

Drumsticks, Brushes, and Mallets

by Raymond Massey

First, let me extend a warm welcome and thanks to everyone for visiting Pearl's **Tech Speak** column.

My name is Raymond Massey, Product Specialist, and I've been with Pearl since 1993. Some of my duties include coordinating trade shows such as the N.A.M.M. (National Association of Music Merchants) show and participating in Pearl's "Masterworks Tour" in support of our Masterworks totally custom drumset line. I'm also a player and very active in the music scene here in Nashville. If you are ever in town, please come and visit; I hold down the house band gig with the **Wooten Brothers at 3rd & Lindsley**, a local R&B club every Wednesday night.

Before we get down to business let me fill you in on some changes here at Pearl. Let's congratulate Gene on his recent promotion to Product Manager (congratulations Gene!). With this position, his responsibilities have increased therefore he has less time to write **Tech Speak** articles. Graciously he has given me an opportunity to contribute articles to the **Tech Speak** column, for which I am thankful.

As previous Tech Speak subjects covered "tools of the trade" topics, namely tuning and drumheads, I felt it appropriate to continue this theme for my first article. Thus with no further fanfare, I'd like to present this installment of **Tech Speak**:

Drumsticks, Brushes, and Mallets.

I hope you find it informative.

Overview

An observation of today's marketplace reveals more varieties of "things to hit drums with" than ever before. There seems to be a model for almost every musical style and application. Take, for example, all the artist models, concert, marching, and jazz models, rock & pop models, sticks intended for specific dynamic levels, models with wood or nylon tips, plus the growing number of synthetic sticks. To that, factor in the huge assortment of brushes, as well as keyboard, timpani, and marching mallets and the list becomes even more complex and often times confusing.

The purpose of this article is to give a general overview of the different types of sticks, brushes, and mallets and explain how each varies in sound, feel, and durability.

Model Numbers

We all use model numbers as a way to identify and separate one stick from the next. Basically, they fall into two types of categories: contemporary and traditional.

Contemporary Model Numbers

Contemporary numbers have meaning only to their respective manufacturer and do not cross-reference from brand to brand. For example, the 707 and 739 are proprietary ProMark models, the Quantum 3000 is a Calato model, and the Magnum Rocker is exclusive to Vic Firth.

Traditional Model Numbers

Traditional model numbers, such as 3S, 2B, 5B, 5A, and 7A were derived from first generation drumsticks where each number and letter denoted the stick's size and application. The exact specifications of each model varied slightly from manufacturer to manufacturer most notably in the **Taper** and **Tip** (we'll discuss in more detail later in this article), nevertheless the basic sizes and shapes were consistent throughout the industry.

Number

The numerical portion signifies the circumference of the stick. In general, the lower the number the larger circumference, and the greater the number the smaller the circumference. For example, the 7A is smaller in circumference than a 5A which in turn is narrower than the 2B. The exception is the 3S, which is larger in circumference than a 2B despite its number.

Letter

The letter suffix: "**S**," "**B**," and "**A**" originally indicated the recommended application.

"**S**" model sticks were designed for **Street** applications such as drum corps and marching band. The largest diameter sticks of their day, their massive size naturally enhanced volume and sound projection demanded for these styles.

"**B**" model sticks were intended for **Band** applications such as brass bands and symphonic concert bands. Smaller in circumference than the "S" models, they were easier to control and thus especially popular with beginning drummers. To this day the 2B is recommended by teachers practically everywhere as ideal starter sticks.

"**A**" stands for **Orchestra**. "**A**" model sticks were designed for big band or dance type orchestras. They're smaller in circumference than "**B**" series sticks and lend themselves well for softer type playing.

I guess by now you're wondering if "**S**" stands for **Street** and "**B**" stands for **Band**, why does "**A**" stand for **Orchestra**?

