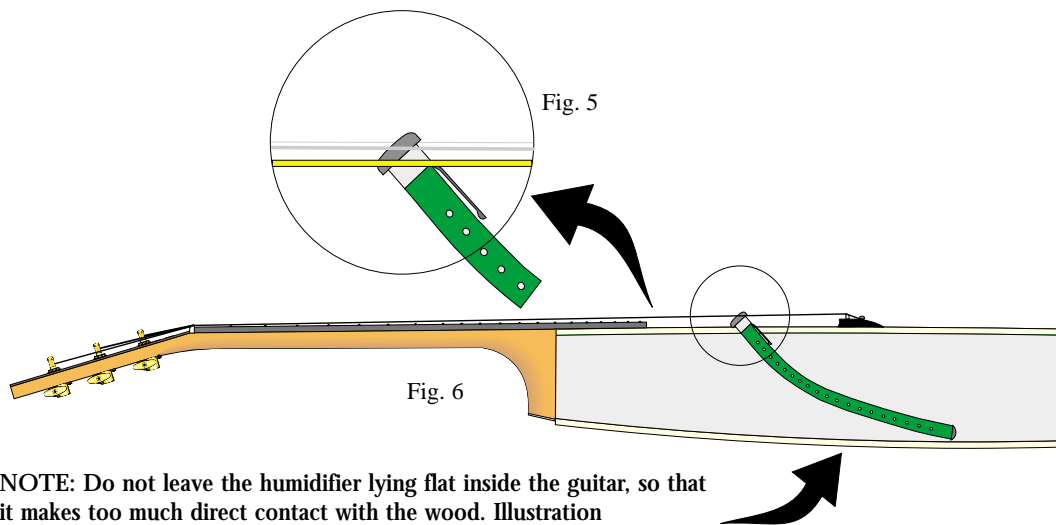


Fig. 4

Nevertheless, some continue to see the dry-guitar syndrome as a "Taylor problem," and when you consider that few people became aware of the prob-





NOTE: Do not leave the humidifier lying flat inside the guitar, so that it makes too much direct contact with the wood. Illustration shows proper positioning.

lem until we started the humidity ball rolling in the early '90s, it is easy to see how one might make the connection.

The fact is, Taylor guitars are built to be just as tough as any other high-end brands, and they're more heavy-duty than others. Generally, we use the same woods (frequently purchased from the same suppliers); kiln-dry it; and build guitars at the same temperature/humidity ratings as other fine guitar makers. What might make Taylor guitars *appear* more sensitive to humidity has nothing to do with the wood's thickness, it's processing, or the durability of the materials. It has to do with the way the instrument is constructed.

Ironically, the same things that might attract you to Taylor guitars in the first place provide a direct connection to their apparent "sensitivity" to dryness — namely, sleek necks, low action, excellent tone, and so on.

Years ago, Bob Taylor decided to make guitars with a steeper neck angle than tradition dictated (see illustration, figure 2). We continue to build guitars

with the neck angle set at a "sweet spot" — steep enough to neutralize (as much as possible) the tug of the string tension on the neck and body, but not so steep as to create problems associated with low action. You could say that we have pushed the limit of how steep a neck angle can be for the sake of a stronger, better-playing, better-feeling instrument (if you are a fan of Taylor guitars, the sound speaks for itself).

As you might imagine, a steeper neck angle, combined with our typically lower action, leaves little room for the top to drop from dryness. With less "play," or margin for fluctuation, a sinking top will bring the strings too close to the fretboard (see illustration, figure 3), causing buzzing and occasional dead notes, particularly in the upper register. *This is the key to understanding why your Taylor will exhibit the adverse effects of drying before other high-end acoustics: It is precisely constructed with a neck angle that ensures optimal performance, and as soon as that angle is compromised by dryness, it will let you know, usually before any seri-*

*ous damage can occur.*

#### 8. The Humidifier Suite: Normal Care and Maintenance

Although your guitar case provides the best protection from drying and other environmental effects, in areas prone to severe dryness and/or cold, preventive care includes the use of one of several stringed-instrument humidifiers on the market that are specifically designed to maintain or restore moisture. Of the tube types (Dampit, Humitron, etc.), we recommend the larger one, which is approximately one foot in length and 3/4-of-an-inch in diameter (see illustration, figure 4). You can purchase a Dampit (or a similar soundhole humidifier) at your local dealer. The "film canister"-type humidifier releases moisture in discreet amounts, and only works well in areas where dryness is minimal. The vinyl soundhole-cover types work well enough, although they have a tendency to trap the majority of the moisture in the body, not releasing enough into the case to benefit the



neck.

