

**Step 2 - 15-0-3 (40% XRT) and 0.28% Prodiamine**  
**(aka Shaw's Prodiamine Barricade)**

This product is a fertilizer containing 15 percent nitrogen and 3 percent potassium, combined with prodiamine, an herbicide, at a concentration of 0.28 percent. Forty (40) percent of the nitrogen (6 percent of product) is a slow release nitrogen from polymer encapsulated urea.

Sixty (60) percent of the nitrogen (9 percent of product) is in the form of urea. Urea is obtained by reacting carbon dioxide with anhydrous ammonia at high pressure and temperature. Urea is highly water soluble and is a "quick-release" form of nitrogen.

Forty (40) percent of the nitrogen (6 percent of product) is provided as XRT<sup>®</sup>. XRT is a granule of urea surrounded by a proprietary polymer resin of unknown composition to provide a temperature-dependent release of nitrogen. According to the manufacturer's literature "after complete release, the polymer decomposes into naturally occurring compounds." The Material Safety Data Sheet (MSDS) for XRT indicates its decomposition products are carbon monoxide and nitrogen oxides. XRT is a slow release form of nitrogen.

Potassium in this fertilizer is provided in the form of potassium chloride, which comes from mined sources.

Prodiamine, also known by its brand name Barricade<sup>®</sup>, is a dinitroaniline herbicide registered for selective, pre-emergent control of many grasses and broadleaf weeds. Prodiamine acts through inhibition of root growth by blocking plant cell division steps needed for chromosome separation and cell wall formation. Degradation of prodiamine in aerobic (oxygen-containing) soil is dependent on soil moisture, direct exposure to sunlight, and presence of microorganisms in soil but the half life (time to decline to half of its original concentration) is reported to range from 7 to 230 days.

Prodiamine is currently undergoing re-registration, due to be completed in 2016. The Environmental Protection Agency is requiring a number of studies on prodiamine's health and environmental effects because such studies were not previously performed, including an ecological risk assessment and assessment of prodiamine's major degradation product, prodiamine benzimidole. Studies conducted in support of its original registration in 1991 indicated that prodiamine is of low acute (short term) mammalian toxicity and is not a developmental toxicant. Prodiamine is moderately toxic to some aquatic invertebrates and "is expected" to be of low toxicity to other aquatic organisms and birds (submitted tests were not properly designed). Prodiamine was classified as a Class C (possible) human carcinogen, but its carcinogenic potency was not quantified.