How the Letter "A" Came to Be

At the P.A.S.I.C. show last year I had the honor and privilege of meeting Bill Ludwig, Jr. I thought that if anybody knew about the origins of the drumstick numbering system, he would. After all, the Ludwig family played a major role in the evolution of manufacturing drums and sticks. So with that in mind, I asked if he could explain to me how the letter "A" came to signify Orchestra model drumsticks.

According to Bill, the Ludwig Drum Company was the first manufacturer to mass-produce drumsticks using modern machinery. His dad, William F. Ludwig, Sr., chose the letter "**A**" for **Orchestra** because: 1) the "**O**" didn't print to his liking; and 2) he simply preferred the letter "**A**" better. Eventually everyone adopted the "A" designation, which is still in use to this day. Just imagine the ramifications if the "**O**" printed OK and if Bill, Sr. liked its looks. The 5A would be known as a 5O!

Drumstick Construction

The process starts in sawmills where logs are cut into square sections and dried in kilns for stabilization. The squares are then turned down into dowels and sorted by size and grain for specific models. During this process, pieces that don't meet quality standards are weeded out.

The dowels are machined a second time to exact model specifications determined by the manufacturer. The finish and nylon tips are applied and the sticks are ready for packaging. These days, most manufacturers pair sticks by weight and density to ensure perfectly pitched-matched pairs. Later in the article I'll explain how to pitch-match sticks yourself.



Mill workers circa 1940's using a wood lathe.

Woods

The woods most commonly used today for drumsticks are hickory, maple, and Japanese oak. Hickory is the most popular of the three because it absorbs impact well and is very durable (hammer and ax handles are commonly made from hickory). Besides these woods, some companies offer exotic woods such as rosewood and bubinga for enhanced tone and endurance.

Maple

Maple is one of the lightest wood types used for drumsticks. Although not as hard or as durable as hickory or oak, they're ideal if you prefer a light feeling stick with fast response.



Vintage Vic Firth SD-2 Bolero maple sticks. Note the branded Vic Firth logo.

Hickory

Hickory is the wood of choice for drumsticks. It's a little heavier and more durable than maple and offers a great all around tone and feel.



Zildjian 5B hickory sticks.

Japanese Oak

Japanese oak is a dense hard wood that tends to weigh more than maple and hickory and has proven to be very durable.



A rare pair of Promark 5A oak sticks (notice the aluminum tips).

Rosewood

Rosewood is a very dense extremely hard wood and makes a very durable stick. They're preferred by some for their wonderful tone and feel, however, they can be expensive.



A pair of custom-made rosewood sticks.

Synthetic Sticks

Most manufacturers of synthetic sticks use a variety of materials and methods for their production. The construction consists of proprietary alloys that are molded or milled to the desired manufacturer's specifications.

Synthetic sticks claim to be more durable than wooden sticks and some have interesting features not possible with wooden sticks. For example, Ahead sticks by Easton feature aluminum bodies with polyurethane covers that are replaceable when worn out. Additionally, a variety of screw-on tips are offered, including a mallet head, for different sound effects.

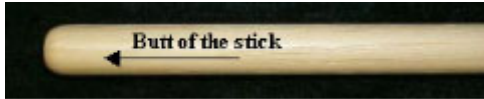


Synthetic sticks (top to bottom): Ahead sticks, carbon fiber sticks, rare Ludwig "Fiber-wood" sticks, and acrylic plastic sticks with flashlight system.

Drum Stick Anatomy

Butt

The butt is the counter balance point of the stick. It can also be used as a batter tip by simply flipping the stick around for additional power and volume when called upon.



In addition, some manufactures offer special-purpose butts. The Calato Splitstix (top) produces a bundle-type sound used in train beats or for a softer feel with less attack. The Ludwig 18A (bottom) produces added attack with its tip-like butt.

Body

The body is the main portion of the stick. Besides being the area that is gripped, it's also the part that is struck when playing side stick on the snare drum. Some manufactures offer tape, sleeves, grooves, knurling, and special shapes on the portion of the body that is gripped to resist slippage.



