

**Sous Vide**



## ***“Sous Vide”: The Other Cooking Method***

**Presented to:**

**By: Walter Zuromski, CCE, CEC**

# *Advantages* **Sous Vide**



- Preserves Foods integrity
- Complete Control over Product
- Decreases Service Time
- Allow Cooks to Focus
- Better Inventory Control
- Extends Shelf Life
- Eliminates Over Production
- Reduces Aerobic Bacteria Growth

# *Introduction/Outline*

## **Sous Vide**



- Why and What?
- Brief History and Philosophy
- Tools / Equipment Needed
- Sous Vide Applications
- Safety / Food Handling Protocols
- Basic Preparation / Packaging

*Quote*  
**Sous Vide**



**“In cooking success is not extemporized. It’s built on precision, the quest for truth, and the purity of flavors and textures.”**

**-Bruno Goussalt**

*Embrace change and technology with the power of precise cooking temperatures.*

# Defined Sous Vide



“Sous Vide” – Under Vacuum

*A method of cooking that is intended to deliver a consistent temperature and time outcome of thermal heat transfer to food items.*

*Like: Roasting, Grilling, Broiling, Sautéing, Braising, Poaching, etc.*



# History Sous Vide



Developed in the mid 1970's by

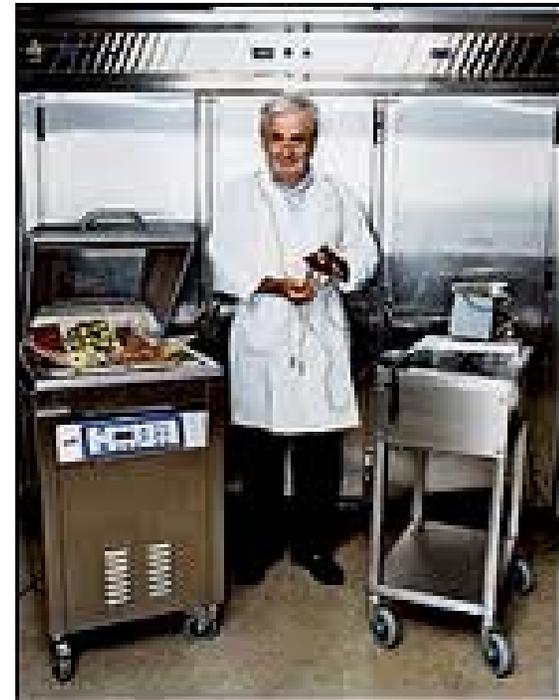
*George Pralus*

*– specifically for the cooking  
of Foie Gras; Restaurant Trogrois*

*The Science of Sous Vide –  
Bruno Goussault*

*Contemporary Practitioners:*

*T Keller, P Bocuse, H  
Blumenthal, C Trotter, JG  
Vongerichten, C Young Modernist  
Cuisine others*



# Equipment Sous Vide

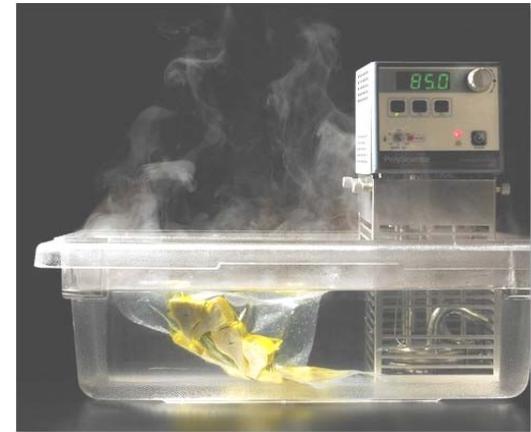


## The Tools:

- Chamber Vacuum Sealer or external type
- Thermal circulator
- Digital timer & thermometer

## Supplies:

- Boilable Food Grade Vac-Pac Bags
- Closed Cell Foam Tap
- Gloves
- Paper Towels



# Applications

## Sous Vide



### 1. Cook/Chill: cook food – rapid chill – freeze or refrigerate

(hot fill → seal → chill)

-Advantages/Usage

### 2. Partially Cook: chill – hold – freeze – water bath or thermal cook

### 3. Contemporary Methods:

- Season/marinate – bag/seal – chill/hold
- Cook precise time / temperature
- Achieve core temperature → Serve

(Cool, Hold & Re-therm)

