INSTRUCTION MANUAL

How to Remove Melted Aluminum Foil from Oven

Advance Technical Writing
Section 2162
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1 INTRODUCTION

1.1 PURPOSE

This instruction manual provides procedures in how to remove aluminum foil that has been melted and bonded to the surface of your oven.

1.2 AUDIENCE

The primary audience is anyone that uses a modern oven, that has a hidden heat element at the bottom, and prefers a cost effective method of restoring its finish. They will consist primarily of home owners or leases with moderate to low income and have any education background that has limited to no chemistry background. They will most likely be individuals that don't like to read, or have access to, the manufacture's instruction manual because many manufacture's instructions provide warning of using aluminum foil.

The alternate audience may consist of landlords, oven manufactures, or anyone that is interested in home remedies, which would most likely use the proposed instruction manual as a reference or general information. They may consist of chemistry enthusiast, or someone that would need to use this as a reference to remove aluminum from other surfaces.

1.3 BACKGROUND

To avoid cleaning up spills at the bottom of the oven, you may be tempted to put aluminum foil at the bottom of the oven. Oven Manufacture's instruction warn not to do this. In the event that aluminum foil is placed at the bottom of the oven during cooking, it will bond to the surface of the oven and nearly impossible to remove.

To break the bonds of the aluminum (Al), hydrochloric acid (HCl) is added to produce aluminum chloride ($AICI_3$) and hydrogen gas (H). Many household cleaning products found around the home contain hydrochloric acid.

Formula: $2AL_{(S)} + 6HCL_{(AQ)} \rightarrow 2ALCL_{3(AQ)} + 3H_{2(G}$

2 EQUIPMENT AND MATERIALS NEEDED

2.1 EQUIPMENT

- Rubber Gloves
- Eye Protection
- Fan
- Wooden Spatula

2.2 MATERIALS

- Modeling Clay (Plasticine)
- Toilet Bowl Cleaner (The Works)
- Paper Towels
- Water

3 IMPORTANT SAFETY INSTRUCTIONS

- ✓ ***Manufacture Instructions:*** Read and understand the manufacture's instructions and do not use cleaning products without a label.
- ✓ ***Proper Protective Equipment (PPE):*** Wear safety glasses, protective clothing, and rubber gloves to prevent irreversible eye and skin damage.
- ✓ ***Ventilation:*** Open the windows to provide proper ventilation and remove children and pets from the area.
- ✓ ***Unattended Chemicals:*** Put cleaning products away when leaving the room. Do not leave chemical products unattended.

4 INSTRUCTIONS

4.1 PREPARE THE AREA

Step 1. Ensure oven and stove top controls are set to off and oven is cool before proceeding.

Warning: Failure to do so can result in death or fire.

Step 2. Open all the windows and turn on stove overhead fan, or place a fan next to oven to provide proper ventilation.

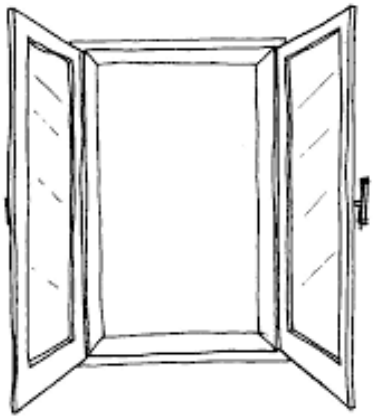

Figure 1.
Diagram of Opened Window

Step 3. Remove children and pets from room.

Step 4. Remove oven racks from oven.

Step 5. Clean oven to remove food and loose aluminum pieces using a non abrasive scrub brush. DO NOT use self-cleaning feature until aluminum has been removed. As this will strengthen the bond the aluminum has to the oven surface.

Caution:
Using Abrasive materials may damage the porcelain enamel coating.

4.2 APPLY MODELING CLAY

Step 1. Cut modeling clay into 1-inch-thick strips.

Step 2. Roll modeling clay strips into a long rope.

Note: Several strips may be needed depending on the size of the area that needs to be treated.

Figure 2.
Diagram of Rolling Modeling Clay

Step 3. Place modeling clay around the area to be treated while pressing down to create a dam that seals the toilet bowl cleaner in place.

Figure 3.
Example of Placing Modeling Clay

4.3 APPLY TOILET BOWL CLEANER

DANGER: Toilet Bowl Cleaner contains Hydrochloric acid which is corrosive and may cause irreversible eye and skin damage. When combined with Aluminum it produces Hydrogen gas and Aluminum chloride. Hydrogen gas may cause suffocation if room is not properly ventilated.

Step 1. Pour toilet Bowl Cleaner (The Works) into the sealed off area surrounded by the modeling clay until it just covers the aluminum foil. DO NOT overflow.

Step 2. Scrape area with wooden spatula to mix contents.

Step 3. Wait 30 minutes. You will start to see the hydrogen gas forming as white bubbles and the mixture turning to a silver color.

Note: Waiting periods depends on the concentration of Hydrochloric Acid in the toilet bowl cleaner. For best result recommend using The Works toilet bowl cleaner.

Step 4. Wipe the mixture up with paper towels.

Step 5. Repeat the process until all aluminum foil has been removed.

Step 6. Clean the area with soap and water. Rinse several times