Different body types and grip surfaces (top to bottom): knurling, grooves, special shape, and grip tape.

Johnny Rabb's RhythmSaw features a ribbed body to produce a rolling-type sound great for playing Jungle grooves when dragged across the rim of the drum. If you get a chance to see Johnny Rabb play, check him out, he's definitely in the forefront of this style of playing.



RhythmSaw

Shoulder and Taper

The **shoulder** is the area of the stick just behind the tip and is the part that most drummers use to hit cymbal crashes, rim shots, and soulful backbeats. By hitting the hi-hat alternating between the stick tip and shoulder, the popular "chit-chat" sound can be easily created.



The **taper** is the **shape** of the shoulder. The length and thickness of the taper influences the flex, feel, and sound of the stick. Sticks with shorter, thicker tapers feel stiffer, offer greater durability and produce a stronger sound than sticks with longer, narrower tapers which tend to be fragile and flex easily but whose sound is more delicate.



The Vic Firth SD-5 Echo produces a very delicate sound due to its long, narrow taper.

Tips

Although there are many variations of shapes and sizes, tips can be categorized into four basic shapes:

#1) Round Tip



Small Round Tip (Top)

The small round tip creates a bright tightly focused tone and are especially pleasing on cymbals.

Larger Round Tip (Bottom)

The larger size produces a fuller body tone than the small rounded tip.

#2) Barrel Tip



The barrel tip has a larger contact area than round tips and creates a medium body tone with broader focus.

#3 Pointed or Triangle Tip



This tip produces a focused medium tone

#4 Tear Drop or Olive Tip



The teardrop or olive tip produces full low tones. This tip distributes the energy over a broader area than other tip thus extending the durability of heads, a great thing for hard hitters!

Nylon Tips



Tips made of hard woods produce tones that tend to be brighter than softer woods. However, as wood tips wear, they often become soft and chipped thus making them sound washed out and dark with less focus. To assure a consistent sound for the life of the stick, Joe Calato, Sr., of the **Regal Tip Company** introduced the first nylon tip drumsticks. The basic shapes of these tips affect the sound the same as wood tips, however, because of the hardness of nylon, they produce a brighter tone with more attack and projection that is preferred by many. The great advantage with nylon tips is their durability: they simply do not chip or become soft with wear the way wooden tips do.

Timbale sticks

Timbale sticks have two butt ends and are generally thinner and lighter than most drumsticks. This design produces bright rimshots and full-bodied tone when playing cascara patterns on the shell of timbales.



Alex Acuna Vic Firth timbale sticks

Choosing the Right Stick

Keep in mind the application (think about size) and find the most suitable stick for the job. The choice of material type, size, tip shape, is a matter of personal preference. The stick should feel comfortable in your hands and be appropriate for the application and sound you are trying to achieve. For example, 7A sticks may be fine for a lounge gig but totally wrong for drum corps!

Diameter

Choose sticks that fit comfortably in your hands and/or are appropriate for your style of playing. Larger diameters with their greater mass enhance projection and power.



Pictured above from (L to R) is a 7A, 5A, 3S. In this photo, it's easy to see how much the diameter can vary.

Length



Longer drumsticks have the advantage of greater leverage and reach however can be harder to control. If you want extra power without going to a larger diameter choosing a longer stick is a good way to go.

Weight

Weight affects the tone, power, and your ability to control drumsticks. In general, as sticks get heavier, the tone gets fatter and the volume louder. As sticks get lighter, the tone gets thinner and the volume softer.

Heavy sticks tend to travel in relatively consistent trajectories thus enabling them to "plow through" most errors in hand position thus making them easier to control for beginners. Additionally, playing with heavier sticks builds strength and endurance for drummers regardless of ability. It's a good idea, however, to switch between heavy sticks and the sticks you use on your kit (assuming there's a difference) to refine control. You'll probably notice that when you switch to lighter sticks, they're harder to control.