# *Safety* **Sous Vide**

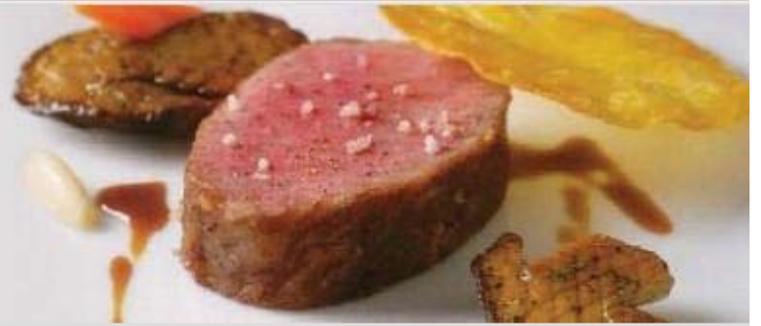


## **The Goal:**

Maximize flavor / taste while minimizing risk of food pathogens.

- ⇒ Pathogenic micro-organisms can be controlled through formulation, time and temperature.
- ⇒ How – using functional ingredients to lower the pH of a finished product below 4.5 (low acid foods).
  - ⇒ Salt, spices, other natural acidulents, modified food ingredients and/or preservatives.
- ⇒ Sous Vide relies heavily on time and temperature controls.

# *Safety* Sous Vide



## Acidifying Agents

- Oils
- Citrus
- Vinegars
- Alcohol
- Buttermilk

## Alkalizing Spices & Seasonings

- Cinnamon
- Curry
- Ginger
- Mustard
- Chili Pepper
- Sea Salt
- Miso
- Tamari
- All herbs

# Myth of "TDZ" 40° - 140°F

## Sous Vide



- Food pathogens can multiply @ temperatures of 29.3°F and 127.5°F
- Food spoilage bacteria begin to multiply @ 23°F.
- Contrary to popular belief, most food pathogens and toxins cannot be seen, smelled or tasted.
- Sous Vide prepared foods are divided into 3 categories:
  1. **Raw or un-pasteurized**
  2. **Pasteurized – to heat treat the food to reduce the number of vegetative pathogens to a safe level. Vegetative pathogens are simply growing and multiplying.**
  3. **Sterilized – Heat treating food to reduce both the vegetative micro-organisms and the spores to a safe level. (sterilization)**
- Sous Vide processing is used in the food industry to extend the shelf life of food products.

# Myth of "TDZ" 40° - 140°F

## Sous Vide



- *Pasteurized foods must either be eaten immediately or rapidly chilled and refrigerated to prevent the outgrowth and multiplication of spores.*
- *The center of the food should reach 130°F within 6 hours to prevent the toxin producing pathogen *Clostridium perfringens* from multiplying to dangerous levels*

# Myth of "TDZ" 40° - 140°F

## Sous Vide



- *Aerobic bacteria that thrives in oxygen rich environments while anaerobic bacteria thrives in environments omitting oxygen like ROP.*
- *The TDZ was created because it is the optimum temperature for aerobic growth to occur. The thought is that, by reducing the amount of time a product spends in the TDZ the amount of growth is minimized to safe levels.*
- *The time and temperature relationship that minimizes growth within the TDZ for aerobic bacteria is similar to anaerobic bacteria control.*

