

How QuikSoil™ 506 Works.

1. 506 is a combination of amino acids, proteins, nucleic acids, intermediate metabolism products, complex glycosides, and selected minerals. This combination provides everything necessary for the metabolization of organic compounds. By increasing the reductive potential of the mass while maintaining good structure, 506 promotes increased facultative proliferation throughout the interior of the substrate. Concurrently, aerobes, micro-aerophiles and existing facultative microbes utilize (by respiration {oxidation}) any molecular oxygen which approaches the interior strata of the substrate, yielding simple non odorous compounds and water. 506 also provides sulphur reducing anaerobes with a preferential replacement for sulphates as a source of oxygen. When the nitrates in 506 are reduced, nitrogen is formed instead of sulphides and mercaptans. As this nitrogen makes its way to the surface of the mass, nitrogen fixing bacteria have the opportunity to oxidize it back into nitrate, creating an additional singlet oxygen source, keeping the nutrient nitrogen in the mass, and limiting odorous volatilization. Aerobic and micro-aerophilic activity dominates the upper parts of the mass, acting as a filtration and finishing system for gases moving outward from the interior.
2. 506 decreases ammonia, amines, indole, and other nitrogenous odours by improving conversion rates to nitrate and increasing biomass production, decreasing the need for aeration and the associated volatilizations. (Stable temperatures increase nitrogen fixation bacteria levels.)
506 decreases sulphide and mercaptan production by supplying the reducing bacteria with an alternative compound oxygen source. Additionally sulphur is tied up in sulph-oxide bonds and proteins produced in biomass increases. Other odours, which are typically the products of incomplete oxidation, such as aldehydes and ketones, are further oxidized and degraded as they are maintained in the mass longer, rather than prematurely exhausted.
3. 506 increases facultative activity to levels allowing decomposition times consistent with the needs of most facilities. Because less carbon dioxide is generated and volatilized, more weight (density) and more carbon remain in the finished product and fewer greenhouse gases are exhausted. Because more ammonia and other free nitrogen compounds are fixed rather than exhausted from the pile, and because sulphates are not reduced to sulphides, nutrient values in 506 treated compost tend to be higher, and the nutrients are often attached in complex organic compounds providing long term nourishment to plants and soil microbes.

4. The addition of the QuikSoil™ technology to 506 increases the speed of stabilization as evidenced by lower CO₂ production, lower ammonia formation, and higher levels of humic acids and humins in shorter periods of time. The QuikSoil™ technology utilizes current primary carbohydrate chain research or Sequential Carbohydrate Availability (SCA) to maximize diversity and growth rates. SCA works by using extremely complex carbohydrates which typically decompose in a specific order to less and less complicated compounds. The order of availability of new carbohydrates and waste compounds, in conjunction with a select set of corresponding enzymes, facilitates the development of specific strains of bacteria in a fairly specific order. The bacteria encouraged are selected for their ability to digest complicated organic compounds in rapid fashion. Since the introduction of QuikSoil™ technology in conjunction with 506, Solvita™ test levels of 6 have been achieved in as few as 8 weeks (average 11 weeks over 56 tests). Test levels of 7 have been achieved in as few as 22 weeks (average 26 weeks). These results have been confirmed analytically on 14 of the 56 tests. (The Solvita™ measures maturity on a scale of 1 to 8 with 8 representing maximum maturity.) The addition of QuikSoil™ increases the value of 506 usage dramatically and also its value to the composting industry. QuikSoil™ 506 represents a significant means of odour control, emission control, fuel consumption control, and can now increase compost's potential as a method of carbon sequestration by bringing true stabilization into economically feasible time frames.
5. Limiting the amount of mechanical aeration facilitates even temperatures and degradation rates. Mechanical aeration, much like fanning a fire, causes temporary temperature spikes and dramatic changes in biological population. Because much of this temperature increase may not be biological, the mass may reach temperature levels toxic to desirable microbes. Thus, heavily aerated materials kept at high temperatures break down as much from chemical (thermal) decomposition as from biological decomposition. Additionally, during aeration activities anaerobically produced compounds are exhausted before they are fully decomposed, **producing many odour problems.**
6. QuikSoil™ 506 requires specific management practices in conjunction with its application to be most effective. These practices typically save the operator labour, maintenance, and fuel costs as they decrease the amount of external handling and processing the material receives.

Application on site.

506 is mixed with water in any quantity desired. (Water acts only as the carrier.) 506 should be added when the feedstock's are shredded/mixed . The 506 should be as thoroughly mixed into the material as is possible. 65 ml of 506 concentrate is required per tonne of compost.

Windrow.

After mixing and initial turning, the material is allowed to remain undisturbed for 6 to 8 weeks so long as temperatures are sufficient, with 6 weeks as an average. Typically, the operator determines the correct time for turning by noting a steady decline in temperatures throughout the mass for a minimum of 3 consecutive days. After this turning, the material is allowed to sit another 2 to 4 weeks determined again by temperature. Then it is turned again if necessary or removed for screening.

Vessel.

After mixing and initial turning, the material is placed in barrier one vessel for 14 days then moved to barrier two vessel for a further 14 days. By this time the material is largely deodorised and noticeable decomposition has occurred. The material is then placed on the pad and left static for a period of 28 to 45 days at which time it can be screened, and the screened material further matured prior to sale.

QuikSoil™ 506 is environmentally friendly, and requires no special care in handling. It is user friendly, completely water soluble and totally biodegradable (see attached health and safety data sheets). The product has a 3 year shelf life stored in dry conditions and not exposed to freezing.