



**SoCalGas**<sup>™</sup>

# Intermediate Cooking with Gas

Lesson 8: Braising

**ADVANCED**



## Introduction

Welcome to Intermediate Cooking with Gas. Today's topic is braising in a combination oven. Once you learn about braising, you will learn how to cook with gas to make your own braised protein dish.

This lesson can be completed in a classroom or at home. Your teacher will provide instructions for completing the assignment from home.

## Opening Assessment

1. Which type of protein would best be used for braising?
  - a. clams
  - b. brisket
  - c. pork shoulder
  - d. chicken breast
2. Which nonrenewable resource produces the most carbon emissions?
  - a. coal
  - b. gasoline
  - c. natural gas
  - d. liquid propane
3. Which method is most related to braising?
  - a. boiling water
  - b. submerging food into oil
  - c. plunging food into ice water
  - d. searing at high temperatures
4. Why is natural gas a preferred energy source for cooking?
  - a. It is easy to obtain due to its wide availability.
  - b. It allows for the temperature to be controlled easily.
  - c. It produces byproducts that can be used for other things.
  - d. It has a minimal cost per unit of volume compared to others.
5. What is an advantage of using a combination oven?
  - a. It allows for focusing on one type of food at a time.
  - b. It takes the place of multiple other appliances in the kitchen.
  - c. It offers customization of oil temperatures to meet a variety of needs.
  - d. It produces dry heat in a steaming mode that has a wide range of uses.



## Cooking with Natural Gas

A combination oven is a versatile oven that performs an array of cooking functions or modes within a single piece of equipment utilizing dry heat/convection, moist heat/steam and a combination of the two.



There are several benefits to using a combination oven. A combi oven can be precisely controlled for each method. These include roasting, braising, steaming, smoking, baking and air frying. Having one oven that performs all of these functions can save kitchen space, time and labor. Natural gas combination ovens also allow for very accurate temperature controls. These controls ensure that foods cook to precisely the right temperature to ensure doneness.

Combination ovens usually have three main cooking modes. These include steam, convection and combination. The steam creates moist heat that keeps food juicy during the cooking process. **Convection** forces hot air around the inside of the oven, creating dry heat that browns foods and removes moisture from them. In combination mode, both hot air from convection and steam are used for cooking foods without losing moisture. This is the ideal setting to use when braising. Meats and vegetables stay juicy but also experience some browning on top.

## Cooking Methods

There are three types of cooking methods that utilize natural gas:

1. **Moist cooking** involves cooking with moisture in either liquid or steam form.
2. **Dry cooking** involves cooking without any moisture.
3. **Combination cooking** combines moist and dry heat cooking.

Today, you will be learning about and preparing food using a combination cooking method.

## Combination Cooking: Braising

Combination cooking methods include braising and stewing. Each method utilizes dry and moist heat in order to cook the food. This lesson will utilize a Dutch oven or a combination oven and the *braising* cooking method. To braise the meat or vegetables, they are first seared in a pan or in the combination oven to brown them. The food is removed and the pot or pan is then filled with a liquid, often a broth or stock, to loosen the crust formed during browning. This process is called **deglaizing**. The food then gets returned to the pan and allowed to simmer. This allows the liquid to evaporate, leaving behind tender meats and vegetables.

Foods like meats, such as pork shoulder and chuck roast, vegetables, potatoes, beets and legumes, such as chickpeas and kidney beans, cook well in braising. You will learn how to utilize combination heat for cooking various proteins, vegetables and starches throughout your lessons on combination cooking.

## Instructor Demonstration

Watch the instructor's demonstration on proper natural gas range safety and how to use a Dutch oven or a combination oven to make a braised protein dish. Answer the following questions as you watch the demonstration.

- What safety tips did the instructor give during the demonstration?
- At what setting was the heat level set on the range?
- Why are the vegetables cut into smaller pieces before braising?
- What purpose does adding the liquid to the pan serve when braising?
- How did the instructor determine how long to cook the protein?
- What cooking tips did the instructor give during the demonstration?

## Selecting and Preparing a Recipe

The following section can be completed at home if the preparing and cooking can be performed safely. Residential and commercial cooking equipment vary; while the information focuses on natural gas equipment, electric ranges and stoves may also be used to complete the cooking assignment.

