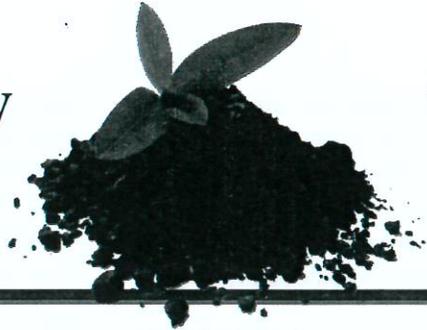


Exceptional Quality Lititz BIOSOLIDS

Natural Specialty Fertilizer



Sod/Turf, Garden & Home Lawn Utilization Information Sheet

What are Exceptional Quality (EQ) Biosolids?

Biosolids are an organic-based, slow-release specialty fertilizing material made from treated, processed, and stabilized residuals resulting from the treatment of wastewater. **LITITZ EQ BIOSOLIDS** (98% total solids) provide a valuable source of organic matter. As shown in Table 1, biosolids also serve as a natural nitrogen (N) fertilizing material, making it less susceptible to leaching losses than conventional chemical fertilizer. It also provides a consistent product that does not burn plants.

How are Lititz EQ Biosolids Produced?

Exceptional Quality (EQ) biosolids are produced at the Lititz Wastewater Treatment Plant (WWTP). The Lititz WWTP offers advanced treatment, utilizing aerobic treatment processes and thermal drying for EQ biosolids stabilization. These EQ biosolids have been treated to such a high degree that the most rigorous standards imposed by state and federal regulations are satisfied. Such residuals meet stringent quality criteria relative to trace elements (heavy metals), pathogen destruction, and vector attraction reduction (stability).

Plant Growth and Soil Quality

EQ biosolids are an excellent moderate-grade fertilizing material and a valuable source of organic matter. In addition to primary nutrients, **LITITZ EQ BIOSOLIDS** contain secondary and micronutrients that are essential to plant health and vigor (crucial for superb turf).

TABLE 1
LITITZ EQ BIOSOLIDS
Typical Nutrient Content

<u>Primary Nutrients</u>	<u>Avg</u>	<u>lbs N / lbs PAN /</u>	
		<u>Wet Ton</u>	<u>Wet Ton</u>
% Organic N	7.40%	144.4	28.9
% Ammonium N	0.14%	2.7	1.4
% Phosphate (P ₂ O ₅)	7.25%		
% Soluble potash (K ₂ O)	0.35%		

Wet Tons (WT) needed to apply 100 lbs of PAN* = 3.2 WT

<u>Micronutrients</u>	<u>Avg</u>
% Calcium	2.92%
% Magnesium	2.13%
% Iron	0.61%

*PAN = Plant Available Nitrogen

Benefits Include:

- Increased soil water holding capacity
- Increased water infiltration and soil aeration
- Increased mineral fertilizer plant uptake efficiency
- Increased turf durability and stress resistance
- Provides slow-release nutrients for plant growth
- Reduced soil surface crusting
- Reduced soil compaction from excessive traffic
- Reduced potential for erosion
- Improved soil tilth (structure, texture, nutrients)

Recommendations for Use

LITITZ EQ BIOSOLIDS may be used as a fertilizer for flower gardens, shrubbery, ornamentals, and as a potting mix component (Table 2). It is an excellent fertilizer for use in the establishment and/or maintenance of sod, turf grass, and home lawns (Table 3). **LITITZ EQ BIOSOLIDS** may be used as an agent for soil blending with other approved residuals. It can also be used for the production of agronomic crops, such as corn, hay, or small grains.

TABLE 2
Container/Garden Typical Application Rates ⁽¹⁾

<u>Garden Plants</u>	<u>Application Rate</u>
Cell Pack Bedding Plants or Quart/Gal Transplants	1/4 cup per ft ²
Established Plants	1/3 cup per ft ² around root zone
Flower Beds	2.5 quarts (or 5.5 lb) per 25 ft ²

LITITZ EQ BIOSOLIDS should be incorporated into the top 1-2" of soil in established perennial and annual gardens in spring. For new plantings, mix with the backfill soil and fill around the plant.