Density and Strength

For wood sticks, density is the single most important indicator of strength: **heavy wood = greater density and strength**. For example, oak is generally heavier and more durable than hickory, a fact that is reflected in their density measurements: hickory: **51** pounds per cubic foot vs. oak at approximately **61** pounds per cubic foot. However as stated before, hickory absorbs impact very well and is thus the wood of choice for most drummers.

No two trees are alike, therefore the density of the wood varies from log to log and even within the same log. This explains why some sticks feel solid and powerful while others feel "hollow" and wimpy despite the fact that they're the same brand and model.

Synthetic sticks are man-made and offer consistent density and (usually) good strength. However, they tend to cost more and feel differently than equivalent sized wooden sticks thus are not for everyone.

Want a Perfect Pair of Sticks? Read On...

Always check for signs of warping, equal pitch, and weight before purchasing a pair. Vic Firth is one of a handful of manufacturers that takes the time to pre-matching sticks into pairs. Nevertheless, it's still a good idea to follow the procedures below, especially to find sticks with the proper weight.

Checking for Signs of Warping

For consistent feel while drumming, you want sticks that are straight as an arrow and not warped. To check for warpage, roll the sticks on a smooth flat surface looking for wobble. Separate the good ones from the bad and proceed to the next step.

Checking for Pitch

You can have perfect technique but sound like a beginner (high, low, high, low, high, low) if your sticks are mismatched in pitch. To pitch-match sticks, tap the sticks on a hard surface while keeping the strokes as consistent as possible (so you're hearing differences in the sticks and not your technique). Once you find several sticks with the same pitch move on to the third and last step of the selection process, weight matching.

Checking for Weight

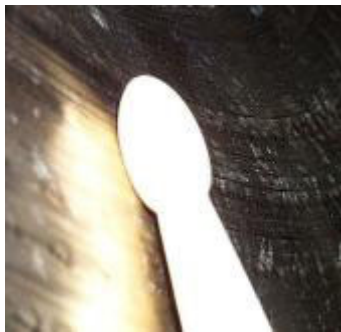
If you really want accuracy use a scale; in fact there are drum stores that have scales just for this purpose! Otherwise, use your judgement and pick pairs that are as similar as possible in weight. All things being equal, heavier sticks tend to be stronger than lighter sticks and produce a stronger tone.

Playing (the) Tips

You can change the sound of your strokes by altering the angle of the tip of the sticks.

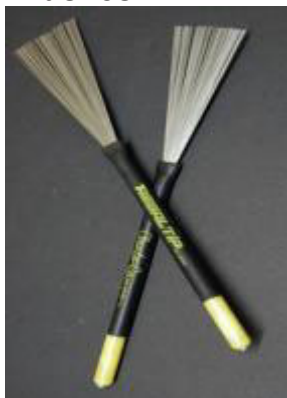


Playing the nose of the tip produces a brighter sound.



Playing the middle of the tip produces a fatter sound.

Brushes



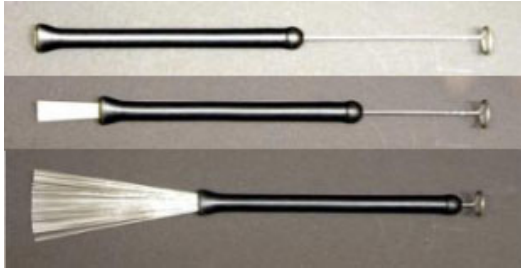
Brushes come in many varieties: telescoping, non-telescoping, metal bristles, plastic bristles, wood handles hollow aluminum handles, rubber coated handles, loop ends, ball ends, etc., etc. Basically there's a brush for any style of playing.

Brushes add texture and sound not possible with sticks. For example, silky swish sounds on coated heads and the delicate "ting" sound on cymbals are only possible with thin wire or nylon brushes. Ed Thigpen and Clayton Cameron are brush masters who can really make them sing. Every drummer should try their hand at playing brushes, it's a great way to have some fun and express yourself!