This section will be completed without making the braised protein, as there is not enough time to prepare the entire recipe within the allotted amount of class time. Instead of cooking the recipe, you will observe your instructor prepare the braised protein and then write up a detailed analysis of the ingredients you would select if you were preparing the recipe, and answers to the following activity. Your instructor will demonstrate some of the techniques to be used if you were to prepare the stew.

Imagine you are going to make your own braised protein dish using a protein. Once cooked, the protein will be served on a plate with whichever seasonings and sides you choose.

## Create Your Recipe

You will need to choose one item from the protein and one from the fat categories for this recipe. You can choose any additional toppings or flavors based on your preference, dietary preferences, allergies and available ingredients. Before starting to cook, it is important to have all of your ingredients, tools and equipment prepared ahead of time, what chefs call "mise en place" or "everything in its place."

### Select a protein:

lamb shanks  
beef tips  
chicken legs  
chicken thighs  
tofu

### Select a fat:

vegetable oil  
olive oil  
butter

### Select additional toppings and seasonings:

kosher salt  
garlic  
fresh rosemary  
white onion  
golden raisins  
shredded cheese  
bacon pieces  
fresh basil  
saffron threads  
cinnamon stick  
almonds  
honey  
toasted sesame seeds

### Safety first:

- Always keep a Class ABC fire extinguisher nearby.
- Make sure there are no pot holders, towels or other flammable materials next to the burner.
- Make sure there are no plastic or meltable objects next to the burner.
- Always use dry, flame retardant potholders to protect your hands from burning on the hot pot.
- Always pour hot liquids away from you.
- Be sure to keep your face away from the pot when braising the vegetables.
- Always use a spatula or tongs to remove the meat from the pot after browning.
- Practice knife safety when cutting the meat and use properly sharpened knives.

### **Equipment:**

- Sharp kitchen knife
- Cutting board (green cutting board for vegetables, red cutting board for meat)
- Dutch oven or combination oven
- Plate for transferring the meat

### **Ingredients:**

- ¼ tbsp olive oil or other fat
- 3 tbsp unsalted butter
- Choice of protein
- Kosher salt and freshly ground black pepper
- 1 large white onion, finely chopped
- 1 cup golden raisins (optional)
- ¼ tsp crushed saffron
- 1 stick cinnamon
- 1 cup blanched whole almonds (optional)
- ⅔ cup honey
- Toasted sesame seeds to garnish (optional)
- 3 cups water

### **Procedure: Dutch Oven**

1. Heat fat in an 8qt Dutch oven over medium-high heat. Season protein generously with salt and pepper and cook, turning as needed until well browned all over, about 12 minutes. Transfer protein to a plate; set aside.
2. Add onion to pot and cook, stirring until soft, about four minutes. Add raisins, saffron, cinnamon and cook, stirring until fragrant, about two minutes.
3. Add protein back into the pot. Add honey and 3 cups of water and bring to a boil.
4. Reduce heat to medium and cook, partially covered, until meat is very tender, about 3½ hours.
5. Divide shanks and sauce among serving plates and sprinkle each with almonds (if dietary restrictions allow), sesame seeds, shredded cheese and bacon pieces.

### **Procedure: Combination Oven**

1. Turn on the combination oven and select the cooking profile for braising. The oven will begin to preheat. During preheat, start your mise en place. When the oven is ready, an alarm will sound.
2. Season protein generously with salt and pepper, rub with oil and add to the roasting pan. Open the door and place the pan in the oven. Hit start and the first stage will begin to brown the protein. Since combi ovens have windows in their doors, you will be able to watch the browning to avoid opening the door and allowing heat to escape.
3. When the first stage is complete, open the door, transfer the protein to a hotel pan for holding and set aside.
4. Add the onion to the roasting pan, toss in the pan juices and fat and return to the oven for the second stage. Hit start on the control panel. The oven will sound when the onions are browned. Open the door and add the raisins, saffron and cinnamon, stirring until fragrant. The heat from the roasting pan will bring out the flavors and fragrance.
5. Add honey and 3 cups of water and stir. Add the protein back into the roasting pan, put back into the oven, hit start for the third stage.
6. The protein will continue to simmer at this point, reducing the liquid and tenderizing the meat. Cooking time will vary based on the protein. Remove from the oven when the alarm sounds.
7. Divide shanks and sauce among serving plates and sprinkle each with almonds (if dietary restrictions allow), sesame seeds or other ingredients. Serve with your preferred starch or accompaniments.



