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Attwood Equestrian Surfaces

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Building the Perfect Arena

The perfect arena installation involves many steps (and expense) which ensure all-weather performance and an aesthetically pleasing arena.

The Dirt/Sub-Base

Since everything is built on top of your bottom-most layer, it is important to get it as precise as possible. When finished, the footing layer is always going to mirror the dirt (soil) or bottom layer; therefore, each layer must be graded to the same pitch. For outdoor arenas less than 100 feet wide, we recommend a slope to one side. If the arena is over 100 feet wide, it may be necessary to build the arena with a crown. The arena should be tilted according to tried and trusted rules we have developed over the years.

For indoor or covered arenas, there is no need for a slope to assist with drainage, but is important to have the sub-base as level as

possible. With both types of arenas, the native dirt (soil) should be compacted to industry standards and be graded to a precise tolerance.

The Kickboard/Containment

Before you move on to the base or footing, it is important to plan for drainage and containment. Basically, think of your arena like a big sandbox.

For an arena that is less than 100 feet wide, we recommend beginning at the longer, lower side and excavating a 2x2 foot trench. Centered along the length of the trench and continuing around the perimeter of the rest of the arena, 4x4 fence posts should be cemented 2 feet deep. These posts should be 12 inches above the top of the dirt, unless you have plans for a three-rail fence. If so, those posts should be higher to accommodate the fence rails. To ensure a longer life span, we recommend using pressure-treated or synthetic plastic lumber.

The Footing

You now have created the optimum foundation for your Perfect Arena. The next step is the footing. There are a number of footings on the market, and selection of your surface can depend on a number of factors: Your discipline, your budget and your climate, for example. Good footing is usually a combination of sand, fiber/felt and/or rubber. There also are synthetic surfaces, offering coated sands that require no watering and are dust-free. Research is important here, and it is good to collect as many samples as possible and talk to references. Also, ask about the MSDS (material safety data sheets) on all products you plan on using in your arena. You want to make sure you don't introduce something to your environment that could be potentially harmful or difficult to dispose of in the long-run. For example rubber tyre scrap can contain carcinogenic oils that were banned from use in tyres by the EU in 2010, but are still being used in imported tyres.

To determine how much sand to purchase, as a rule of thumb, you will need 2 ½ inches of sand, which equals about 25 pounds of sand per square foot of arena. So to help with the math, for a large court dressage arena (65.6 x196.8 = 12,913 square feet), you would need about 160 tons of sand (1 ton = 2000 pounds).

It is best to install the sand in several steps. Initially, position and grade half the sand in an oval shape while remaining 5 feet from all sides. If you are blending in an additive, position that product over the graded sand as evenly as possible. Blend it together with the sand.

Add the remaining sand and blend both layers together. When your blending processes is complete push the blended footing to the edges and grade the footing into place.

Footing Facts

Equestrian Sand

This month we take a look at sand, and discover that not all sands are equal.

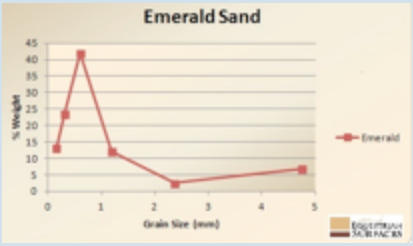
Most modern equestrian and racing surfaces are based on sand. There are a multitude of surface variants utilising additives such as tyre scrap, and shredded carpet, and coatings such as wax or Attwood's unique polymers. However the major component is always sand, and many people just don't realise how significant the sand can be in contributing to the properties of the surface. Many suppliers will cut corners by supplying a surface based on a totally unsuitable, but probably cheap, sand.

Firstly some background. The Oxford English Dictionary describes sand as: "a loose granular substance, typically pale yellowish brown, resulting from the erosion of siliceous and other rocks and forming a major constituent of beaches, river beds, the seabed, and deserts." The key word here is siliceous which means silicon in origin, and in the case of sand refers to silicon dioxide, or silica. This is a very hard material that gives good quality sand its hard-wearing properties. But notice also that sand can be derived from other rocks, and this is where lower quality sand comes in. A common alternative rock is calcium carbonate, which often is formed from the deposition and then pressurisation over millions of years of sea animals. Calcium carbonate is a significantly softer material than silica and will easily crush to form finer and finer particles.

Scientific measures of Absolute Hardness give a value of 100 to silica, whilst calcium carbonate has a value of only 9.

Typically, sand is a mixture of minerals, but the highest quality sand is composed mainly of silica – usually greater than 95%. Other minerals can give sand its colour such as iron oxide which yields a yellow/brown colour.

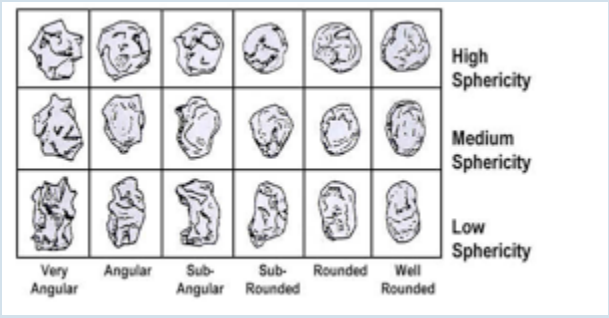
A second characteristic of sand is the grain size distribution. Grains can vary in size from around 2mm, down to 0.063mm – particles smaller than this are classified as 'silt'. Particle size has a profound influence on footing properties.



For instance bigger grains tend to drain well because the spaces between them are large, and the route down through a layer of sand is less tortuous. However large grains can drain water so well that a footing will dry out too quickly and require excessive watering. Also clearly not all grains will be the same size and the spread of sizes also influences surface properties.

A third characteristic is the grain shape. A classification based on the visual appearance of grains under a microscope is used to describe average grain shape . Two attributes are checked, the sphericity, i.e. how round the grain is, and the angularity, i.e. how smooth the surface is.

The shape of the grains also has a large bearing on the way a footing behaves. This is because the grains rub against each other as the surface is compressed by the hoof, and so frictional properties are important in providing the correct level of support and cushioning.



At Attwood Equestrian Surfaces we are experts on sand, and only specify sand that will impart the desired properties and lifetime to a surface. When you talk to footing manufacturers and suppliers, make sure you ask plenty of questions about the sand – it is a vital component!