

USING REFRIGERATORS ON SHABBOS

ZMAN **TECH**
NOLOGIES

ELECTRICITY

Years ago when refrigerators became a standard home appliance, the question of using refrigerators on Shabbos was posed to many prominent poskim.

The problem originates with the general use of electricity on Shabbos. Is it permitted? Is it d'oraysa or d'rabanana? Some viewed electricity as an issur d'oraysa- a biblical prohibition, but most determined that the issur was d'rabanana. (This has implications in certain situations- even if using electricity is d'rabanana, causing the automatic defrost to activate would be a d'oraysa as will be seen).

Today, the issur of using electricity has been established throughout the Jewish world and using any form of electricity today is unequivocally considered Chilul Shabbos.

REFRIGERATION

In order to fully understand the issues involved with using refrigerators on Shabbos, a brief introduction to refrigeration is necessary:

A refrigerator produces cool air by cycling gas (Freon) through tubes located behind the refrigerator. When the gas compresses and expands through the tubes, it produces cool air which is pumped throughout the inside of the refrigerator. A pump called the compressor, cycles the gas through this system and if left running continuously, would freeze anything inside.

To keep temperatures in the refrigerator regulated back then, manufacturers added a mechanical thermostat which acted as bridge to the compressor's electrical circuit. When temperatures cooled, the thermostat would contract, severing the electrical circuit and shutting the compressor off. When temperatures got warm again, the thermostat would expand, completing the electrical circuit and activating the compressor once again.

Old Refrigerators- Halacha

This posed a dilemma when using those refrigerators on Shabbos. If the door to the refrigerator was opened letting in warm air, it would cause the thermostat to contract, completing the electrical circuit and turning on the compressor again. Did this constitute Chilul Shabbos?

THERE WERE THREE PARTS TO THE QUESTION:

- 1** *Was opening the door considered a direct action or an indirect action- grama?*
- 2** *Was turning on a compressor an issur d'oraysa or d'rabanen? If it was d'rabanen perhaps an indirect action - gramma on an issur d'rabanen, could be allowed under certain circumstances.*
- 3** *Even if it were considered a direct action: would it inevitably turn the compressor on- psik reisha, or was there a possibility that the compressor would not turn on for a while?*

OPINIONS:

Ultimately, there were three major opinions in the poskim:

1 *The refrigerator was not allowed to be opened on Shabbos at all².*

2 *The refrigerator was allowed to be opened only while the compressor was running so that letting the warm air in would not directly activate it³.*

3 *The refrigerator could be opened even when the compressor was not running⁴.*

Rav Shlomo Zalman Aurbach zt'l held of the last opinion. His reasoning was that letting in warm air might not be considered a direct action of activating the compressor on Shabbos. Furthermore, it was possible that using electricity altogether was d'rabanan. So for the sake of Oneg Shabbos he held that it was permitted to rely on the lenient opinion.

Accepted Practice

While there are many today who are careful to open the refrigerator only while the compressor is running, over time, the opinion of R' Shlomo Zalman zt'l took traction throughout most of the Jewish world and the common practice is to open the refrigerator door even when the compressor is off.

Exceptions

What many are not aware of is that this leniency applies only in instances where it is not inevitable that the compressor will turn on. However when placing a hot pot into the refrigerator or when the kitchen is very hot and the warm air will inevitably cause the compressor to turn on, one may not rely on this⁵.

⁵R' Sh.Z. Aurbach.

REFRIGERATORS TODAY

Back in those days, the only issue was using the compressor and electricity. Today however, manufacturers started introducing new electronic systems into the refrigerator. Some are added features like the automatic defrost and ice maker, others are electronic systems designed to make a more energy efficient appliance.

Regardless of their nature, no longer can we be certain that refrigerators are allowed on Shabbos, nor can we simply rely on the opinion that permits opening the door at any time. Each new system introduced requires individual attention, inspection and decision from a Rav before assuming their permissibility.

