

Summer 2008



## Capacitor Musings Part 1

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### Relcap RTX

This tin foil/polystyrene cap has been around a long time, and many designers and modders swear by their use as bypass caps. Some more recent cap comparisons also confirm they are very good coupling caps by themselves. The RTX had some big shoes to fill, replacing Sonicap Platitudes, and I must say they did pretty well against the heavy hitters.

**Warning:** Even after a long break-in, these caps sounded horrid for some hours after being soldered in, sounding grainy on top and anemic in the bass. Do not evaluate them without a long workout after solder dries. After dust settled, these turned out to be very balanced top-to-bottom with no gross errors or peaks. Extension of frequency extremes was impressive, and the level of resolution was high without highlighting upper-midrange or upper-bass.

Compared to Sonicap Platitudes, RTX didn't sound as dense and rich in the midrange, but it still managed to sound subjectively neutral, akin to some of those high-class red wines that's on the dry side as opposed to fruity and colorful. At a bit over half the price of Sonicap Platitudes, these are a nice bargain in the cap world, but I wouldn't use too many in equipment that tends toward dryness in the midrange.

What really put the RTX in perspective was when I switched in Mundorf silver/gold again. Suddenly, I had beautifully colorful (but not colored) midrange that "popped" with effortless midrange dynamics. Musical textures just pulled your ears in, and that often-yearned-for "magic" was in the air. Mundorf silver/gold is almost three times the price of RTX, unfortunately, so save your pennies.

### Mundorf silver/gold vs. silver/oil



I finally did some proper comparisons between these two capacitors, and while they do share the musical Mundorf house sound, their differences are significant enough that one should not automatically think a system synergistic with one will be synergistic with the other. There are some who have concluded silver/gold is "not as good" as silver/oil, but I would not agree with that conclusion. However, they have sufficiently differing presentations and gestalt that yes, one "may" definitely prefer silver/oil in a given

setup/preferences.

One word I would use to describe the main difference is "liquidity." While both are remarkably smooth, silver/oil has more liquidity, not enough to obscure detail but just enough to "massage" recordings that are not perfect. As a result, I am able to enjoy more percentage of my recordings through silver/oil, which liquefies a few percent of the upper-midrange/low-treble spittiness and hardness inherent in many recordings. Because silver/oil makes this range less noticeable, the high treble/air becomes relatively more noticeable, but upon closer analysis, the silver/gold has just as much upper end extension and air.

So once again, I still think silver/oil is the cap that most likely will have me keep listening to my (non-perfect) music collection instead of tweaking, but if your system is already leaning towards liquidity, silver/gold may be a better choice.



#### Russian FT3 Teflon Capacitor

I must first thank an Audio Circle member Gary ("GGB") for loaning me the FT3 and K72 caps. Otherwise, I would have had to buy on eBay and wait a month for delivery. The FT3 is a great cap sonically, but its sheer size and weight can present a challenge in cramped spaces. Its lack of traditional leadouts also forces one to make his own; I had to solder some leftover leads as seen in the photo above.

This cap is exceedingly smooth, smooth, yet resolved like only Teflon caps are. This evenness and lack of glare, grain, or bite can be disadvantageous for FT3, especially in quick cap-rolling A-B comparisons, where a cap with a more insistent personality will attract more attention and spotlight. However, after living with this cap for a long time, one has to marvel at its consistently musically-revealing nature and tonality. It doesn't wear its detail resolution on its sleeve, yet when one chooses to listen for it, the extension in both directions are impressive as well as actual detail. Its trick is having equal resolution from top-to-bottom, so the whole is well, wholesome. It conveys music in a flowing, suave tonality and is the crooner of the cap crowd.



#### Russian K72 Teflon Capacitor

Probably the most hyped AND maligned cap out there. Some praise it while others despise it and write it off completely. It is my understanding that FT3 and K72 caps are internally the same. Here is an internal picture of K72, courtesy of the internet.



FT3 uses aluminum casing and thin tabs as leadouts while K72 uses thicker steel casing with solid poles as leadouts. FT3 is glass-encapsulated while K72 is hermetically sealed, and due to the thick steel case, K72 is even heavier than FT3.

One huge caveat to comparing K72 and FT3 is that the largest value of K72 available seems to be 0.056 $\mu$ F, while FT3 is predominantly available in 0.1 and 0.22 $\mu$ F. My loaned K72 was the customary 0.056 $\mu$ F and FT3 0.22 $\mu$ F, and yes, the larger cap is "supposed" to be more bassy. Lo and behold, FT3 does seem to be a little richer in the bass region; however, it was not a huge difference, and there is no way to tell how much of this is due to the  $\mu$ F difference or just the way these caps sound. This cannot be answered today because K72 does not come in 0.1 or 0.22 $\mu$ F and FT3 does not come in 0.056 $\mu$ F.

These caps do sound similar, but after doing A-B-A-B comparisons using music with and without bass, I can say they do have differences. K72 adds a pinch of spice and "kick" to the proceedings. Middle midrange to somewhere in upper midrange seems to sound bit more obviously "detailed" with K72; this leads to a little more tension in the listener's shoulders when playing poorly-recorded material, i.e. the vast majority of today's compressed and hotly equalized modern fare. Some may even call it extra grain, glaze, or hardness compared to FT3's relative softer rendering. However, with clean recordings, I can see some people even preferring K72 for its more assertive, forward stance. Combining that little highlighting with a bit tighter control, K72 comes across as hair more dynamic and fun. Which Teflon cap should you purchase? Well, both are cheap enough that I think you should try both, but do consider if you wish for a little more smoothness vs. forwardness from current setup.