### Tips:

- Take care when removing the protein from the pot, as it may start to fall apart.
- Be sure to turn the meat about halfway through braising to ensure even cooking.
- When simmering, keep an eye on the meat, adjusting it occasionally to prevent it from burning on the bottom.

## Activity

Since this dish takes longer than one class period to complete, respond to both prompts instead of preparing the braised protein.

1. The recipe outlined here makes an excellent main course. What side dishes would make nice complements to this recipe? Describe the sides you might pair with this protein dish and explain why they would add to the overall experience of the flavors.
2. The process of braising often involves a step called deglazing after the protein is cooked in the pot. What is deglazing, and why is it a useful part of the braising cooking process?

### Scoring Rubric:

4	3	2	1
<p>The student response ...</p> <ul style="list-style-type: none"><li>• fully responds to each part of the writing prompt with relevant, strong details</li><li>• has logical organization</li><li>• uses effective language and word choice for purpose and audience</li><li>• contains no errors in usage or grammar</li></ul>	<p>The student response ...</p> <ul style="list-style-type: none"><li>• addresses each part of the writing prompt with sufficient details</li><li>• has sufficient organization</li><li>• uses mostly effective language and word choice for purpose and audience</li><li>• contains minor errors in usage or grammar that do not affect meaning</li></ul>	<p>The student response ...</p> <ul style="list-style-type: none"><li>• addresses some of the writing prompt with weak details</li><li>• attempts organization</li><li>• uses some language and word choice for purpose and audience</li><li>• contains minor errors in usage or grammar that slightly affect meaning</li></ul>	<p>The student response ...</p> <ul style="list-style-type: none"><li>• does not address a large portion of the writing prompt</li><li>• lacks organization</li><li>• rarely uses appropriate language and word choice for purpose and audience</li><li>• contains major errors in usage or grammar that greatly affect meaning</li></ul>

## Additional Activity

Use the definitions to find the terms in the puzzle.

X H A S P N E W C H D O B K V S J U P S  
I O F P P C G P T Q N O X R G U K M P T  
L R N A L H Y N I I L K M V A T W Y B X  
C O M B I N A T I O N O V E N I P E N Y  
C H J R K Y A A T Z T E I B Q G S F Z H  
S G H V M Q V Y I J A G D Z V Z R I W U  
N O I T A N I B M O C L I P H I S E N X  
T I B Q W P N Z W Z V L G J P I M O Z G  
I A W Q F Z K K H X S S E E Z M Z O I H  
Z X K G R A S V O O E D T P D B N C N D  
P A I H V Q U D N Z I U A V F H N W C J  
P S K Y Y Y W A N X Q V Y G Q O D O X K  
D R H W U A H A O X N L O U W R N T L J  
K X K Y P L D I N R O O V B B V M X B O  
N Z A O M Z D N R V O Y T M E I W P D D  
Z M W M Y N G H E H M D R C D O O M S Q  
D H K U O K C P N Q N Y T R G O H T O O  
C X K B J G J X E Y P I N E I L G U H S  
O H R W Q K C J W N O U Z Q B E Q I V C  
X A M A G D O Y A N A T O C K I T U Z O  
C R Z Z G T F U B L Y E C B J U P O Y G  
Y R Z B U B P C L T P O H A N Q P E A A  
Y V R Q C Q S O E Q A N M Y Y P M U Q K  
T Q O J D C V H M K Y H J S E P L K C Q  
N J K H J Y H V X N X S A S E A Y C R B

1. The gas released from burning coal or natural gas (13 letters, two words)
2. Partially submerging meat or vegetables in liquid after browning (8 letters)
3. A machine that can do both moist and dry cooking at the same time (15 letters, two words)
4. A resource that is in limited supply and disappears once it is used up (12 letters)
5. A type of cooking that involves both moist and dry heat (12 letters)
6. This forces hot air around the food inside an oven (10 letters)
7. The addition of a liquid to a pot after browning meat to remove flavorful bits (9 letters)

