



The Tubeking's 'Tube Tasters Guide'

Hi folks. If you're anything like me, then you're passionate about vintage and NOS audio and guitar tubes. So I am writing this guide to give my customers information about these fantastic tubes... how, when and where they were made, how to decipher tube codes, and most importantly, how they sound. I will also detail long vs. short plate and gray vs. black plate. I am mainly going to cover 12AX7/ECC83 and 5751 type pre-amp tubes and EL84/6BQ5 power tubes: since these are some of the most popular and in demand tubes for guitarists and audiophiles. I will also get into tube dampers, and how these dampers can greatly improve tube sound and performance in guitar and audio applications. I will also briefly discuss the real meaning of a 'NOS' tube, tube faking, and overcharging for tubes by some dealers.

[European ECC83/12AX7 :](#)

ECC83 is the European designation for the 12AX7 tube -- (it is the same exact tube). These tubes include those produced by Mullard, Amperex, Siemens, Telefunken, Tung-ram, RFT, Ei, Mazda, Lorenz, Philips and others. European ECC83s are generally sought after for their warm sound (with exceptions -- Telefunken, for example). These tubes emphasize even order harmonics, so you get a warmer clean sound, and a very harmonic overdrive sound in a guitar amp which is very pleasing to the ears. I will detail the sound of each European tube type below.

[USA 12AX7/ECC83:](#)

These tubes include those produced by RCA, GE, Sylvania, Tung-Sol, Raytheon, Ken-Rad and a few others. USA 12AX7s tend to emphasize the fundamental tone, rather than the even order harmonics (with exceptions - please see 'Black Plate tubes' below). This means that they generally have a cleaner sound and a more 'American' overdrive. These types of tubes are very popular among Fender users, who are looking for a classic 1950s-1960s rock and blues sound. The exception to this rule are the black plate tubes produced by RCA, Sylvania, Raytheon, and Ken-Rad. These tubes have a very warm 'European' clean sound and a fantastic 'harmonic' overdrive sound. I will detail the sound of each tube below.

Also you might want to read this note on tube 'paint.' Logos and labels on a tube mean nothing -- except possibly paying too much money for a tube and causing confusion. All the major European and USA tube manufacturers produced tubes under many different logos. Some of these tubes were 'OEM, - Original Equipment Manufactured' for other companies. This means that, for example, producers like RCA or Mullard manufactured tubes for other companies, and would put a different company logo on the tube. A Mullard tube that says 'The Fisher,' 'Bogen,' or 'Knight,' is still a Mullard tube. It can also get confusing because some companies 'cross-labeled' their tubes. For example, you can find British Mullard ECC83s that are labeled Holland Amperex, and vis-versa. Sometimes a Mullard that says 'Gt. Britain' on the tube can actually be an Ei, RFT or Amperex. Same goes for other American or European tubes. It gets even more confusing when you find European ECC83s with American logos such as RCA or GE. That's why it is important to understand tube construction, tube codes, and tube history, or at least purchase your tubes from someone who does. The real determinants for a tube are construction, when and where it was made, and etched codes. In other words, an RCA or Telefunken that is labeled Zenith or Fisher is the same exact tube as a 'real' RCA or Telefunken, provided they were made in the same factory with the same codes. We carefully screen, inspect and test all the tubes we sell to make sure you are getting exactly what you pay for.