Features

Telescoping Models

Telescoping models allow the bristles to retract into the handles for protection when not being played. Additionally, the width of the "fan" can be widened or narrowed to the player's preference.



Regal Tip "Classic" telescopic brushes shown closed and extended.

Non-Telescoping Models

The handles and bristles may vary from model to model but non-telescoping brushes are simply that, non-telescopic. Care should be used when storing these as to not damage the bristles. Some non-telescoping brushes are sold in tubes to protect the bristles when not being played.



Top: Regal Tip "Clayton Cameron" model non-telescopic brushes.
 Bottom: Regal Tip "Ultraflex" model non-telescopic brushes.

Butt

The butt end of the brush can create an array sounds from mallet-type rolls to glissando effects on cymbals. The different ends also influence the overall feel and balance of the brush.



Loop end.

This style was popularized on the Gene Krupa model brushes and is a very common on retractable brushes. Loops are great for glissando sounds when moved across cymbals.



Ball end.

Ball ends are great for mallet-type rolls on cymbals and drums. They weigh more than loop ends thus affecting how they play.



This type features a rubber clad body for cymbal rolls; a hard plastic tip for playing cross stick, ride cymbals and cymbal crashes; and a metal cap for playing glissando effects on cymbals.

Clayton Cameron-style.

Handles

Handles are available in wood, plastic, and aluminum, and with or without rubber coating. Wood, plastic and aluminum are most commonly used on non-telescoping models while aluminum rubber coated handles are most popular with the telescoping models.



Top to bottom: Ludwig L-194's, Regal Tip 583R "Classic," Regal Tip 593C "Clayton Cameron," and Regal Tip #565U "Ultraflex."

Bristles

Bristles are available in **wire**, **nylon**, and **plastic**. All of these dramatically influence the sound and feel of the brush.

Wire produces a silk-like sound with a snappy feel. Because these bristles are very thin, there's more wires per brush than on the thicker plastic versions. This produces the full-bodied silky-smooth texture favored by many.

Nylon bristles are larger than wire thus fewer of them fit per brush. This produces a texture that's less dense and darker than wire bristles. These brushes feel lighter and stiffer than wire brushes and are a great alternative to classic wire brush sound.

Plastic bristles are the largest and produce the darkest tone of the three types of bristles. The feeling is also the stiffest (similar to bundle sticks) thus lending themselves ideally to "Un-Plugged" pop style beats.



Left: wire bristles.

Right: nylon bristles.

Fan Adjustment

Adjusting the fan influences the feel and sound of brushes: wider spreads have a fuller, broader sound while narrow spreads are more focused with snappier feel.

Choosing Brushes

It's a good idea to own both plastic and wire brushes to be prepared for whatever you might encounter on the bandstand. Choose your brushes based on what sounds and feels best to you. If you're new to brushes, you can't go wrong with a pair of Regal Tip "Classic" or "Ultraflex."

Bundle Sticks

Bundle sticks consist of small rods made from plastic or wood that are bundled together and attached to wood, plastic, or shrink-wrap handles. They are halfway between sticks and brushes thus allowing them to be played with drumstick technique but with reduced volume. Bundle sticks are great for playing "Train Beats" in country music and "Un-Plugged" grooves.

The bristles come in different thickness. Thinner ones offer more delicacy while thicker ones are louder and more durable.

Some models have an adjustable ring around the bristles to alter the spread of the bristles. When the ring is moved closer to the tip the action becomes stiffer. As you move the ring toward the handle, the action becomes softer.



Top: Prototype Regal Tip "Blasticks."
Middle: Vic Firth Rutes.
Bottom: Wood Whacks.

Selecting Bundle Sticks

Simply find a model that feels good and has the right sound that you need. Again, you might want more than one pair to meet all of your needs.

