

Reduced Oxygen Packaging (ROP)

What is Reduced Oxygen Packaging?

ROP is a process where the amount of oxygen in a package is reduced to a level below that normally found in the surrounding atmosphere. This can be done several ways:



Vacuum Packaging

Oxygen is removed mechanically from a container of food. An example would include use of a vacuum sealing device for storage of potentially hazardous foods.



Sous Vide

Food is placed in a bag, the air is mechanically evacuated and the food is cooked in a water bath, usually at low temperatures over several hours.



Cook Chill

Oxygen is driven off by boiling or heating followed by sealing the hot food product in an air-tight container. Food is then cooled in an ice bath or refrigerator.



Canning or Jarring

Oxygen is driven off by boiling or heating; The can or jar is then capped, and as the food product cools, an air-tight vacuum seal is created within the lid of the can or jar.



Modified Atmospheric Packaging and Controlled Atmospheric Packaging

Oxygen in the package is displaced or modified with another gas or combination of gases (mostly done at the wholesale packaging level).

Why use ROP at the retail level?

ROP has several advantages at the retail food facility level:

- Extends the shelf life of perishable food by creating an atmosphere unfavorable for the growth of spoilage bacteria
- Reduces both preparation and clean-up times by allowing foods to be prepared in advance
- Creates a tender and/or flavorful food product, such as with sous vide

What are the hazards associated with ROP?

Using ROP improperly can be quite serious due to the hazards associated with the processes. The lack of oxygen creates an anaerobic environment, which favors the growth of two very dangerous pathogens: *Clostridium botulinum* and *Listeria monocytogenes*.

- *Clostridium botulinum* is responsible for the deadly botulism toxin. This is a rare but serious condition that has a high fatality rate.
- *Listeria monocytogenes* can cause still births in pregnant women and is particularly deadly for babies and small children.
- Both of these bacteria can grow even when food is properly refrigerated.
- Eliminating the bacteria that causes spoilage actually gives these deadly bacteria an advantage to grow and reproduce with no competition.
- Raw fresh fish presents an even greater hazard due to the presence of naturally occurring bacteria on and inside of the fish. For that reason, raw, fresh fish may only be packaged using ROP at the wholesale level with a HACCP plan under FDA guidelines and inspection. Fish **cannot** be packaged using ROP at the retail level unless it is frozen before, during, and after the packaging process and must still meet the requirements listed below.

What is required to conduct ROP safely and legally at my establishment?

Any retail food facility processing potentially hazardous foods using ROP is required to have a Hazardous Analysis Critical Control Point (HACCP) plan **approved by California Department of Public Health (CDPH), Food and Drug Branch.**

- If you do not currently have an approved plan, you must cease and desist ROP of food at your facility. You are in violation of California Retail Food Code Section 114419(b).
 - * **Exemption:** Your retail food facility is not required to have an approved HACCP plan for ROP of potentially hazardous food if all the following standards are always met:
 1. The food is labeled with the production time and date.
 2. The food is held at 41° F or lower during refrigerated storage.
 3. The food is removed from its package in the food facility within 48 hours after packaging.
- For information on submitting a HACCP plan for approval, please contact CDPH at (916) 650-6500 or by e-mail, FDBinfo@cdph.ca.gov.

What are the consequences of continuing to process ROP food without an approved HACCP plan?

Apart from potentially endangering your customers' health and safety, continued operation of a ROP procedure after being given a cease and desist order from this Department could result in any or all of the following legal actions:

- Condemnation of all ROP food product
- Impoundment of any equipment used for ROP
- Suspension or revocation of your permit to operate
- Citations or other fines
- Other legal actions

Where can I get more information on ROP?



California Department of Public Health

California Retail Food Code (Sections: 113799, 113801, 113883, 114057, 114419)

- <https://www.cdph.ca.gov/Programs/CEH/DFDCS/CDPH%20Document%20Library/FDB/FoodSafetyProgram/MEHKO/CALIFORNIA%20RETAIL%20FOOD%20CODE%202019.pdf>



U.S. Food and Drug Administration

Retail & Food Service Hazard Analysis and Critical Control Points (HACCP)

- www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006810.htm

For more information call (707) 565-6565