LONG PLATES VS. SHORT PLATES

The 12AX7/ECC83 comes in two main types (with some exceptions): 17mm Long Plates and 14mm Short Plates. It is important to know the differences between these tubes, since sound and performance can differ greatly between the two types. Long plate 12AX7s were the first tubes of this type ever produced. These include tubes by such makers as RCA, Mullard, Amperex, GE, Ken-Rad and so on. As a rule, Long Plates usually fetch higher prices than short plates. One of the first Long Plate 12ax7s is the Blackplate Ken-Rad, which is a very fine tube. Short plate 12ax7 tubes were first produced in the early 1960's by the likes of RCA, GE and so on, and then picked up by the European producers such as Philips, Mullard and Amperex. Companies developed short plates in an attempt to provide a longer lasting tube with resistance to noise and microphonics. The main sonic differences between Long Plates and Short Plates can be summed up in three words: '3-D,' 'Lively,' and 'Open'. By and large, Long Plates have a bigger sound in guitar and audio amps than short plates (with exceptions.) However, Long Plates can sometimes be vulnerable to noise and microphonics. Short plates are more stable in guitar applications, although Long Plates usually do okay, especially when equipped with tube dampers. Sometimes the differences in sound between the two types can be subtle. It really depends on your taste and what you are going for. Personally, I usually favor Long Plates in V1 of my guitar amp and short plates in V2 (overdrive slot). However, there are exceptions to every rule. For example, to my ears, Tung-ram and Mullard I61 ECC83s have a big sound similar to Long Plates. My advice is to buy a bunch of Long and Short plates and try them out in different applications to see what you like. Each type has its place in home audio and guitar

amps.

BLACK VS. GRAY PLATES

This distinction mainly applies to classic American made tubes. The first 12AX7s produced were all black plates, and are considered very desirable tubes due to their fantastic and sweet sound. Manufacturers of black plate 12AX7s included: RCA, Sylvania, Tung-Sol, Raytheon and Ken-Rad. The Ken-Rad was one of the first 12AX7s, (black plate or otherwise), dating around 1949. USA black plate 12AX7s sound much different than USA gray plates, and can be compared to some premium European ECC83s. In general, black plates have a warmer, more complex, harmonic and fuller sound than US gray plates. They emphasize even order harmonics rather than the fundamental tone. They have a really nice and full clean sound in a guitar amp, and a complex, aggressive and saturated overdrive. Audiophiles also seem to love US black plate 12AX7s (and 5751s). There are differences in sound between the different brands of black plates: some have more high end, some are warmer, some are more aggressive, some are more cutting. However, you can't go wrong with any of the brands... all made fine tubes. Genuine RCA black plate 12AX7s can be identified by their dull color and a horseshoe or square getter. Sylvania black plates are much shinier and usually have a square getter. Raytheon black plates are also very shiny and will have a square or halo getter. Ken-Rad and Tung-Sol made some very fine and rare black plates as well. My advice would be to buy a bunch of different branded black plate 12AX7s to find your favorite 'taste.' They can be a nice change of pace from US Gray plate 12AX7s.

OKAY.... LET'S START 'TASTING TUBES!'

Mullard ECC83:

One of the most sought after tube by guitarists and audiophiles, British Mullards (produced at the Blackburn Factory) have a warm 3-D syrupy midrange sound, unlike any other tube in existence. They have a fantastic 'tweedy' clean and overdrive sound in a guitar amp. Many audiophiles prefer these tubes to add 'life' and 'warmth' to a sterile or bright sound system. The famous Mullard mid-range is great at reproducing vocals, especially female. And Mullards can really improve the sound of a guitar amp, since its classic mid-range suits this instrument perfectly. Many of the classic rock records we are familiar with have the Mullard sound, especially all the old recordings done on Marshall guitar amps. So you will immediately recognize this sound when you hear it. Many 'blah' tube amps can greatly improve when stocked with some nice Mullards.

However, you should know which Mullard ECC83 type you are getting, because the sound can differ significantly between each type.

MC1 Long Plate Square Getter: The most sought after, early production and expensive Mullard ECC83 from the mid-1950s. This one has 17mm long gray ladder plates and a dual supported square getter. This is the ultimate 'Mullard' sound.... big, open and warm with a tweedy harmonic overdrive. The etched MC1 code on the bottom of the glass denotes this type, along with the 'B' Blackburn Code + a Number and a Letter.

F91 Long Plate Dual Halo Getter: Similar in sonic characteristics to the MC1 Mullard above. This version comes from the late 50's (roughly 1957-1958) and will sometimes come with a square getter. It sounds very similar or the same to the MC1 Mullard, but is usually a bit less expensive. You can tell this type by the etched F91 code on the bottom of the glass, along with the 'B' Blackburn Code + a Number and a Letter.