**A Word to the Wise:** In *extremely* dry areas of the country, where the humidity is consistently 20 percent or lower, it's good to use the small, film canister-size humidifier (or an extra Dampit) *in conjunction* with the sound-hole humidifier. The second, or supplementary humidifier should be left in an open area of the guitar case (e.g. beneath the tuners).

The frequency with which you re-wet your humidifier depends on the season and the region in which you live. As a general rule:

In areas of the country that are very dry, or where cold winters are the norm, or where the relative humidity consistently remains in the 20-to-35 percent range, re-wet your humidifier every five to seven days. [Homes with wood-burning heaters frequently have extremely dry interiors.]

If your humidity is consistently in the 35-to-45 percent range, re-wet the Dampit every 10 to 14 days.

Working musicians who routinely perform in dry regions and winter climates should keep their soundhole humidifier moist all the time, and use the supplemental method mentioned in **A Word to the Wise** (see above).

Instruments that spend a lot of time outside of their cases, and/or under hot stage lights, require a higher-than-normal amount of humidification.

**9. Okay, I Blew It — Now What Do I Do?**

We realize that, for various reasons, not all guitar owners will maintain the proper humidity levels. If your guitar betrays some or all of the symptoms of dryness, you need to use a Dampit or other similar humidifier to restore the moisture to your guitar. One Dampit should suffice, although two of them will bring the guitar back to factory specs in a shorter period of time.

**How To:** Soak the two Dampits, then ring them out, being sure to get rid of excess water! Insert them into the guitar, put the guitar in its case, and leave it closed for three days (see illustration, figures 5 & 6). Repeat this process for another three days if your guitar hasn't regained the playability it had when you bought it. If your guitar is *very* dry, you might even need to add a couple *more* days to this process.

If, after using this method, you find that your guitars are still dry, call our customer service department at (619) 258-6957 for easy-to-follow instructions on how to re-humidify that instrument and return it to good playing condition (without having to return it to us). FYI: Even if your efforts at re-humidification are successful, those sharp fret ends still might need to be filed smooth. Consult your local repairperson about this inexpensive procedure.

**10. Shopping for a Guitar: Humidity and Stores**

As a consumer, your chances of buying a guitar in good condition are greater at a store that takes good care of its solid-wood instruments, and invariably that means providing sufficient humidification.

Radical swings in temperature and humidity can wreak havoc on a store's inventory, often without warning, and without the dealer even noticing. A number of our dealers have grown in wisdom and knowledge, and have built dedicated, humidified "acoustic guitar rooms," or have installed commercial humidification systems throughout their stores. As a result, these proprietors have decreased the damage to their solid-wood guitar stocks — many dealers have *totally eliminated any damage* to their guitars during the winter months — and, consequently,

increased their sales.

Here are a few things to look for when you enter a guitar store: 1) does the store have a dedicated, humidified "acoustic room" or adequate store-wide humidification? 2) are acoustic guitars displayed near exterior doors (where air moving across them can dry the wood faster), or near heating ducts, where the air generally is drier than in other areas of the store? 3) are acoustic guitars displayed in direct sunlight, or high on a shelf or rack, or hung from the ceiling higher than eye level, where rising heat tends to accumulate and dry-out the air? If the answers are "yes" to question number 1, and "no" to questions 2 and 3, the store's guitars are less likely to have been adversely affected by dryness.

**11. Re-education of an Industry: Taylor at the Bully Pulpit**

Some people wonder why Taylor Guitars continues to make such a big issue out of "humidity," when one hardly heard it mentioned before. Actually, people have been aware of the effects of drying on fine furniture and other quality wood products for a long time (hence the numerous oils and polishes on the market). And, pianists, violinists, and other players of wood instruments dealt with the humidification issue centuries before the advent of the modern soundhole humidifier. Several years ago, Taylor Guitars became the first manufacturer of high-end acoustic guitars to assume the role of "ambassadors of humidification." This was a conscious decision, and not one thrust upon us by circumstances. At the risk of sounding like one-note-Johnnies, we've trumpeted the gospel of humidification far and wide, in national publications as well as in our own newsletters and Tech-Sheets, and this "continuing education" has benefitted *all*



## HUMIDITY'S GREATEST HITS (continued from page 4)

acoustic guitar makers. Indeed, we get letters from people thanking us for "saving" their Martins, Gibsons, Guilds, etc.

Today, there are more and *better* solid-wood acoustic guitars on the market than ever before, and many

players are more conscientious and prudent about their instruments than were their predecessors. It is for these owners, as well as for new owners cherishing their first high-end guitar, that we will continue to provide the latest information on guitar care —

even at the risk of drawing undue attention to ourselves.



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