Defrost

The first major problem with refrigerators on Shabbos came with the introduction of the defrost system. When warm air comes into contact with a cold surface it will condense and stick to the surface- much like a window pane in winter. In freezing temperatures the frost will accumulate and turn into a thick layer of ice.

At first, this ice buildup in the freezer needed melting every so often by unplugging the freezer for a few hours.

Consequently, manufacturers introduced the defrost mechanism. Inside the freezer walls, they installed a heating coil –like the coils found in a toaster oven- that burns red-hot and melts any frost buildup. The small amount of excess water is drained into a tray underneath the refrigerator where it evaporates.

THERE ARE THREE METHODS THEY USED TO TURN ON THE DEFROST COIL:

Method 1- Defrost Timers

Initially, the defrost coil was activated with an internal timer. Every 6-8 hours the coil would heat up melting the ice. However, since the timer would activate the heating coil whether it were needed or not, it wasted a lot of energy.

Method 2- Adaptive Defrost

To make refrigerators energy efficient, manufacturers introduced the Adaptive Defrost cycle. Instead of activating the defrost on a timer, the computer would calculate the compressor run time only and assume that after 5 hours of compressor run, the frost had built up enough to warrant a defrost cycle, and then turn it on for a short period.

This became a real problem to use on Shabbos. If the refrigerator door is opened, hot air that enters causes the temperature to rise and the compressor needs to run longer to keep the food cool. Longer compressor run time means the defrost cycle activates sooner than it would have.

This is a serious concern. Even according to the poskim who held that using electricity is d'rabanan, causing the heating coil to ignite would be d'oraysa- a biblical prohibition. The defrost coil is a gacheles shel mateches, which is classified as igniting a flame - havarah⁶.

⁶ See Rambam H. Shabbos 12:1, MM ibid.

Method 3- Electromagnetic Sensors

A third method used to activate the defrost system is by counting how many times the door is opened- sometimes by using electromagnetic sensors. These are usually embedded inside the door and undetectable.

The door sensors count the number of times a refrigerator door is opened and closed and activate the coil after a certain number of times. The reason they use this method is that the more the door is opened the more warm air is let in causing ice buildup. So for an example, after 20 times of warm air entering the refrigerator, they estimate, the freezer needs a defrost cycle. Here, opening the door constitutes a direct action of igniting the defrost after a certain amount of times the door is opened.

Halacha

Even if one could argue that it is not a direct action- since the person is merely opening the door and not directly turning on the defrost- still, it would most certainly constitute a psik- raisha - inevitable result, on a d'oraysa- activating the defrost coil. (Rav Hershel Shachter Shlit'a of the OU and other poskim are of the opinion that this is considered a direct action).

Some might argue that this is only considered a safek psik-raisha since it is not known which time the opened door will activate the defrost. Although this may be sufficient enough to be lenient at times, it would not be a leniency to constantly rely on as a standard way of keeping Shabbos.

Is it considered unintentional - davar sh'eino miskaven?

Since the user is only opening the door and does not intend to turn the defrost on, can we be lenient? defrost after a certain amount of times the door is opened. To establish a leniency based upon this, one needs to conclude that the user does not want the defrost to go on at all and wants only to open the door. This, according to some poskim, would be similar to one who turns on a light bulb and claims they only want the light in the room but not to ignite the filament. Would it then be permitted to turn on lights on Shabbos? Similarly, when someone purchases a refrigerator we assume that they want that appliance with all systems inside functioning properly -defrost included.

Damper and Fan

In sectioned refrigerator/freezer models, cold air generated by the compressor is channeled only into the freezer. Located beneath the freezer panels, is an electronic air vent called the damper. When the thermostat feels the temperature in the refrigerator is too warm the damper opens, allowing cold air to flow from the freezer into the refrigerator. The air is then dispersed around the refrigerator section by a fan. The fan is directly affected by opening the door and the damper is affected by the thermostat.

At one point buttons could be easily taped down. Today, in many refrigerators these electronics are triggered by electromagnetic sensors located in the door panel. Taping the buttons will no longer prevent the sensors from activating the damper and fan on Shabbos.