F92 Long Plate Single Halo Getter: Similar in sonic characteristics to the F91 Mullard above. This version comes from the late 50's (1959) and will have a single supported halo. It sounds very similar or the same to the MC1 Mullard, but is usually somewhat less expensive. You can tell this type by the etched F92 code on the bottom of the glass, along with the 'B' Blackburn Code + a Number and a Letter.

I61 Short Plate Halo Getter: This is the first short plate Mullard ever produced and was made around 1959-1964. A great tube with that classic 'Mullard' sound, this tube has the benefit of resistance to microphonics due to the plate structure. At the same time, the open 3-D midrange sounds similar to the long plate Mullards, with a little more balls. One of my favorite guitar tubes. You can tell this type by the etched I61 code on the bottom of the glass, along with the 'B' Blackburn Code + two Numbers and one Letter.

I63 Short Plate Halo Getter: This is the second short plate Mullard ever produced* and was made from 1965 onwards. This tube is a bit more compressed than some of the Mullards listed above, so it is favored by many rock guitarists for its distortion characteristics. Many people will use an I61 or F91/F92 tube in the V1 (first slot) of their guitar amp for overall sound, and then put an I63 type in their overdrive slot (usually V2 or V3). This can be an ideal combination, depending on your amp and what you are going for. You can tell this type by the etched I63 code on the bottom of the glass, along with the 'B' Blackburn Code + two Numbers and one Letter. *(There was actually a very short production run "Yellow Label" Mullard ECC83 produced right before this tube.)

CV4004 M187 ECC83 Box plate: The CV4004 box plate Mullard is a military production tube that can be identified by its unique plate structure. This is a well built, highly desirable and favored tube by audiophiles. Many swear by this

tube for their home tube stereo systems, and prefer them to regular Mullards. Some guitarists use them in their amps, but most seem to prefer regular Mullards. Produced at the Mullard Mitchum Factory these tubes can usually be identified by the 'R' code etched in the bottom of the glass + a Number and a Letter.

Mullard 10M Master Series ECC83: These were specially made, later production Mullard short plates that are rated for 10,000+ hours in a tube amp. They were also specially selected for low noise and balanced triodes. They can be identified by the Gold Mullard '10M' Logo on the tube and they have gold or regular pins. The Gold Pin versions are superior and worth more. These tubes are highly sought after by audiophiles. They have a wide-band sound similar to a Telefunken, but with a touch of that Mullard warmth. They are quite rare, and can fetch insane prices, especially if they are NOS. I finally got a chance to hear this tube in my guitar amp and I am impressed... fabulous balanced clean sound with a touch of brightness.... incredibly SWEET. Overdrive was pretty cool as well. I can see why audio guys go crazy for these tubes.

There are other Mullard ECC83s that were produced later, but the tubes listed above are the ones you should look for. Beware of fake Mullards being sold on ebay. These will often have 'perfect' baked-on enamel labels that will not wipe off. These labels usually look too thick and 'painted-on' in pictures. Real silk-screened Mullard logos look much more delicate in pictures. Sometimes Matsushita tubes will be sold as Mullards with Shield logos. These are Japanese tubes that were made on Mullard tooling so they look similar to I63 Type Mullards. Not a bad tube, but be aware that some vendors will relabel these to pass them off as the real thing. Sometimes you will see "OEM" Mullards that originally had no labels branded with a fake Mullard label from another era. This can also happen with British 'Brimars' which can have fake Mullard labels. There are also people on ebay selling 'Mullards' with obviously new, fake and cloned 'Mullard' boxes that look nothing like the real thing.... unbelievable. Always purchase your tubes from reputable dealers. We carefully screen each and every tube we sell to make sure they are authentic.