*Myth of "TDZ" 40° - 140°F*

## **Sous Vide**

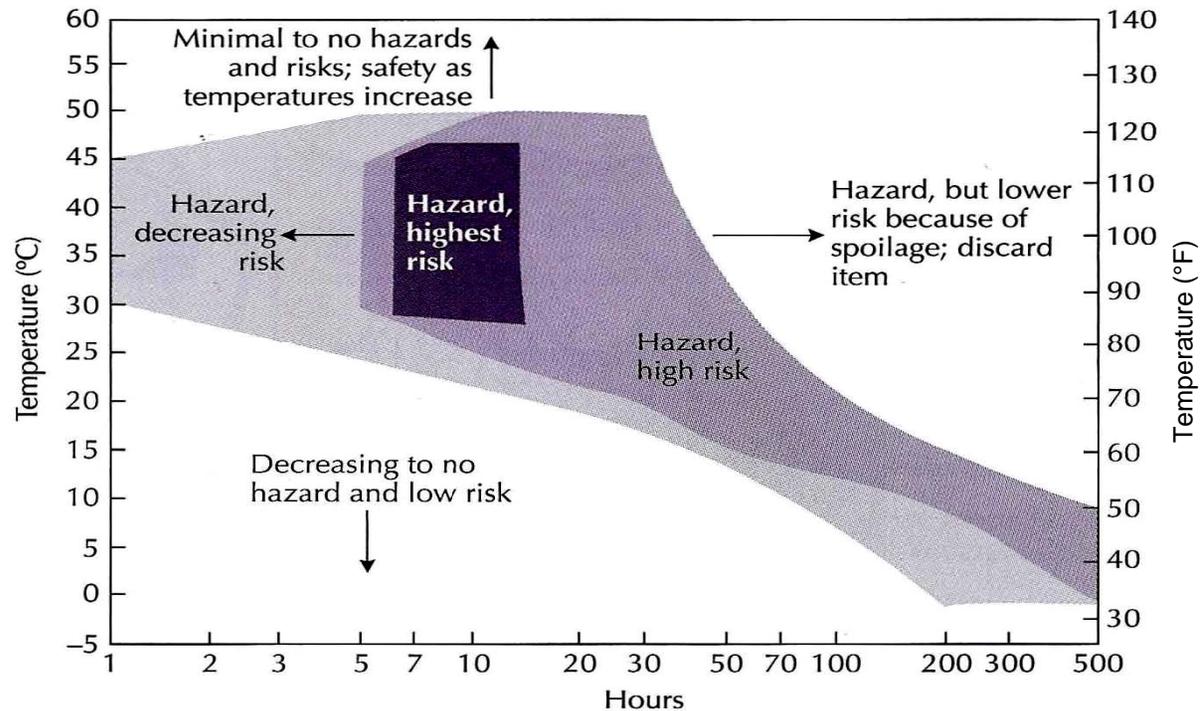


- *Instead of having a set zone to avoid, cooking time and temperature are based on a ratio to remove or kill 90% of anaerobic bacteria in a product.*
- *The concept is a formula that increases time by a factor specific to the bacteria, based on influencing factors, as the temperature decreases by a factor of 10.*

*So every 10°F decrease in cooking temperature will cause the amount of cooking time required to increase by the factor*
- *This ratio is the reason why a sous vide product can be cooked to a lower temperature for a longer amount of time and still be safe.*

# Myth of "TDZ" 40° - 140°F

## Sous Vide



**Relationship between time and temperature allows an evaluation of hazard and risk to take place.**

# *A La Carte Preparation* **Sous Vide**



- Use only fresh food materials
- Prepare sous vide in a dedicated area with high level sanitation practices (protocols)
- Maintain temperatures of food when sealed in the bag – 38°F
- Prepare a HACCP plan for each Sous Vide prepared item
- Write up all protocols and keep a log
- Approach it differently not conventionally, focus on each kill step time and temperature.

# *A La Carte Preparation* **Sous Vide**



## **Safety applies every step of the way**

### **Sealing Preparation for Packaging:**

- ⇒ *Chill food, sear, then chill food immediately if called for before putting in the bag.*
- ⇒ *Seal the chilled food and cook immediately or store immediately at 38°F or below.*

### **Cooking:**

- ⇒ *Cook, remove and serve*
- ⇒ *Cook, leave in bag, chill in ice bath and store under refrigeration or freeze*

### **Storing:**

- ⇒ *Store food (chilled if it was cooked first) at or below 38°F.*
- ⇒ *Defrost food under refrigeration before using.*