## Final Assessment

1. Which type of protein would best be used for braising?
  - a. clams
  - b. brisket
  - c. pork shoulder
  - d. chicken breast
2. Which nonrenewable resource produces the most carbon emissions?
  - a. coal
  - b. gasoline
  - c. natural gas
  - d. liquid propane
3. Which method is most related to braising?
  - a. boiling water
  - b. submerging food into oil
  - c. plunging food into ice water
  - d. searing at high temperatures
4. Why is natural gas a preferred energy source for cooking?
  - a. It is easy to obtain due to its wide availability.
  - b. It allows for the temperature to be controlled easily.
  - c. It produces byproducts that can be used for other things.
  - d. It has a minimal cost per unit of volume compared to others.
5. What is an advantage of using a combination oven?
  - a. It allows for focusing on one type of food at a time.
  - b. It takes the place of multiple other appliances in the kitchen.
  - c. It offers customization of oil temperatures to meet a variety of needs.
  - d. It produces dry heat in a steaming mode that has a wide range of uses.

# **Intermediate Cooking with Gas—Advanced**

## **Lesson 8: Braising**

### **Teacher Guide**

(1 class session)

## **Introduction**

This lesson covers a basic understanding of how natural gas compares to other energy sources and the benefits of using a combination oven. Then, students will learn how natural gas is used for cooking with a Dutch oven or a combination oven to braise a protein source. Keep in mind that students may have dietary preferences, restrictions or allergies that may need to be accommodated to complete the recipe. Note that students may have different appliances at home, such as an electric or induction range, which will not prevent them from completing the assignment. If the student is preparing food at home, ensure that appropriate adult supervision will be available.

This lesson could be completed in a classroom or at home. Suggestions and instructions will be given for both scenarios.

## Opening Assessment: Answer Key (3 minutes)

Use these questions to obtain a baseline for what your students know before beginning the lesson. The correct answers are highlighted.

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## **Comparison of Natural Gas to Other Fossil Fuels** (3 minutes)

Students will read about natural gas and why it is a preferred fuel source for chefs. The following questions could be used for a class discussion or given to students to complete individually.

- How does natural gas compare to other fuel sources in terms of carbon emissions?
- Why do chefs prefer using natural gas for cooking?
- How does natural gas compare to using coal as an energy source for cooking?

## **Cooking with Natural Gas** (3 minutes)

Students will read about the advantages of using a combination oven for cooking. The following questions could be used for a class discussion or given to students to complete individually.

- What is the purpose of a combination oven?
- Why would a chef prefer using a combination oven over a regular oven?
- What types of food preparation techniques can be performed with a combination oven?

## **Cooking Methods** (2 minutes)

Students will understand three cooking methods that utilize natural gas: moist cooking, dry cooking and combination cooking.

## **Combination Cooking: Braising** (3 minutes)

Students will read about cooking with combination heat and the braising technique. The following questions could be used for a class discussion or given to students to complete individually.

- What are the benefits of cooking with combination heat?
- What advantages does a combination oven provide to a chef?
- Why might food be more tender cooked in a combination oven than on the range?

## Instructor Demonstration (10 minutes)

The demonstration can either be performed in class or recorded for remote use. If the demonstration is done in person, consider preheating the Dutch oven or combination oven while the students complete their readings to prepare the oven for your demonstration.

The demonstration should include:

- how a Dutch oven or combination oven works
- safety tips when using a Dutch oven or combination oven
- how to braise, including tips for how hot to get the oven or Dutch oven
- benefits of using braising as a cooking technique
- how to cook protein, noting how to check the protein for doneness
- finishing the braised protein with cheese and other flavorings, and incorporating other optional ingredients
- knife techniques and safety when cutting the vegetables

Students will use the following questions as a guide to either a class discussion after or note-taking during the demonstration:

- What safety tips did the instructor give during the demonstration?
- How much protein did the instructor put into the Dutch oven?
- How high did the instructor have the temperature?
- How did the instructor determine how long to cook the protein?
- What cooking tips did the instructor give during the demonstration?

## Selecting and Preparing a Recipe (5 minutes)

The recipe provided will take longer than one class period to complete. So instead of having the students prepare the recipe, have students read the recipe instructions, select the ingredients they would choose if they were cooking the recipe and complete the writing prompts in the Activity section below.

Students will use the instructor demonstration as a guide to cooking their own braised protein dish. Students will select a protein, vegetable, fat and optional flavorings and toppings from a list to complete their recipe.

## Selecting and Preparing a Recipe (12 minutes)

Students will answer both writing prompts.

1. The recipe outlined here makes an excellent main course. What side dishes would make nice complements to this recipe? Describe the sides you might pair with this protein dish and explain why they would add to the overall experience of the flavors.

