

How to Maintain Reflectors in Infrared Ovens

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Many electric infrared ovens rely on quartz medium-wave or short-wave infrared emitters to impinge heat on the product. Reflectors installed behind the emitters are therefore necessary to direct the infrared energy in the most efficient manner possible to the product. The reflectors may vary in patterns or composition, but all are designed to allow for ease of maintenance and cleanliness.

To understand the importance of reflector cleanliness, you need to look at what reflector maintenance means to the overall efficiency of the electric infrared oven. Most industrial infrared ovens are designed around the customer's specific needs and application. This makes it difficult to define "oven efficiency" in generalized terms that can be applied to every situation. However, an industry-wide accepted definition for oven efficiency is:

Efficiencies measured on various infrared ovens will vary in the range of 10 percent to 70 percent. The main factors that affect infrared oven efficiency are:

- Oven design.
- Product (surface characteristic, geo-metry and position to infrared).
- Reflectors.
- Exhaust and cooling.

The following example illustrates the importance of reflector maintenance:

Assume a typical, well-designed, well-maintained infrared oven operates with efficiencies in the 25 percent range. (This means that in order to put 1 kW/hr of energy into the product, you will have to buy 4 kW/hr of electricity.) With dirty or damaged reflectors, the oven efficiency could possibly fall to 20 percent. This means that to do the same job as before, you now have to buy 5 kW/hr of electricity -- assuming the oven has the capability. Therefore, what appears to be a slight reduction in efficiency (only 5 percent) causes a significant increase in power consumption (25 percent). This is why regular maintenance and cleaning of an infrared oven is extremely important.

How To Checklist

Maintenance items for infrared oven reflectors.

- Keep all dust, dirt and paint overspray away from the oven openings.
- Develop a maintenance schedule to check the operation of all heat sources. (Determining how often the oven should be cleaned will depend on shop conditions.)
- Blow off loose dust.
- Wipe reflectors with a clean, soft cloth.
- When cleaning any reflective surface, dust away all loose dirt and dust; then, clean with a nonabrasive material.
- Heat sources should be kept as clean as the reflective areas of the oven. If heat sources become dirty, they may overheat and



experience a reduction in operating efficiency.

- To clean a quartz tube or quartz lamp heat source:
 - Wipe with a cloth dampened in alcohol.
 - Then, wipe with a soft, dry cloth.
 - Do not touch the emitters with bare hands after cleaning.