P.S. When you tap the stiff steel case of K72, you can hear and feel a hollow "ping" resonance. I tried applying a strip of EAR Isodamp material, covering about 1/3 of the surface area, which attenuated the sparkle and "detail" just a tad. I'm not saying one is better than the other, but depending on your tastes, a bit of damping may have a role.

### Are You a Contender?

No, are these Russian Teflon caps as "good" as the V Caps, Sonicap Teflons? Well, I know some say no, but I don't know how to answer that.

In direct comparisons, VCap Teflon does come across as having the highest highs and the most linear response across the range. It paints the sonic scape with the finer brush, and its sonic signature reminds me of my beloved Sylvania 5751 triple mica black plate tubes for you tube people. On the other hand, the FT3 and especially K72 have a more forward, bolder midrange presentation, albeit with a bit less refinement and a bit bolder lower midrange/upper bass range. I enjoy listening to deep male vocals a bit more through the Russian caps while VCaps absolutely rule with high-pitched female vocals and instruments that live in the same range and above, resolving them with the finest of the surgical scalpel yet without any harshness.

I really don't feel all these caps should be given concrete rankings, like number 1, 2, 3, etc. Let's just say music can sound glorious with most good caps mentioned in this article, often coming down to tweaking tubes, interconnects, power cords, etc.



### Russian K40y Paper-In-Oil Capacitor

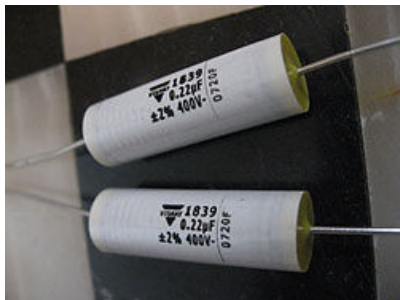
I must thank "Bob B" and "Les Lemmars" for kindly loaning me these K40y caps. After the usual rocky burn-in ritual, this PIO cap settled into a confident, natural sounding device. There are some audiophiles who rank these PIO caps as the best of the Russian military caps, including the FT-3 and K72 Teflon caps. I may agree with this sentiment when it comes to utter naturalness and ease of presentation as well as the lack of a

subtle "plastic" sound, which of course all plastic (film) caps have.

Gladly, this PIO cap did not have an overly dark, laid-back sound some people may expect of PIO caps. The important midrange energy was quite forceful and engaging as well as richly harmonic. The rendering of textures was most reminiscent of a good vinyl setup, which is a good thing; and detail resolution was not lacking, either, but the extreme "air" on top was not as beautifully alive as with VCap Teflons. Speaking of Teflons, the only real reservation I have about K40y is in the bass. The VCap Teflon, K72, FT3, Sonicap Platinum all seem to have a tighter control over basslines with sharper leading edges and snappier decay. K40y's bass is more woody, richer, but just shy of the vise-grip crunch, so if you're a death-metal or electronica fan, K40y may not get you to the promised land.

Overall, I really enjoyed the K40y. Its *raison d'être* falls squarely in the critical midrange, where tons of texture, bloom, and natural detail anchor the music without that subtle synthetic feel of many other caps. Although the voices aren't brightly spotlighted, there is a magical highlighting and intensification without turning bright.

Dare I dream of oil-impregnated foamed-Teflon silver-foil capacitor...?



### Vishay Roederstein MKP-1839 Metalized Polypropylene Capacitor

Audio Circle member "slbender" was kind enough to send me some less-than-exotic caps to evaluate, including the Vishay MKP-1839. His view is that most caps of similar construction, e.g. metalized poly, should sound very similar, no matter the brand or price. This was a good exercise for me because it helped with the "Big Question" that must be lurking in the minds of many audiophiles: are these expensive, exotic capacitors worth it?

Vishay MKP-1839 is the axial version of the more famous Vishay Roederstein MKP1837 (a.k.a. ERO MKP1830), which is touted as a good bypass cap, and represents a well-made, inexpensive metalized poly cap. And as it turns out, it also sounds good as a coupling cap. Upon casual listening from a casual house guest, for example, it is unlikely he will jump up and down and scream, "Put back that other capacitor X ASAP!"

MKP-1839 sounds pretty well-balanced, without obvious peaks or valleys, and pleasant; it is less hard-sounding than, say Solens. In fact, one can only wish manufacturers would use caps like MKP-1839 in their cheaper, generic audio gear. So, why should you pay more for your cap?

The most important difference between MKP and some of the better caps is the weight behind the notes. I'm not talking about bass weight or warmth but the fully fleshed-out, 3-dimensional harmonic energy behind each note, be it in treble, mid, or bass. Lacking this, soprano, chime, flute can sound just 2-dimensional and thin, failing to fully make you believe.

The other significant difference is in dynamics. The MKP doesn't sound too lacking until you compare to the better caps. A "pop" or "thwack" via MKP sounds like a fighter who is punching to save his neighbor's life whereas via a better cap, he sounds like he's punching to save his own life. Similar difference in microdynamics as well; better caps simply let the small nuances and subtleties to bubble to the surface with easier effervescence and life.

I still don't believe any of this truly answers the question whether exotic caps are worth it because the answer will depend on one's gear, tastes, resolution level of the system, musical choice, pocketbook status, and simply how crazy you are. Time to enjoy the music, either way, any way...

-- Jon L.

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