Amperex ECC83:

This type includes the famous 'Bugle Boy' ECC83 produced at the Herleen, Holland factory but can mean any Herleen, Holland ECC83, which is the exact same tube regardless of paint or logo. These tubes are very sought after by guitarists and audiophiles for their nice combination of 'warm' and 'clean' tone. They have a nice warmish mid-range with balanced clear highs and lows. To me, these Dutch tubes have an 'Orange' sound. Clear, bright and warm at the same time. They also have a very nice harmonic overdrive in a guitar amp. There are a few types of these tubes to look out for. Please note: all Herleen Amperexes should have a 'Delta' symbol code etched on the bottom of the glass. (Looks like an 'unequal' triangle.)

MC6 Foil D Getter Long Plate: This is the earliest Amperex/Bugle Boy, produced at the Herleen, Holland factory in the mid-1950s. This tube can be identified by its 17mm long gray plates and unique 'D' getter with a piece of foil attached. This is the most desirable and expensive Amperex ECC83. It has the classic Holland Amperex sound as detailed above, with the added 3-D open effect of the long plates. I really like the overdrive qualities of Amperex.... nice and richly harmonic, but focused at the same time. A great tube for audio or guitar. You can find this tube by the etched MC6 code, along with the Herleen Delta symbol + one number and a letter on the bottom of the glass

I65 Short Plate Halo Getter: This is the main other type of Amperex tube produced at the Herleen Factory in the 1960's. It sounds VERY similar to the MC6 long plate, albeit a tad less open. This type of tube usually has a halo getter. Earlier and more sought after versions have a very large halo getter. Later versions have a smaller halo getter while even latter versions have a 'disc' or 'dimpled' getter. Also, later versions of this tube were produced under the 'Orange Globe' logo. Many times you can find Herleen, Holland Amperex with a 'Hammond' logo. These are very nice low noise tubes that were highly screened for use in organs. They are the same as any Bugle Boy or Amperex ECC83, except screened for higher quality. Hammond Amperexes are one of my favorite tubes... I buy them whenever I can. I have found certain Hammond Amperexes to be exceptionally sweet, as good or better than any 'Bugle Boy' labeled tube. In general you can identify most of these tubes by the I65 code etched in the bottom of the glass along with the Herleen Delta symbol + a few numbers and letters, depending on the year.

You can also look out for Amperexes with other labels: Miniwatt, Philips and others. These are the same exact tube as any Amperex Bugle Boy ECC83. Also look out for the rare 'Medical Grade' Amperexes. These were specially screened for use in medical equipment and have medical markings on the tube usually stating 'for medical use'.

[Tungsram Hungary ECC83](#) :

A fantastic underrated tube, the Tungsram Hungary is one of the best guitar and audio tubes in existence. It is also a VERY well built and uniquely constructed tube. This tube has a great European sound in a guitar amp.... very well, perfectly balanced 'colorful' harmonic clean tone and beautiful overdrive when pushed. The Tungsram Hungary also has one of the best extended top ends out of any ECC83, and it is never harsh. Sounds similar to an Amperex D-Getter, but I like the Tungsram better. Fantastically balanced for audio use as well. Tungsrams are also very well built. They have thick dual getter supports that run all the way down to the first mica. Very few ECC83s have this construction. The only other one I am aware that has similar construction is the Silver plate Mazda. You can also identify Tungsrams by the unique numbered 'Silver Foil Square Tag' that is usually attached to the getter supports. The Foil Square is usually located higher up on the tube for later production versions. (I.E. 1960s vs 1970s). One of my all-time favorite guitar and audio tubes. Keep an eye out for the rare 'RCA' branded Tungsrams. They sound fantastic as

well. (I have one but I'm not selling it!). Every guitar player or audiophile should own at least one Tungstram. (Preferably three or four!) NOS Tungstrams need to be 'burned in' for at least 48 hrs for optimal sound. These are getting harder to find and prices are going up.

