

**Conference for Food Protection  
2014 Issue Form**

**Internal Number: 074  
Issue: 2014 III-029**

<b>Council Recommendation:</b>	Accepted as Submitted _____	Accepted as Amended _____	No Action _____
<b>Delegate Action:</b>	Accepted _____	Rejected _____	

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**Title:**

Seasoned Cast Iron

**Issue you would like the Conference to consider:**

Amend Food Code section 4-101.12 (Cast Iron, Use Limitation) to approve seasoned cast iron to be used for utensils or food-contact surfaces of equipment whether or not the surface is heated or used for cooking.

A local regulatory authority food facility received a violation from a Maricopa County, AZ Health Inspector in January 2012 for serving a cookie with ice cream on a seasoned cast iron server directly to the consumer.

The Maricopa County violation resulted in the only time that we have been contacted to clarify the use of cast iron in accordance with Food Code provision 4-101.12.

The Maricopa County violation prompted immediate research, thereby learning that the current Food Code has not kept up with technology as it was adopted from the 1976 Food Service Sanitation Manual and has remained the same for over 37 years.

The process of seasoned cast iron renders the current regulations as outdated.

Today, seasoned cast iron is not perceived to be a rough surface due to seasoned cast iron having a smoother Ra value than bare cast iron as well as an easily cleanable surface.

Seasoned cast iron can be commercially cleaned the same as all utensils. The use of low and high temperature commercial dishwashers eliminates the possible transmission of disease and food-borne illnesses such as bacteria and pathogens.

Over time, the routine use of cast iron adds oils from cooking that creates a smoother, less porous surface, while the finish on many cookware surfaces breakdown after continued usage creating a rougher and more porous surface.

**Public Health Significance:**

Equipment and utensils constructed of seasoned cast iron meet the requirements in Food Code Section 4-101.11. Seasoned cast iron cookware and utensils have a natural non-stick, durable, nonabsorbent, easily cleanable surface. Seasoning is used to protect bare cast iron from oxidation and to create a natural non-stick surface that improves with use. Without protective seasoning, cast iron can oxidize during the cleaning process.

Seasoned cast iron utensils and food-contact surfaces are acceptable as surfaces for cooking, preparation and serving. The seasoning layer allows for the cookware to be commercially cleaned by providing a barrier from oxidation. Thus, pathogens and bacteria

will be eradicated. The continued use of cast iron adds oils from cooking that darken the cast iron to a black patina, maintaining the seasoning of the cast iron and creating a lasting non-stick finish.

In 2002, a new innovation in cast iron cookware manufacturing introduced foundry-seasoned cast iron cookware. To achieve this, during the manufacturing process, vegetable oil is sprayed onto the cookware then baked at +600°F to create a natural carbonized, non-stick cooking surface for items such as skillets, grill pans, Dutch ovens and restaurant-quality serving pieces.

Foundry Seasoned cast iron is pre-seasoned in a foundry and mass produced for consumer availability.

A seasoned piece of cast iron cookware is very durable. Modern commercial dishwashers will not harm seasoned cast iron. Commercial dishwashers use primarily chemicals and a sanitization cycle that lasts for approximately 2-4 minutes.

Cast iron is cleaned the same as all other utensils in the food service industry by means of pre-soaking/pre-spraying, mild scrub as necessary, commercial dishwasher (low or high temperature), and air dried.

Low temperature dishwashing kills bacteria and viruses during the final sanitizing rinse when using approved sanitizing chemicals consisting of bleach (chlorine) or quats (quaternary ammonium compounds). High temperature dishwashing kills bacteria and viruses with hot water temperature of 180°F - 190°F as per FDA Food Code provisions 4-501.110 and 4-501.112.

Liquid dye penetrant has been utilized by independent metallurgists from a certified Level 1 and 3 Non Destructive Examination testing labs to demonstrate the porosity of cast iron and stainless steel using a fluorescent dye penetrant and color contrast penetrant.

Liquid dye penetrant is a Non Destructive Examination (NDE). It is a water washable solvent that may be used to test ferrous and non-ferrous components to evaluate surface flaws in any non-porous material. Cast Iron and stainless steel are non-porous materials.

Liquid dye penetrant examinations are used with equal success on such metals as aluminum, brass, copper, cast iron, stainless steel and titanium.

Liquid penetrant industry standard for evaluating rounded indications denote maximum dimension of rounded indications shall be considered as its size. Indications are rejectable as defects if individual indications > 1/8" (3.17mm).

Liquid dye penetrant examinations show that cast iron and stainless steel have a level of porosity. On a microscopic level, all metals have a level of porosity.

