



Anaheim Office
December 29, 2021
Report 21-351-0001

Zanker Landscape Materials
4201 Florin Perkins Road
Sacramento, CA 95826

Attn: Saul and Spencer

RE: Arbor Mulch Fines

The product submitted is ground stumps that has been screened but not composted.

Visually, this material has a nice dark brown color and is free of contaminants.

About 98% of the material passes a 1/2" screen with about 87% of the material passing a 1/4" screen. The particle size distribution is favorable for an incorporated amendment and is a little finer than average for a surface mulch product.

The product is comprised of 60% organic matter by weight with over 300 lbs. of organic matter per cubic yard.

The product is slightly acidic. Soluble salts are favorably low. The only nutrient of significance is potassium.

The carbon to nitrogen ratio is high and if this material is incorporated into soil there will be competition between plants and soil microorganisms for available nitrogen. Nitrogen draw is not expected to be an issue if the material is used as a surface mulch.

Concerns with using this material as an incorporated amendment are the nitrogen draw and potential for shrinkage over time. It may be possible to overcome the nitrogen draw with the addition of a slow release nitrogen material. The carbon nitrogen ratio and shrinkage issues could be improved by composting.

If no composting is anticipated, then the best use is as a surface mulch. The current grind has a nice appearance but it is a little finer than ideal if the goal is to reduce surface water evaporation and to suppress weed germination. Another option would be to screen at 1/4" minus and market the fines as a turf topper. As a turf topper it would not have the same nitrogen kick as some available toppers with better nitrogen supply.

Please let us know if we can be of additional assistance.

A handwritten signature in black ink that reads "William Darlington". The signature is written in a cursive, flowing style.

WILLIAM DARLINGTON, M.S., CCA

COMPOST / AMENDMENT EVALUATION

Send To : Zanker Landscape Materials 675 Los Esteros Road San Jose CA 95134	Project : Arbor Mulch Florin Perkins Landscape Materials	Report Number : 21-351-0001 Customer Number : 01002 Date printed : 12/23/2021 Date received : 12/17/2021 Page : 1 of 2 Lab Number : 97643
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Sample Id : **Arbor Mulch fines**

Nutrient	Total - Dry Weight	Extractable - Dry Weight	Saturation Extract	Sufficiency Factor
Nitrogen (N)	0.33 %	39 ppm		0.2
NH ₄ -N		30 ppm		
NO ₃ -N		9 ppm		
Phosphorus (P)		102 ppm		0.8
Phosphorus (P ₂ O ₅)		234 ppm		
Potassium (K)		1583 ppm	7.6 meq/L	2.9
Potassium (K ₂ O)		1915 ppm		
Calcium (Ca)		3918 ppm	19.4 meq/L	1.0
Magnesium (Mg)		821 ppm	7.1 meq/L	1.5
Sodium (Na)			1.7 meq/L	
Sulfur (S)				
Sulfate (SO ₄)			32.0 meq/L	10.7
Chloride (Cl)				
Copper (Cu)		2.7 ppm		0.9
Zinc (Zn)		11 ppm		1.0
Manganese (Mn)		44 ppm		1.7
Iron (Fe)		47 ppm		0.4
Dilute Acid Fe		0.17 %		
Boron (B)			0.18 ppm	0.6

Test	Result
pH (sat paste)	6.8 s.u.
% Half Sat.	111
TEC	230 meq/kg
Qualitative Lime	None
Salinity (EC of sat ext.)	2.7 dS/m
SAR (Sodium adsorption ratio)	0.48
Sodium as % of ECe	6 %
Bulk Density - Dry	548 lbs/yd ³
Bulk Density - As Received	860 lbs/yd ³
Moisture - As Received	36.2 %
Organic	60.2 %
Weight of organic / yd ³	330 lbs/yd ³
Weight of mineral / yd ³	218 lbs/yd ³
C/N Ratio	109.2

Gradation	
Wt Percent Retained 1"	0.0 %
Wt Percent Retained 1/2"	2.0 %
Fraction Passing 1/2 inch Screen - Dry Weight Basis	
Screen Opening	% Passing
Passing 9.5mm	98.7 %
Passing 6.4mm (1/4")	87.2 %
Passing 4.75mm	79.6 %
Passing 2.36mm	57.1 %
Passing 1.00mm	35.1 %
Passing 0.50mm	17.7 %

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POTENTIAL RATE LIMIT FACTORS

Test	% Volume rate limit	Cubic yard amendment per 1000 sf to 6"							
		1	2	3	4	5	6	7	8
		Volume % amendment blend with sandy loam							
		5	11	16	22	27	32	38	43
EC sat. ext.	88 %								
Sodium sol.	No Limit								
Chloride sol.									
Boron sol.	No Limit								
NH ₄ -N	No Limit								
Available Nitrogen	No Limit								
PO ₄ P	No Limit								
Copper	No Limit								
Zinc	No Limit								

Rate limit estimates based on amending a non-problematic sandy loam

RELATIVE IMMEDIATE NUTRIENT AND ORGANIC VALUE

* Example Rate 29 %	Slight	Moderate	Abundant
Nitrogen	[Bar]		
Phosphorus	[Bar]		
Potassium	[Bar]		
Calcium	[Bar]		
Magnesium	[Bar]		
Copper	[Bar]		
Zinc	[Bar]		
Manganese	[Bar]		
Iron	[Bar]		
Sulfate	[Bar]		
Organic Matter	[Bar]		

* If no chemical characteristics are rate limiting, the example rate is based on organic content of the amendment (up to a max of 43%).