MOR, Inc
Covered Aerated Static Pile Composting Technology

Managed Organic Recycling (MOR) employees the in-vessel (covered) aerated static pile (IASP) composting technology to make a "nutrient" rich soil amendment. This is a process whereby organic feedstock materials are processed in four separate steps; 1) mixing, 2) active composting, 3) stabilization/curing and 4) screening finished product.

The mixing step is critical to achieving an efficient composting process. Mix design must take into account the bulk densities, moisture concentrations and Carbon to Nitrogen ratios of feedstock materials. Bulking agents are often required to adjust mix characteristics. Porosity in the mix is also important to the IASP process since there will be no turning during the composting phases. Typically, design parameters for most feedstock materials in the mix are: moisture concentration 60 percent, C:N ratio 30-40, and air-filled porosity about 40 percent. Mixing can either be batch or continuous (mixers, such as, pug mills, agricultural tub grinders and windrow turners as well as mixing using front end loaders).

The next step in the IASP composting process is active composting. During this phase, which last about four weeks, complex organic materials are a biodegraded by organisms that only use oxygen as the electron acceptor. Thus, these organisms convert complex organics to CO_2 and water while at the same time generating heat (piles can easily reach temperatures above 150 degrees F). This part of the process is also referred to as the pathogen destruction phase US Environmental Protection Agency Rule 503 (PFRP requires that temperatures in the pile reach a minimum of 141 degrees F for at least three consecutive days). Another benefit of active composting is the destruction of odorous compounds, such as, VOCs and inorganic compounds (nitrogen and sulfur). This usually occurs within the first ten to 15 days in the active composting phase.

Positive aeration is the preferred method of supplying air to the pile, since not only are horsepower requirements lower, but air distribution throughout the pile is uniform. The air demand can range anywhere from 750 to 1,200 cfh per dry ton of compostable material.

Following the active composting phase, the pile is remixed/transferred to the stabilization/curing phase. It is in this phase that mesophilic organisms take over and begin the stabilization and curing of the feedstock materials. This phase can take between two to four weeks as the oxygen uptake rate slows and the maturity of the compost increases (a finished compost is considered stable and mature when its oxygen uptake rate is less than .08mg CO_2 per gram of organic matter and Slovita Index is above 6. Mesophilic organisms are more efficient in the stabilization/curing process. To provide the best environment for these organisms to thrive temperature should be maintained around 120 degrees F.

Finally, after the active composting and stabilization/curing phases the finished product is ready for screening. Depending on the end use, different screen sizes ranging from ¼ to 2-inch are employed. Smaller sizes are used for top dressing applications while the larger screen sizes are used for landscaping products. Finished product may be sold in bulk or in bags and in some cases given away to local residents of public composters.

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