Moisture absorbers

Identification

Key words
Humidity, absorber, water, water activity, moisture, quality, active packaging, moisture scavenger, desiccant

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How does it work?

Primary objective
Moisture absorbers can be used for modification and control of environment conditions without a source of energy.

Working principle
Moisture absorbers contain a material that absorbs water from the surrounding atmosphere and mostly consists of silica gel, calcium chloride, acrylate polymer etc. They can be in the form of bags, pads, polymer films, tablets or granules. Tablet absorbers collect the moisture from the air and convert it to water in a tank or container. Absorbent pads are very widely used in contact with fish and meat. They are also known as drip pads. Their construction is usually a laminate of plastic gauze, adhesive and either a cellulose fibre pad or a water absorbent acrylate polymer. Bags containing silica gels have also been reported to act as desiccants for use with moisture sensitive foodstuffs. Advantage of silica gel absorber bags opposite to e.g. calcium chloride tablets is that they can be dried and used again. Amount of the absorber depends on size, temperature and humidity of environment where we want to use it. They are excellent for home and general industrial storage purposes (modified atmosphere). They absorb unwanted moisture from the air, preventing mold, mildew, rust and corrosion. Non-dusting, non-tearing food grade packets are available [1, 2, 3, 4, 5, 6].

Images

Additional effects
silica gel absorbers can eliminate also odor problems. Affects the microbial growth indirectly since it can reduce the aw

Important process parameters
moisture content, relative humidity, temperature, amount of absorber

Important product parameters
moisture content, temperature

What can it be used for?

Products
All types of products except moist and liquid

Operations
Packaging, storage

Solutions for short comings
Moisture absorbers do not need an energy source and they can be put directly into the package of product.
What can it NOT be used for?

Products
Moisture absorbers do not need an energy source and they can be put directly into the package of product.

Operations
- 

Other limitations
Some type of absorbers cannot be used directly at food packaging (calcium chloride base). Size and kind of the absorber depends on size of packaging and amount of moisture at a product.

Risks or hazards
- 

Implementation

Maturity
Widely used in industry

Modularity
/Implementation
It can be implemented to the production line (part of packaging) probably as new appliance. It depends also on existing state and type of packaging machine.

Consumer aspects
The absorber bag has to be marked due to accidental consumption

Legal aspects
EU Regulation EC NO 1935/2004 and the COMMISSION REGULATION (EC) No 450/2009 of 29 May 2009 on active and intelligent materials and articles intended to come into contact with food.

Environmental aspects
Silica gel absorber bags can be dried and used again.

Facilities that might be interesting for you

Further Information

Institutes
University College Cork - PCE

Companies
Brownell, Henkel, DRIERITE, Humidipak

References