RFT East Germany ECC83

This is a very interesting, somewhat unknown tube. It is constructed with the thickest glass out of any ECC83. It is a very stout tube with great resistance to microphonics. The ultra-short plate structure and windmill mica is unique as well. Among those in the know, RFT is famous as a great hard rock 'crunch' tube in a guitar amp. It is favored by many Marshall and Mesa players for this reason. It is a somewhat 'warm' tube with a rolled-off high end, so it can help with overly bright guitar amps. If you are interested in trying the RFT ECC83, it is best used in the 'overdrive' pre-amp slot in your guitar amp. You probably would not want to use it in the main pre-amp slot (V1), since it is not an overly detailed tube. A really good combination that I use in some of my amps is a Mullard in V1 and an RFT in V2 (overdrive). This will give you a great general tone and a fantastic warm distortion. Another benefit to RFTs is that they last forever and you can run them really hard without worrying about noise and microphonics, although they take a while to break in.

Telefunken ECC83

A well known tube among audiophiles and guitarists, some people regard the Telefunken ECC83 as the ultimate pre-amp tube. It is used more commonly by audiophiles. The Telefunken is considered a wide-band 'neutral' or 'clear' tube. It does not really impart any color to the sound. Therefore, if you have an overly warm stereo or guitar amp, you may want to consider this tube. There are two main types of Telefunken: smooth plates and ribbed plates. The smooth plates are usually more desirable and expensive for audiophiles, probably because people consider this type to be more 'neutral'. Telefunken are not used in guitar amps as much as other ECC83 types. I have found that the smooth plate Telefunken lacks personality in a guitar amp and does not really overdrive well. The ribbed plates are a little better in this regard. However, there is a good place to put a Telefunken smooth plate in a guitar amp... in the phase-inverter slot (usually the last slot closest to the power amp tubes.) I have found that this can add some 'clarity' and '3-D' effect to your overall sound. Genuine Telefunken always have an etched diamond shape on the bottom of the tube between the pins, so you must always look out for this. Telefunken are also commonly faked, even with the diamond bottom. Usually these fake Telefunken will have perfect labeling that is 'baked-on' and will not rub off with a cloth. This is a dead-giveaway that you are dealing with a fake. The labels on real Telefunken are always fragile and will easily rub off. Look out for Telefunken with other labels: Fisher, Gap-R Computer and others. These are genuine Telefunken and can usually be had at special prices. There are also highly regarded 'Lab Quality' Medial Telefunken that were produced for Leeds & Northrup Grummond. These will usually have red tips, say 'Selected' somewhere on the tube, and are sought after by audiophiles who will pay insane prices for these tubes.

Ei Yugo

These fine tubes were produced at the Nis Factory in Yugoslavia on Telefunken tooling. The tube itself has smooth long plates and resembles a Telefunken, but that is where the similarity ends. Ei Yugos are excellent to use in guitar amps and audio. In audio, they have a clear and aggressive sound, somewhat like a Telefunken 'on-steroids' with more personality. Eis are also a great tube to use in guitar amps, provided you can find one that is not microphonic. They have a nice detailed, balanced and very punchy clean sound and a great aggressive overdrive with extended high end. Good Eis are one of my favorite guitar tubes and Dr. Z seems to agree (from what I have read). Eis are no longer being produced and are getting harder to find. Just do an ebay search... there are always many more Mullards available than Eis. Eis come in two styles: gray and silver plates. The gray plates were produced earlier and are more popular. However, many people also like the silver plates. You want to try and find what are called 'Pre-War' Eis. These were produced at the Nis factory prior to the conflict in Yugoslavia in the 1990's and are considered superior. Ei's from the 1970's can fetch high prices. These are usually rebranded tubes that don't always say Ei on the logo. However, Eis from the 80's-early 90's are fine tubes as well. The only problem with Eis is that some tend to be microphonic. Therefore, you would want to make sure to buy from a reputable dealer who screens tubes. That being said, I have used many Eis in the past and have found only one to be microphonic. They usually will do okay. I believe that the Ei 'microphonic problem' is a bit over hyped. These tubes are fantastic in any guitar amp, but are particularly good in Vox style amps. You can use the Ei ECC83 in any slot of your guitar amp, especially the main slot and the overdrive slot. An interesting fact about Eis is that they usually have seams on top and will 'flash' on start-up like a good Mullard or Amperex. I will be trying to procure a good stock of NOS Ei Gray and Silver plates in the near future for my customers.

