

# Ginger

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**Scientific Name and Introduction:** The rhizome of the ginger (*Zingiber officinale*) plant is referred to as a root and is used as a spice in cooking and as a pickled vegetable. The knobby, fibrous mature root has a light yellowish brown skin when fresh. The rhizome is also harvested at a very early stage before fiber development has taken place, for use in pickles and confectionery.

**Quality Characteristics and Criteria:** Desired quality characteristics include skin color, plumpness of tuber pieces, sheen on skin and absence of vegetative sprouts, blemishes, soil and insect injury. Young ginger is bright yellow to brown and has a high sheen with greenish-yellow vegetative buds, but no sprouts.

**Horticultural Maturity Indices:** Mature ginger rhizomes are harvested when the plant tops begin to wilt and die. These rhizomes should be plump and with a dry bright yellow-brown skin color. The sheen is soon lost and the skin darkens.

**Grades, Sizes and Packaging:** Rhizomes are sold in full telescoping 13.6 kg (30 lb), 6.8 kg (20 lb) fiberboard cartons or 1.7 kg (5 lb) cartons with film bags.

**Pre-cooling Conditions:** Forced-air or room-cooling to 12 to 14 °C (54 to 57 °F) should be used.

**Optimum Storage Conditions:** Mature ginger rhizomes can be stored at 12 to 14 °C (54 to 57 °F) with 85 to 90% RH for 60 to 90 days. Storage at 13 °C (55 °F) with 65% RH leads to extensive dehydration and a wilted appearance (Akamine, 1962). Superficial mold growth can occur if condensation occurs on rhizomes.

**Controlled Atmospheres (CA) Consideration:** No published recommendations.

**Retail Outlet Display Considerations:** Display fresh young ginger with misting, and mature ginger at ambient temperature with no misting.

**Chilling Sensitivity:** Mature ginger is chilling sensitive if held below 12 °C (54 °F). Symptoms include loss of skin color and pitting of the skin, in severe cases there is internal breakdown.

**Ethylene Production and Sensitivity:** Very low.

**Respiration Rate:** About 5.5 to 6.8 mg CO<sub>2</sub> kg<sup>-1</sup> h<sup>-1</sup> (3.1 to 3.8 μL kg<sup>-1</sup> h<sup>-1</sup>) at 22 °C (72 °F). To get mL kg<sup>-1</sup> h<sup>-1</sup>, divide the mg kg<sup>-1</sup> h<sup>-1</sup> rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C (68 °F). To calculate heat production, multiply mg kg<sup>-1</sup> h<sup>-1</sup> by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day.

**Physiological Disorders:** Dehydration is the most common problem. The rhizomes lose their sheen and darken rapidly during handling (Akamine, 1962). Shriveling of the pieces becomes pronounced after the loss of about 10% of harvest weight (Paull et al., 1988).

**Postharvest Pathology:** Fusarium rot (*Fusarium* spp) can cause serious problems, symptoms include pale

brown discoloration of the vascular strands (Trujillo, 1963) that invades the rest of the rhizome that becomes brown and dry (Teakle, 1965). Pythium rot (*Pythium* spp) has also been reported, rhizome become soft and watery (Haware and Joshi, 1974). Fungicides are not permitted but reasonable control is obtained if the rhizome are adequately cured and held at 12 to 14 °C (54 to 57 °F). Saprophytes, such as *Penicillium* spp., may grow on cut ends and injured areas, and although not parasitic, they give the cut ends and surface an unsightly appearance.

**Quarantine Issues:** Rhizome pieces free of soil and insect injury require no treatment.

**Suitability as Fresh-cut Product:** Not applicable.

**Special Considerations:** None.

**References:**

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