Mallets

Mallets come in all shapes and sizes and feature various heads made from wood, felt, virgin wool, covered wood or cork, plus many types of spun yarn and special composites. Specific designs are available for use on timpani, mallet instruments, chimes, bass drums, cymbals, tenor drums, gongs, etc. with some designs applicable on more than one instrument.

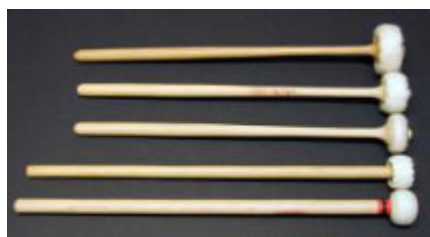


Assorted mallets by Gambal

Now, let's look at the general features of these mallets and their affect on sound and feel.

Timpani Mallets

Timpani mallets typically feature shafts made from bamboo, maple, and hickory although some manufacturers also offer aluminum. Of these, bamboo is the most sought after because of their lightness and flexibility. The popular **Cloyd Duff** timpani mallets by Adams are available in a variety of models with both bamboo and hickory shafts for superior balance, feel, and sound.



Cloyd Duff timpani mallets.

The mallet heads vary in hardness, shape, and size to accommodate different applications. Softer heads are ideal for legato strokes and soft rolls. Medium- hard heads produce a staccato note with good articulation. Larger heavier heads produce a robust full-bodied tone at pianissimo to forte dynamic levels

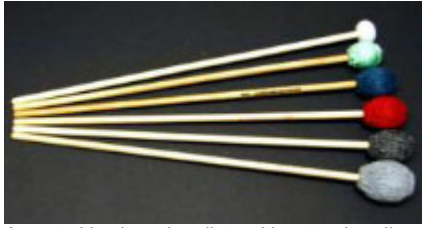
Keyboard Mallets

Keyboard mallets vary depending on the type of instrument played and playing application. Keyboard mallets are generally offered with birch, synthetic, or rattan handles. The heads vary from spun yarn over a solid core, rubber, wood, brass, phenolic, synthetic material, as well as proprietary yarn composites by manufacturers.

Rattan Handles

Rattan (*Calamus rotang**) is mostly used for traditional vibraphone mallets. Handles made from rattan offer a great amount of flex that is

preferred by many vibraphonists especially for muted strokes. *Rattan vines are commonly found in regions like Sumatra and Indonesia and thrive in the shade of rubber trees.



Assorted keyboard mallets with rattan handles.

Mallet Heads

Mallet heads made from harder materials such as phenolic or wood lend themselves to staccato playing thus are most popular for playing xylophones. Brass head mallets are mainly used for bells and bell trees, and should never be used on marimbas or xylophones as they can dent and crack the keyboard bars.

Yarn wound mallets are generally used on marimbas and vibes but can also be used on xylophones. The heads are available in many sizes and various degrees of temper that range from very soft to very hard. Some heads feature yarn wrapped solid cores for added attack when necessary. Large soft mallets are great for pianissimo articulations and rolls in the lower register of marimbas.



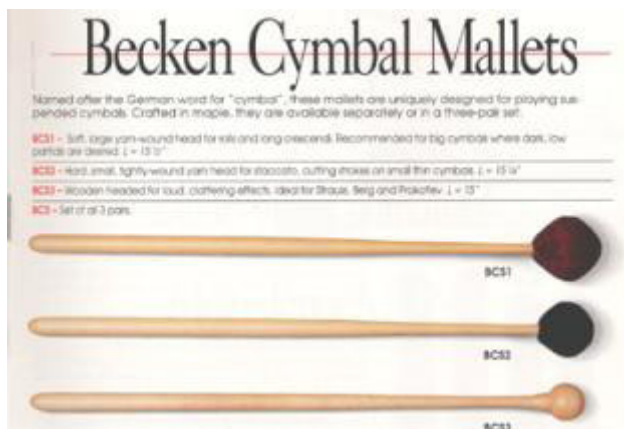
Assorted Vic Firth keyboard mallets showing different head styles.