USA 12AX7 AND 5751

Special Factory Selected 1959 RCA Red-Tipped Wurlitzer Organ 12AX7

These are among the earliest and best 12AX7s that RCA produced, and some of the finest 12AX7s in the world. They rival premium European tubes such as Telefunken and Amperex and have red-painted tips (although this paint has sometimes worn off after many years). The red-tips indicate that these tubes were "Factory-culled," representing the best of the best of Early RCA production from 1959. They were specially selected at the original RCA Factory for low noise, tight operating conditions and long-term use. " They sound superior to the RCA Blackplates due to their clarity and tone. In addition, the Wurlitzer RCAs have the "quintessential Fender Sound" and are perfect for Fender

Blackface, Super Reverbs, Deluxes, Champs, Pro Reverbs, and Boutique amps such as Dr. Z, Top Hat, Carr, and so on.

Use these in the V1 slot on any guitar amp. If you want a light-to-medium Chicago or Texas blues overdrive, you can add another one of these tubes to the overdrive slot of your amp. These tubes also sound fantastic on non-master volume amps when you crank them up.

A lot of audiophiles also love these tubes since they are so quiet and reliable and add an amazing colorful and hauntingly "live" sound to any performance. If you have a quality tube amp and other good equipment, you do not want to miss out on these tubes. (If you can find any).

The fact is that good examples of these 12AX7s are becoming almost impossible to find, and tubes like these will never be produced again. (Even if people wanted to produce these tubes, it would be impossible because the factory tooling simply does not exist anymore). They are worth every penny and more.

Benefits Include:

- tubes will open up the sound of your amp.
- you will turn heads in a live setting .
- adds color and that "Fender" bell-like tone to any guitar amp.
- adds clarity to any amp.
- fantastically balanced mids, highs and bass.
- smooth and clean top-end that is never harsh.
- perfect mids; your guitar will pop out of the mix in a live setting.
- ultra-creamy Bluesy overdrive.
- adds a beautiful live sound to any audiophile stereo pre-amp.
- vocals and instruments take on a new dimension.
- your amp will run much quieter and with improved operation.
- especially suited for Audiophile applications because they are very quiet.

RCA 12AX7:

RCA ('Radio Corporation of America') is the most well known company that produced tubes in the USA, and their 12AX7s are among the most popular NOS and vintage tubes looked for by musicians and audiophiles. RCA also produced some of the earliest 12AX7s and made many innovations in tube manufacturing that were copied by other companies. Many RCA tubes came standard in vintage Fender amps and are considered a big part of that 'Fender' sound. Some RCA tubes are popular with audiophiles, especially the 5751 tubes like the RCA Command Series and some RCA Blackplate 12AX7s. You can break down RCA 12AX7 tubes into three common types:

Gray plate 17mm 12AX7:

These tubes were produced from the late 50's to early 60's. They have 17mm ribbed ladder plates and a horseshoe, 'D,' or halo getter. Earlier versions will have the horseshoe/D getter, and are worth more. These tubes have that classic 'RCA' sound in a guitar amp: a bell-like clean tone and a 'Phat' somewhat gritty overdrive. They are popular with Fender users and other people interested in an early rock and blues sound. A very sweet sounding tube. Keep an eye out for the rare, low noise version of this tube.... the 7025 Gray Long Plate. I don't come across these too often. (They are much less common than the 14mm RCA 7025 Short Plate.) Also look for Baldwin or Lowrey branded RCA long plate 12AX7s. These were specially selected low noise tubes made for organs and represent high quality RCA tubes. They were once a bargain, but prices have been going up recently as more people discover these tubes.

PLEASE CHECK OUT [PART II](#) OF MY GUIDE FOR MORE UPDATES ON THE BEST NOS 12AX7s, 5751s, RUSSIAN 7199s, EL84/6BQ5s and Much More!