<u>Potted Plants*</u>	<u>Indoor</u>	<u>Outdoor</u>
4" Diameter	2 tsp	3 tsp
8" Diameter	1/8 cup	1/4 cup
12" Diameter	1/3 cup	2/3 cup
14" Diameter	1/2 cup	3/4 cup

*For container gardens, mix evenly into the potting soil in spring.

Lititz EQ Biosolids Application Rates

The Plant Available Nitrogen (PAN) contributed by biosolids as a fertilizer should be credited along with other N sources (e.g. chemical fertilizers, manure, etc.) towards satisfying the plant N need. The sum total of all PAN sources should not exceed projected plant N uptake.

The biosolids N content determines the amount of biosolids that may be applied for a particular use such as turf, nursery, or sod. Additionally, EQ biosolids have a lower P availability and less impact on the environment than fertilizers with highly available P. Recommended application rates will build the soil's organic content and improve soil quality (Table 3).

Planned Vegetation	EQ Biosolids Application Rate (per appl. event)	Recommended Application Events
Sod Establishment	100 lb/1,000ft ²	x 3 applications: (bimonthly during growing season)
Turf/Lawn Seasonal Topdress, Landscaping	50 lb/1,000ft ²	x 2 applications: (spring and fall)
Turf Dormant Feed (Golf Courses)	75 lb/1,000ft ²	X 1 application: (early winter)

The natural slow release granules have a fertilizer analysis of 7.5-7-0 (% nitrogen, phosphate, and potash). 100 lb of the **LITITZ EQ BIOSOLIDS** will slowly release a total of 7.5 lb of nitrogen over an extended period. The nutrients are mostly in an organic, water insoluble form, releasing at a rate similar to which roots absorb them, so feeding a little more or less won't harm plants.

66 lb **LITITZ EQ BIOSOLIDS** provides 1 lb Plant Available N

Turf and General Use Guidelines

Because **LITITZ EQ BIOSOLIDS** meet the PADEP most stringent trace element limits, Class A pathogen, and vector reduction standards, they can be applied anywhere that fertilizer is applied. Like all commercial fertilizer products, **LITITZ EQ BIOSOLIDS** should be used in a way to avoid potential environmental impacts. Therefore, standard application practices used with any commercial fertilizer are recommended for application of EQ biosolids.

Standard practices include limiting use:

- ◆ During or immediately prior to a rain event
- ◆ When ground is saturated, snow covered, or frozen (deeper than 2 inches)

As with any fertilizer, applications of **LITITZ EQ BIOSOLIDS** should be kept away from surface waters and streams.

Transport and Beneficial Use

LITITZ EQ BIOSOLIDS produced at the WWTP are certified by analysis to meet strict EQ/Class A requirements. This fertilizer can then be applied, or stored and later applied onto lawns, flower gardens, residential areas, athletic

fields, sod farms, golf courses, and numerous other applications. Generally, it is suggested that **LITITZ EQ BIOSOLIDS** be covered and stored until conditions are suitable for application (within one year). **LITITZ EQ BIOSOLIDS** application rates should be based on the PAN need of the established or planned vegetation.

Characteristics

The chemical and physical properties of **LITITZ EQ BIOSOLIDS** are shown in Table 4. Note that they contain very low levels of regulated trace elements.

Metals/PCBs ⁽¹⁾	Accepted ⁽²⁾ Concentration (mg/kg)	Lititz EQ Biosolids Concentration (mg/kg)
Arsenic	41	2.6
Cadmium	39	2.7
Copper	1,500	598
Lead	300	22.8
Mercury	17	0.6
Molybdenum	n/a	6.8
Nickel	420	12.5
Selenium	100	5.4
Zinc	2,800	1,515
PCBs	4	<0.27
Other Parameters:		
pH	6.6	
Total Solids Content	98% (approx)	



⁽¹⁾ Values expressed on dry weight basis
⁽²⁾ USEPA and PADEP limits for EQ biosolids

Environmental Considerations

Beneficial use of biosolids as a fertilizer has an excellent track record, over a period of 40+ years. Hundreds of academic and actual field studies, along with the experience of thousands of producers & gardeners show that biosolids use provides excellent crop response.

For Additional Information Contact:

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