

Artificial Lighting

Ultraviolet (UV) radiation derived from sunlight is essential for the synthesis of vitamin D in many animals, including desert tortoises. Vitamin D3 is essential for the absorption of calcium and phosphorus from the diet. A deficiency of calcium and phosphorus in a tortoise can lead to development of a soft shell. Desert tortoises, including hatchlings and adults, should be kept outside so that they receive the proper amount of UV radiation.

Unfortunately, there is no safe, comparable substitute for natural sunlight for a captive animal. Artificial full spectrum lighting only meets the minimum UV radiation requirements for many reptiles kept indoors. Artificial lighting may be used when a veterinarian states that a tortoise must be kept indoors temporarily or intermittently, so below we provide information on the most effective and safest indoor lighting configurations.

The safest lighting configuration incorporates a 24" or 48" fluorescent shop light fixture holding two full spectrum fluorescent bulbs (with a Color Rendering Index (C.R.I.) between 90 and 100) or one UV transmitting fluorescent tube and one BL-type blacklight fluorescent tube. The blacklight must be the BL type and **not** the BLB type. The lighting unit should be situated from 4-15" above the animal. A ceramic clip-on incandescent lighting fixture is generally used with the fluorescent fixture to heat the area beneath the full spectrum lighting. This provides the natural combination of bright UV-rich light and warmth which many ectothermic (cold-blooded) animals seek and require. The wattage of the heating lamp is determined by the size of the enclosure and the distance it is installed from the substrate.

Heat tolerance limits of the tortoise must be accommodated at all times. A hide box should be provided on the coolest end of the enclosure allowing the animal to retreat from the light and heat. Both lighting units may be controlled by an electrical timer to insure a normal day and night cycle. Tortoises do well under an 11 hour day/13 hour night summer cycle. A period of darkness is essential. Lights should never be left on 24 hours a day.

There is an approximately 50% loss in UV efficiency for every foot the lights are raised above the substrate. Also, the full spectrum bulbs become progressively weaker in UV output with time. UV transmitting fluorescent bulbs should be changed yearly and full-spectrum fluorescent bulbs should be changed every six months to maintain optimal UV output.

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