Choosing Keyboard Mallets

The main thing is to use the correct mallets for the instrument(s) you're playing. Purchase as many models as necessary to cover all dynamic levels and timber variations.

Cymbal Mallets

Cymbal mallet feature heads made from spun yarn, wood, and rubber with maple, hickory, synthetic, and sometimes aluminum shafts. These mallets are primarily designed for suspended cymbal concert use however, they can also be used on drum set and other applications. As with keyboard mallets, harder heads produce a brighter tone and sharper attack, whereas softer heads produce mellower tones with less attack.



Becken cymbal mallets.

Bass Drum Mallets

Bass drum mallets are offered in symphonic and marching models with and without covered heads for very soft to very hard attack. Handles are commonly made from hickory or aluminum with many featuring non-slip grips.

For concert applications, many symphonic percussionists prefer mallets with large soft lambskin heads that produce a deep full-bodied dark tone. Other models featuring heads ranging from wood to covered wood offer a variety of sounds depending on their hardness and size.

Generally, marching bass drum mallets feature smaller harder heads with spherical shapes to provide consistent rebound and tone with maximum projection. Although the most popular shafts are made of maple and hickory, some players prefer aluminum shafts for added durability.



Top: Pearl marching bass drum mallet.
Bottom: Vic Firth concert bass drum mallet

Multi-Tenor Marching Mallets

The most popular tenor mallets feature aluminum shafts with grips for durability and slip-resistance with hard acrylic heads for maximum attack, projection, and volume. Other versions feature rubber, solid felt, and covered felt heads for warmer tonal effects. Wood handles offer a darker tone than aluminum and are preferred by some.



Multi-Tenor mallets

Gong Mallets

Gong mallets are similar to concert bass drum mallets but generally larger in size. They are typically fleece or felt covered with maple, hickory, and aluminum handles.

Chime Mallets

Chime mallets resemble a dual-head hammer featuring a soft and hard face. The soft face provides a darker tone with less attack, while the hard side offers a bright tone with plenty of attack.



Soft Surface.



Hard Surface.

Pipe Band Mallets

Pipe band tenor mallets feature a cork core with a powder puff-like fleece covering and a strap for twiling. The bass drum mallets feature a very large soft mallet head for deep rich dark sounds.



Vic Firth pipe band bass drum mallets

Drum set Mallets

There really aren't any mallets dedicated just for drum set however, any of the aforementioned mallets can be applied. Timpani mallets especially work well on drum set. They're great for cymbal rolls and melodic tom patterns. Check out Elvin Jones with John Coltrane for great examples of timp mallets used in this way.

Specialty Sticks

There are many models of specialty sticks that are designed to produce an additional sound besides the sound of the instrument being struck. Examples of these include tambourine sticks, hollow sticks with maraca-like beads inside, clapper sticks that produce a clap sound when struck, and so on. These are great for sound effects and can be applied on just about any percussive instrument.



Regal Tip Handbournine Stick.

Conga Mallets

Conga mallets have felt or leather covered flat heads for playing congas and bongos using regular stick technique.



Regal Tip Conga Stick.

In Closing

As we grow and follow our musical path, we can expect to use many different sizes, types, and brands of sticks. A wise man once said, don't worry too much about when you arrive, the best part is the journey there. This is true for searching for drumsticks, it's best just to have fun and explore.

At this time I would like to thank Gene Okamoto for being so kind to loan me some of his rare and collectable sticks for several photos in this article. Gene even had an original Ringo Starr model stick and some very cool prototypes from various manufactures.

Shown below is a sample of sticks that Gene and I used for this article.



All of us thank you all for visiting the Pearl website and for choosing Pearl drums!

Please feel free to contact me with any questions or comments at: raymondmassey@pearldrums.com
Until next time.