Release Test

Objective

The Release test is to evaluate the release properties of the ceramic non-stick coating for cookware applications. The following foods are used for the test purpose:

1. Pancake
2. Eggs
3. Carbonized milk

Apparatus

- Frying pans (or similar cooking surface)
- Timer
- Infra-red temperature recorder
- Soft sponge

Procedure

1. Pancake release test
   - i. Put the frying pans on the heating surface, and adjust the temperature to 200℃.
   - ii. Pour 30 g/dm^2 of pancake batter into the centre of the frying pan. It should completely cover the bottom of the frying pan.
   - iii. Remove 1.5 cm^2 of the batter at the point mid way between the frying pan centre and handle. Gently loosen the pancake around its periphery from the surface of the frying pan. Take the frying pan away from the heating surface, turn it upside down and check if the pancake is entirely released by the surface.
   - iv. If the pancake does not release from the frying pan, remove it with a spatula and rate it according to Point 6.
   - v. Quench the frying pan in warm, mild dishwashing detergent solution. Then wash and rinse with cool water. Dry it thoroughly.

2. Egg release test
   - i. Put the frying pans on heating surface, and adjust the temperature to 200℃.
   - ii. Break one egg into the center of the frying pan.
   - iii. Turn the egg over in the frying pan.
   - iv. Evaluate the release performance according to Table 1.

v. Cook 2 minutes on the flipped side. Turn the frying pan upside down. Evaluate the release performance according to Point 6.

vi. Quench the frying pan in warm, mild dishwashing detergent solution. Then wash and rinse with cool water. Dry it thoroughly.

3. Carbonized milk release test

i. Pour 80 g/dm^2 of milk into the frying pan. It should completely cover the bottom of the frying pan.

ii. Put the frying pans on the heating surface, and boil the milk slowly.

iii. Continue boiling until the milk is entirely evaporated.

iv. Adjust the temperature to 200℃. Carbonize the film of the milk until it becomes brown, and has stopped emitting smoke.

v. Pour cold water (20 mm) to the frying pan. Allow it to cool to room temperature.

vi. Remove the water, and rate the release performance according to Point 5 below.

4. Repeat the above release tests 2 times for total of 3 cycles.

5. Rating for milk

"5" milk film is entirely removed during immersion under cold water.

"4" milk film is not entirely removed during immersion under cold water, but completely removed by hand peeling.

"3" milk film is 99%-75% removed by hand peeling.

"2" milk film is 74%-50% removed by hand peeling.

"1" milk film is 49%-25% removed by hand peeling.

"0" milk film is 24% or lower removed by hand peeling.

6. Rating for egg and pancake

"5" All food is entirely released when the frying pan is turned upside down.

"3" All food is entirely released with spatula.

"1" Food sticks but can be detached from frying pan surface with the spatula.

"0" Food cannot be removed at all.