

a_w

Microorganisms generally inhibited by a_w at this point

Examples of foods within this range of water activity.

0.950

Pseudomonas, Escherichia, Proteus, Shigella, Klebsiella, Bacillus, Clostridium perfringens, some yeasts

Highly perishable foods (fresh and canned fruits, vegetables, meat, fish) and milk; cooked sausages and breads; foods containing up to 4oz (w/w) sucrose or 7% NaCl

0.910

Salmonella, Vibrio parahaemolyticus, C. botulinum, Serratia, Lactobacillus, Pediococcus, some molds, *Rhodotorula, Pichia*

Some cheese (Cheddar, Swiss, Muenster, Provolone), cured meat (ham), some fruit juice concentrates foods containing 55% (w/w) sucrose or 12% NaCl

0.870

Many yeasts (*Candida, Torulopsis, Hansenula, Micrococcus*)

Fermented sausage (salami), sponge cakes, dry cheeses, margarine; foods containing 65% (w/w) sucrose (saturated) or 15% NaCl

0.800

Most molds (mycotoxigenic penicillia), *Staphylococcus aureus*, most *Saccharomyces (baillii) spp., Debaryomyces*

Most fruit juice concentrates, sweetened condensed milk, chocolate syrup, maple and fruit syrups, flour, rice, pulses containing 15-17% moisture; fruit cake; country style ham, fondants, high-sugar cakes

0.750

Most halophilic bacteria, mycotoxigenic aspergilli

Jam, marmalade, marzipan, glacé fruits some marshmallows

0.650

Xerophilic molds (*Aspergillus chevalieri, A. candidus, Wallemia sebi, Saccharomyces bisporus*)

Rolled oats containing ~10% moisture, grained nougats, fudge marshmallows, jelly, molasses, raw cane sugar, some dried fruits, nuts

0.600

Osmophilic yeasts (*Saccharomyces rouxii*), few molds (*Aspergillus echinulatus, Monascus bisporus*)

Dried fruits containing 15-20% moisture; some toffees and caramels, honey

0.500

Noodles, spaghetti, etc. containing ~12% moisture; spices containing ~10% moisture

0.400

No microbial proliferation

Whole egg powder containing ~5% moisture

0.300

Cookies, crackers, bread crusts, etc. containing 3-5% moisture

0.030

Whole milk powder containing 2-3% moisture; dried vegetables containing ~5% moisture; corn flakes containing ~5% moisture; dehydrated soups; some cookies, crackers



Water activity meter
for food quality.

AquaLab.

Water Activity of Some Foods and Susceptibility to Spoilage by Microorganisms Adapted from Beuchat (1981).

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