## *Seasoning - Flavoring* **Sous Vide**



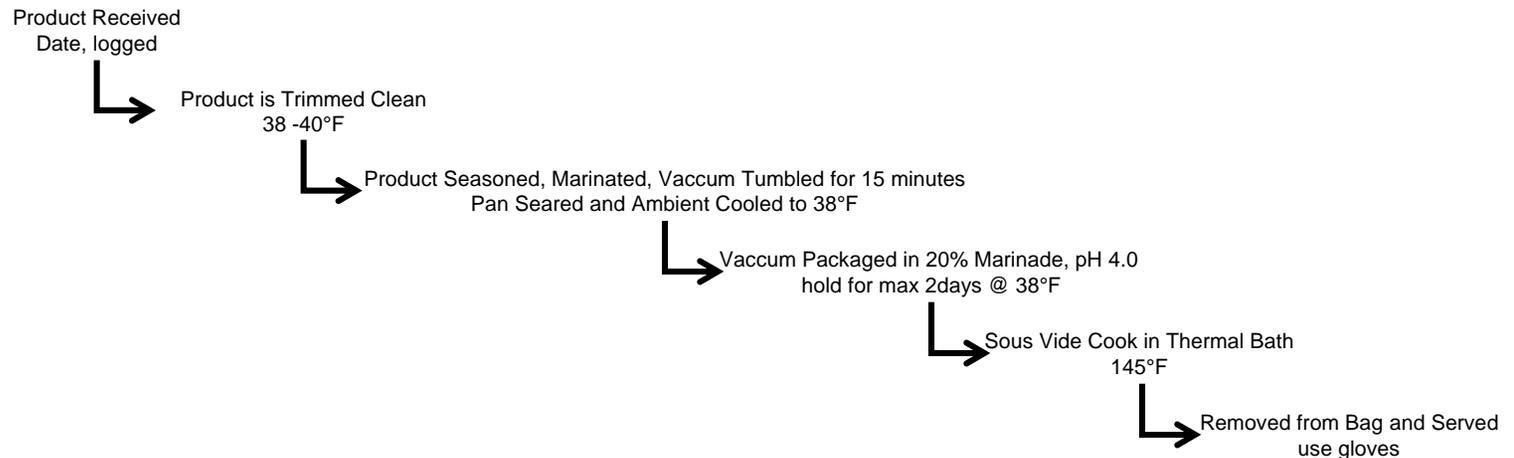
- Seasoning can be a little tricky when cooking sous vide
- Many herbs and spices act as expected, other are amplified and can easily overpower a dish
- Additionally, aromatics (such as carrots, onions, celery, bell peppers, etc.) will not soften or flavor the dish as they do in conventional cooking methods.
- Use mild oil – EVOO shouldn't be used – Salt lightly when packaging

# HACCP Plan

## Sous Vide



## Protocol for Handling & Processing Pork Tenderloin- Jamaican Jerk Marinated



# Basic Preparation

## Sous Vide



***Sous Vide typically consists of three stages:***

- Pressure / Vacuum Sealing – seasoning or Compression
- Storage or shelf life enhancement
- Cooking – Temperature – Time
- Finishing



## *Pressure / Storage* **Sous Vide**



- Chamber sealer has the option of pressure.
- Marination is intensified without oxygen.
- Shelf life is enhanced for storage up to 4 days.

### **MARINATING / BRINING:**

- Generally static marinating or vacuum tumbling prior to packaging
- When cooking with the marinade it is best to cook off wine prior to pressurizing
- Brining has become increasingly popular in modern cooking

## *Cooking Time / Temperature* **Sous Vide**



- The temperatures used in Sous Vide cooking are always below that of simmering water (190-200°F)
- The cap is 185°F – used for vegetable cookery – cook times vary based on cut and vegetable.

### **MEAT & FISH:**

- Meat is varied in time based on thickness and connective tissue, muscle fiber.
- Fish proteins generally are delicate, and they denature and coagulate, that is, cook at around 12°F lower than meat. Soak fish in a 10% brine solution to help keep fish moist and manage albumen.

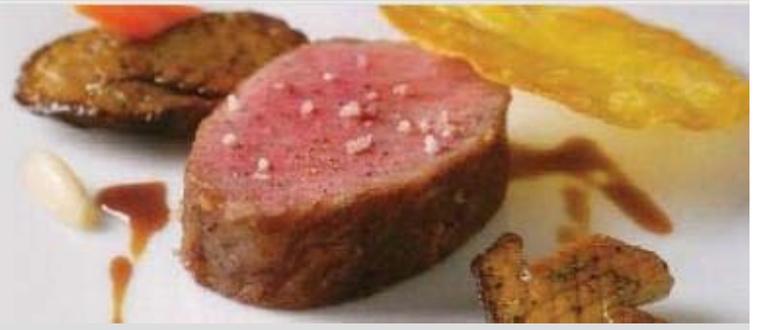
## *Cooking Time / Temperature* **Sous Vide**



- Chicken Breast ➤ 145°F for 30 to 40 minutes
- Stuffed Chicken ➤ 145° for 55 minutes sear
- Pork Tenderloin ➤ 145° for 50 minutes
- Bone in Rib Eye ➤ 130°F for 12 to 15 minutes
- Steak Tenderloin ➤ 125°F 30 to 40 minutes
- Whole Tenderloin ➤ 130°F for 50 minutes to hour
- Salmon @ MR ➤ 120°F for 20 minutes
- Lamb Racks – ➤ 125°F for 55 minutes to hour
- Turkey Breast ➤ 150°F depends on size
- Duck Confit ➤ 180°F – 8 hours
- Vegetables ➤ 185°F – Size and cut