Samples of cast iron and stainless steel were tested and documented by 3rd party metallurgists and NDE Testing labs using liquid penetrant examinations. Data documented by these labs show all cast iron indications to be < 1/8" (3.17mm); rejectable flaws in accordance with liquid penetrant industry standards.

The seasoned cast iron examined by means of liquid penetrant, using a dye penetrant standard dwell time of 30 minutes, did not oxidize from the examination and did not oxidize after commercial cleaning. The Seasoning remained on cast iron throughout this examination process.

Porosity is not a factor in the cleanability of cast iron as shown from liquid penetrant examination and ability to withstand commercial cleaning.

## References:

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17. NDT Resource Center.  
<http://www.ndt-ed.org/EducationResources/CommunityCollege/PenetrantTest/Principles/liquidpi.html>
18. ASTM International. Nondestructive Testing Standards, 1994-2014.  
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## **Recommended Solution: The Conference recommends...:**

That a letter be sent to FDA requesting the 2013 Food Code be amended as follows (new language is underlined/language; language to be deleted is in strikethrough format):

1. Amend Section 4-101.12 Cast Iron, Use Limitation  
Delete existing paragraph (A)

~~(A) Except as specified in 4-101.10 (B) and (C) of this section, cast iron may not be used for UTENSILS or FOOD CONTACT SURFACES of EQUIPMENT.~~

Amend and renumber existing paragraphs (B) and (C)

~~(B) (A) Unseasoned (bare) cast iron may be used as a surface for cooking.~~

~~(C) (B) Unseasoned (bare) cast iron may be used in UTENSILS for serving FOOD if the UTENSILS are used only as part of an uninterrupted process from cooking through service.~~

Add new paragraphs (C), (D) and (E)

(C) Seasoned cast iron may be used for utensils or food-contact surfaces of equipment and may be washed in a warewashing machine.

(D) Seasoned cast iron from which the seasoning has been removed shall be re-seasoned.

(E) Seasoned cast iron utensils or food-contact surfaces of equipment shall be cleaned with nonscratching cleaning aids.

2. Add a new definition to paragraph 1-201.10(B):

"Seasoned Cast Iron" means the treatment of a cast iron utensil or food contact surface with a stick-resistant coating formed from fat and oil, creating a polymerized coating on surface of cookware.

3. Amend Annex 3, 4-101.12

Equipment and utensils constructed of cast iron meet the requirements of section 4-101.11. Seasoned cast iron utensils and food-contact surfaces are acceptable as surfaces for cooking, preparation and serving. The seasoning layer protects the cookware from oxidation and provides a non-stick surface for cooking. Seasoning is desirable on cast iron cookware and carbon steel cookware to prevent sticking and oxidation. This base coat is initially created by a process of layering a very thin coat of oil on the pan. The oil is carbonized to the metal's surface with high heat. The base coat will eventually develop a more refined coating.

Seasoning may be done by the equipment manufacturer or on-site at the food establishment. To re-season:

1. Use commercial dishwasher clean cycle.
2. Rinse and dry completely.
3. Apply a very thin, even coating of MELTED solid vegetable shortening (or cooking oil of choice) to the cookware inside and out. Too much oil will result in a sticky finish.
4. Place aluminum foil on the bottom rack of the oven (not directly on bottom) to catch any drips.
5. Set oven temperature to 350 - 400 degrees F.
6. Place cookware upside down on the top rack of the oven to prevent pooling.
7. Bake the cookware for at least one hour. After the hour, turn the oven off and let the cookware cool in the oven.
8. Store the cookware uncovered, in a dry place when cooled.
9. Repeat as necessary.

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**Attachments:**

- α "Attachment #2: Porosity PT Level 3 Fluorescent Dye Cast Iron Examination"
- α "Attachment #3: Porosity PT Level 3 Cast Iron After wash Examination"
- α "Attachment #4: Porosity PT Level 3 Stainless Steel Examination"
- α "Attachment #5: Supporting statement - Seasoned Cast Iron cleaning"
- α "Attachment #6: Supporting statement - Seasoned Cast Iron Cleaning"
- α "Attachment #7: Supporting statement - Seasoned Cast Iron Cleaning"
- α "Attachment #8: Supporting statement - Seasoned Cast Iron Cleaning"
- α "Attachment #9: Department of Health and Human Services / Letter dated 9/27"
- α "Attachment #10: 1976 Food Service Sanitation Excerpts"
- α "Attachment #11: PT Examination measurements"
- α "Attachment #12: Official documentation"
- α "Attachment #1: Porosity Analysis Level 1 Contrast Dye Examination"

*It is the policy of the Conference for Food Protection to not accept Issues that would endorse a brand name or a commercial proprietary process.*