Answers will vary, but students may describe how braised potatoes and vegetables would be appropriate side dishes for the braised meat. They would add additional flavors to the meal and be easy to cook, as the meat is already being braised, so the same technique and equipment can be used for the sides. Adding potatoes and/or vegetables will expand the flavor palette by adding a contrasting starch/dry taste to the juicy meat.

2. The process of braising often involves a step called deglazing after the protein is cooked in the pot. What is deglazing, and why is it a useful part of the braising cooking process?

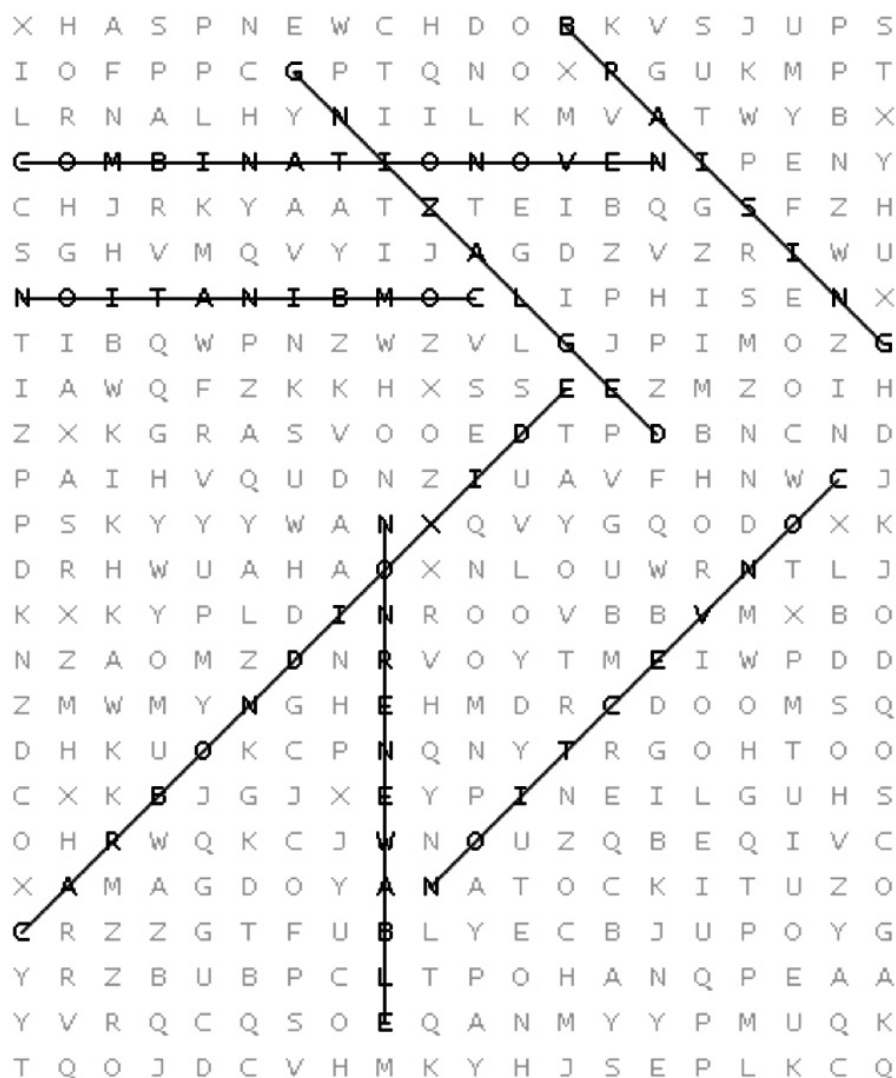
Answers will vary, but students may describe that deglazing is when liquid is added to the pot after the meat is browned to remove bits of skin and fat that have adhered to the surface. These bits are often very flavorful and, once removed, can be added back into the recipe for additional flavor. They can also be saved for a future recipe to add flavor to that as well.

## Scoring Rubric:

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## Additional Activity (65 minutes or as homework)

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## Final Assessment: Answer Key (3 minutes or as homework)

Use these questions in conjunction with the discussion questions in each section to formally assess student growth throughout the lesson. Address any student misconceptions that remain at the end of the lesson. Consider having students compare their opening assessment with their final assessment to see how their understanding of cooking with gas improved in the lesson.

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