



sustainable nutrient solutions for this generation . . . and the next

Natural NPK



Sustainability



Site Approval



About quasar



www.equatenpk.com



equate is an organic NPK supplement designed for agricultural land application. *equate* meets ¹Class B or Class A solids requirements as applicable and contains organic material from wastewater treatment plants and food processing plants.

ecofriendly alternative:

equate is an ecofriendly alternative to traditional fertilizer options such as land application of manure or chemical fertilizers.

high organic matter:

Adding these products to the soil helps increase tilth and organic matter.

be part of the solution:

equate is the product of anaerobic digestion, a natural process where microorganisms break down organic material in the absence of oxygen. This process creates two products: energy and *equate*. The gases resulting from anaerobic digestion are used to create domestic renewable energy, while *equate*, containing valuable nutrients and organic matter, is applied to farm fields for agronomic benefit.

odor management:

Odor causing solids are naturally reduced during the anaerobic digestion process by converting volatile solids into biogas - leaving you with a less odorous product.

Organic Fertilizer Supplement

Soil Amendment

Supports Healthy Crop Growth

Nitrogen Replacement

High Organic Matter

Natural NPK



***Typical Fertilizer Value**

**** 5-4-1**

Nutrient	*** Average lbs/1000 gallons
Nitrogen (Plant Available)	31.22 lbs
P ₂ O ₅	23.13 lbs
K ₂ O	5.45 lbs

*Average concentrations above are based on laboratory tests of representative samples from quasar's Columbus system. *equate* is a product of anaerobic digestion. As such, nutrient values may vary slightly.

** Numbers are based on dry weight.

*** Numbers are based on wet weight.



1. *equate* material complies with Ohio EPA Class B or Class A criteria as applicable.



equate

- Renewable Energy
- Cost Effective Waste Management
- Carbon Neutral
- Turn-key Solutions
- Sustainable Nutrient Product

quasar energy group is a Cleveland, Ohio based waste management and renewable energy company. Combined, our leadership team has over 75 years experience converting waste management challenges into sustainable solutions that generate valuable byproducts. *equate* is a natural byproduct of anaerobic digestion.

anaerobic digestion systems:

- Complete engineering services
- Turn-key system design/build/own/operate
- Remote monitoring capabilities
- State-of-the-art laboratory at The Ohio State University OARDC

About quasar



organics management (via anaerobic digestion):

- manure
- food processing waste
- ethanol stillage
- FOG (fats, oils, and greases)
- municipal biosolids
- agricultural waste (crop waste)
- energy crops

renewable energy:

Production of low-cost renewable energy from waste that offsets fossil fuel use while reducing our carbon footprint.

- Alternative motor vehicle fuel (qng)
- Pipeline quality biomethane
- Combined heat and power

Growing National Presence:

- (operational or under construction)*
- Ashley, Ohio
 - Buffalo, New York
 - Cleveland, Ohio
 - Columbus, Ohio
 - Haviland, Ohio
 - North Ridgeville, Ohio
 - Rutland, Massachusetts
 - Wheatfield, New York
 - Wooster, Ohio



● Locations of anaerobic digesters

equate site approval process: *(applies to Class B material only)*

quasar’s experienced team of professionals will manage the site approval process for you and ensure that your property is in complete regulatory compliance.

To utilize Class B biosolids for beneficial use on your fields, quasar will complete an Application for Authorization through OEPA’s Division of Surface Water. This application formalizes the Beneficial Use Agreement (BUA), ensures the consistent quality of the material spread during land application, and assures that material will be utilized at agronomic rates.

The Application for Authorization includes consent forms to be signed by the treatment works operator (quasar, Form BUA-1), the land owner (holder of legal title to the property, Form BUA-2), and the site operator (farm operator who acknowledges the fertilizer loading from the biosolids, Form BUA-3). By signing these forms each party consents to utilization of Class B biosolids and thereby agrees to comply with the State of Ohio’s beneficial use requirements.

In addition to formal consent, the Application for Authorization includes site information for the acreage applying for authorization under the program (Form BUA-4). This site information includes total acreage proposed for beneficial use, soil mapping and soil characteristics, and type of crops to be grown on the land. If within the last three years soil samples have been taken on the land designated in the application, then that soil data can be used in the application. If soil analysis hasn’t taken place within the last three years, then new soil samples will need to undergo analysis. Once these four forms are completed, quasar will submit them to Ohio EPA for review and approval.

general guidelines:

Crops/Livestock/Public	Harvest Period				
	30 Days	12 Months	14 Months	24 Months	38 Months
Food Crops (touch the surface)			X		
Food Crops (below surface) - when equate remains on the surface 4 months or longer prior to incorporation				X	
Food Crops (below surface) - when equate remains on the surface 4 months or less prior to incorporation					X
All other food crops, feed crops, and fiber crops	X				
Livestock grazing	X				
Turf or vegetation for landscaping		X			
Public access (potential public exposure)		X			

Full Service Land Application

Complete Regulatory Compliance

Farm Based Solutions

Site Approval





equate

Naturally Occurring

Restores Soil Balance

Replaces Fertilizer Products

annually reduce fertilizer costs
by up to \$150 per acre.

high value alternative fertilizer:

As commercial fertilizer prices fluctuate with petroleum markets, crop management solutions that are more reliable and more cost effective will give farmers and their families a competitive advantage by delivering the strong yields and stable soils they expect. *equate* is the solution. *equate* reduces costs by sustainably reclaiming nutrients from organic materials to make farmers more profitable and more secure.

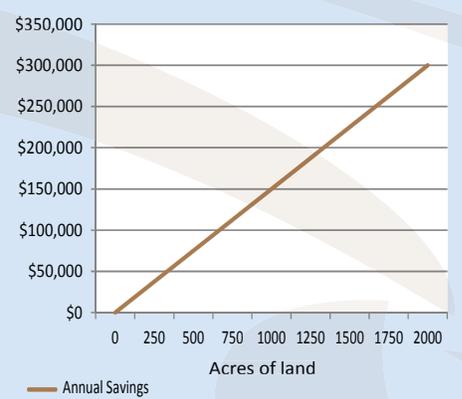
land application management:

quasar offers a full-service nutrient management program for our agricultural customers. We will work with you to calculate agronomic nutrient application rates for your fields. *equate* is either directly injected into the soil or surface sprayed, depending on farming practices. Use of *equate* can offset your farm's fertilizer requirements while reducing the cost to fuel and operate spreading equipment. On average, using *equate* in place of traditional fertilizer products can reduce your annual costs by up to \$150 per acre.

Sustainability

Projected Annual Value

*Based on application rate of 6,000 gallons of *equate* per acre



"Analysis shows the material (equate) is a very good plant fertilizer and is of high quality. Chemical analysis shows metal contaminants of no concern. Land application of this effluent will benefit agricultural crop production, soil and environmental quality."

Nicholas T. Basta
 Professor of Soil and Environmental Chemistry
 The Ohio State University

dynamic stewardship:

The health and quality of your soil is our top priority. quasar's *equate* delivers valuable nutrients and organic matter to your fields - replenishing them for the next generation. *equate* can help to position your farm for continued growth and prosperity in a changing environment.

