



Sanitization: Concentration, Temperature, and Exposure Time



Did you know? According to the CDC, contaminated equipment is one of the top five risk factors that contribute to foodborne illnesses.

Food contact surfaces in your establishment must be cleaned and sanitized. This can be done either by heating an object to a high enough temperature to kill harmful micro-organisms or it can be treated with a chemical sanitizing compound.

1. Heat Sanitization:

Allowing a food contact surface to be exposed to high heat for a designated period of time will sanitize the surface.

An acceptable method of hot water sanitizing is by utilizing the three compartment sink. The final step of the wash, rinse, and sanitizing procedure is immersion of the object in water with a temperature of at least 170°F for no less than 30 seconds.

The most common method of hot water sanitizing takes place in the final rinse cycle of dishwashing machines. Water temperature must be at least 180°F, but not greater than 200°F. At temperatures greater than 200°F, water vaporizes into steam before sanitization can occur.

It is important to note that the surface temperature of the object being sanitized must be at 160°F for a long enough time to kill the bacteria.

2. Chemical Sanitization:

Sanitizing is also achieved through the use of chemical compounds capable of destroying disease causing bacteria. Common sanitizers are chlorine (bleach), iodine, and quaternary ammonium.

Chemical sanitizers have found widespread acceptance in the food service industry. These compounds are regulated by the U.S. Environmental Protection Agency and consequently require labeling with the word "Sanitizer." The labeling should also include what concentration to use, data on minimum effective uses and warnings of possible health hazards.

Chemical sanitizing is performed in two ways; by full immersion or rinsing, swabbing, or spraying. For bleach, objects can be immersed in the three compartment sink's sanitizer for 7 seconds or it can be wiped down with double the immersion concentration. This is due to the reduced contact time the surface is getting with the sanitizer. When using quaternary ammonium, the concentration should be between 150-400ppm for immersion and in-place cleaning. Always verify your chemicals recommended range by reading the manufacturer's label.

Certain factors affect the action of chemical sanitizers and should be noted with their use:

1. **Concentration:** Proper concentration is critical. Concentrations below the required amount will result in a failure to sanitize. Concentrations too high are considered toxic and poisonous. It is essential to monitor the sanitizing solution on a regular basis with the proper test strips.
2. **Temperature:** The temperature of the solution is crucial. The water must be warm enough to increase the activity of the solution, but not so hot that it increases the evaporation of the sanitizer. Generally temperatures between 75°F and 120°F allow sanitizers to work properly. At higher temperatures, chlorine compounds may corrode some metal items. Also at higher temperatures, chlorine and iodine compounds may leave the solutions.
3. **Solution pH:** The pH level of some detergents can affect some sanitizers. For this reason, items must be thoroughly rinsed of detergent prior to sanitizing.

Sanitizing Agent Requirements

MINIMUM CONCENTRATION	CHLORINE	IODINE	QUATERNARY AMMONIA
For Immersion	50-100ppm	12.5ppm	200ppm
For In-Place Cleaning	100-200ppm	25ppm	200ppm
TEMPERATURE OF SOLUTION	75°F	75-120°F	75°F
DURATION OF IMMERSION	7 seconds	30 seconds	30 seconds (some products may require longer)
INDICATION OF SANITIZER CONCENTRATION	Chlorine Test Kit required	Iodine Test Kit required	QT-10 or QT-20 Test Kit required

Chlorine (bleach) Use

For a 100ppm Concentration:

1. Water temperature of approximately 75°F.
2. Do not use detergent with sanitizers or scented bleach.
3. Ratios: 1/4 cup of bleach to 8 gallons of water
1 tablespoon to 2 gallons of water
1 1/2 teaspoon to 1 gallon of water