# Demo & Tasting

## Sous Vide



### MENU

- 101 ZUCCHINI, PEPPER CILANTRO AND CHILI SPICED SOUP  
(SOUS VIDE / COOK CHILL – FREEZE – RE-THERM)
- 101 JAMAICAN JERK MARINATED PORK TENDERLOIN WITH A MUSTARD  
SEED TOMATO MANGO RELISH  
(MARINATE – SEAR – SOUS VIDE – COOK )
- 101 BREAST OF CHICKEN WITH A DRIED FRUIT AND NUT STUFFING  
(SEASONING – STUFF – SOUS VIDE – COOK – SEAR)
  - 101 CRISPY SALMON IN A CHABLIS DILL BUTTER  
(SEASON – SOUS VIDE – COOK – SEAR)
- 101 CHUCK STEAK BRAISED SOUS VIDE WITH A HOISIN ROOT BEER GLAZE

### SIDES:

- 101 CARROTS WITH RED ONION IN A CIDER MANDARIN TEA SYRUP
  - 101 FENNEL IN VANILLA BEAN AND PARSLEY BUTTER

# Preparation Illustrations

## Sous Vide



# Processing Soup

## Sous Vide



### *Cook Chill and packaging method*



**- Two Stage Filling of Soup**

**Fill bag with Fill Ring**



**Heat Seal & Cooling - Product is 30 days refrigerator stable**

# Processing Pork Tenderloin

## Sous Vide



**Vacuum Tumbler**



**Add the marinade**



**Vacuum Tumble 15 min**



**Prepare for Searing**



**Vacuum Pack and Chill**

# Processing Chicken Sous Vide



**Pound Out Breast**



**Prepare the stuffing  
and Activa**



**Fold bottom layer over  
stuffing**



**Brush with Activa  
Solution**



**Wrap in clear and  
foil**



# Sous Vide



# *Walk Aways* **Sous Vide**



- Understand the theory and technique of Sous Vide preparation and cooking – Definition
- To identify Sous Vide as a new and innovative alternative cooking method for some food items
- Identify equipment and tools necessary
- Review Sous Vide applications
- Realize the safety procedures and Myths about Sous Vide safe handling practices/sanitation is key
- Basic Sous Vide preparations / techniques / cook times/practices.
- You're a cook, experiment and have fun

## References

# Sous Vide



- Douglas E. Baldwin – *Practical Guide to Sous Vide Cooking*
- Thomas Keller – “*Under Pressure*”
- T. Montville – *Food Microbiology an Introduction*
- Walter Zuromski Chef Services Group – Development

# Equipment & Ingredient Resources

## Sous Vide



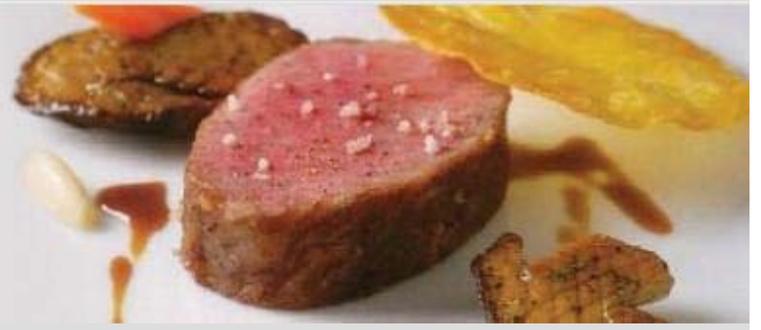
### Equipment –

- Poly-Science/Cuisine Technology  
Thermal Circulators Other related equipment – [www.cuisinetechology.com](http://www.cuisinetechology.com)
- BCU Plastics –  
Thermal Circulators Other related equipment – [www.lowtempcooking.com](http://www.lowtempcooking.com)
- Day Mark Safety –  
Cook Chill Bags, HACCP management materials/labels, bag stand and bags  
[www.daymarksafety.com](http://www.daymarksafety.com)
- **Plascon Packaging –Matt Klein – 231-675-3196**  
Cook Chill Bags – all sizes and HACCP labeled

### Ingredients –

- Hydrocolloids – GUMS – [www.ticgums.com](http://www.ticgums.com)
- Activa – Ajinomoto / Transglutimanese [www.ajiusafood.com](http://www.ajiusafood.com)
- Modified Food Starch / National Starch & Nestle Foods -

# Sous Vide



*Thank You!*

**Walter Zuromski, CEC, CCE**

[walterz@chefservicesgroup.com](mailto:walterz@chefservicesgroup.com)

[www.chefservicesgroup.com](http://www.chefservicesgroup.com)