ELECTRONICS, MICROPROCESSORS AND MESSAGING

Introduction

The main difference between electrical and electronic circuits is that electrical circuits have no decision making capability, whilst electronic circuits do. An electric circuit simply powers machines with electricity. However, an electronic circuit can interpret a signal or an instruction, and perform a task to suit the circumstance. For example, a microwave oven often beeps when it has finished cooking, to inform the user that the meal is ready.

Modern refrigerators use a combination of electronic and electrical circuitry. A refrigerator has an electrical circuit comprising a plug socket, fuse, on/off switch, defrost and compressor, damper vent and fan. The electronic microprocessors decide when to activate each of these.

For example when the desired temperature is set via the control panel or dial inside the refrigerators, these instructions are interpreted by microprocessors. When the electronic circuit has interpreted these commands, it sends signals to the electrical circuit to operate the compressor, defrost or other systems, to keep systems at optimum performance levels and the food temperatures stable.

So each time the door is opened the microprocessor makes many changes to the calculations so that it can adjust the systems accordingly: How often to turn on the compressor, when to open the damper vent, how wide to open it, when to turn on the defrost etc. Every change in calculation creates a new electronic switch in the circuitry.

Halacha

WHAT IS THE HALACHA REGARDING THESE CHANGES ON SHABBOS?

Many poskim today rule that causing any change to these electronic systems regardless of the outcome – is considered Chillul Shabbos. Each change creates a new electronic “switch”. Even if the “switch” did not ultimately trigger any systems to go on, simply creating a new electronic “switch” to trigger systems differently, is considered makeh-b’patish- a melacha d’oraysa⁷ or at the very least a d’rabanen. Other poskim rule that it is assur only if the “switch” actually affects another system causing it to go on, but simply creating a new “switch” is not a problem if nothing changes as a result⁸. However according to both opinions, anytime the electronic sensors read and adjust the systems, it is considered a direct action that is Chilul Shabbos. (The opinion that this is not problematic because it cannot be seen has been refuted by all gedolim in Eretz Yisrael and abroad).

IN ERETZ YISRAEL

These problems are not new. They have been known in Eretz Yisrael for many years. Organizations and institutes to research halacha and technology were created years ago with the support of the Gedolim. For years Gedolim have been publishing statements, letters and responses calling out the issues and calling on Klal Yisrael to use refrigerators only with a solution to prevent Chilul Shabbos. Special refrigerators were manufactured by the Eidah Hacharedis to help solve these problems.

IN AMERICA

Here in America, the issues never received proper attention or publicity. When asked privately over the years, poskim would express concern and distress knowing the issues and that there was nothing they could do about it. No solution was available to the public and it would be impossible to call for everyone to stop using refrigerators on Shabbos⁹.

⁷ Rav Elyashiv, R' Shlomo Miller and others. R' Hershel Shechter considers it a form of Meleches Ksiva

⁸ R' Yisrael Belsky, and yb'l R'Binyomin Landau (Tosher Dayan)

⁹ R' Yisrael Belsky, R' Shlomo Miller and others expressed this clearly

IN CONCLUSION

1 *We have seen that when using an old refrigerator with just a compressor it is possible to rely on the lenient opinion by combining several leniencies.*

2 *These leniencies are not applicable when opening the refrigerator door is certain to cause the compressor to activate.*

3 *Leniencies are - leniencies. Can one still rely on them when a solution exists to avoid the problems?*

4 *Modern refrigerators contain new systems that were never discussed by poskim from the previous generation. Some, such as the defrost system and microprocessor messaging are considered d'oraysa¹⁰.*

5 *Leniencies are not applicable when dealing with a d'oraysa.*

6 *The issues were known to poskim for a long time. They did not publicize it because no solution was available.*

7 *Today, a solution exists that can help avoid any issur when using a refrigerator on Shabbos.*

¹⁰ R' Shlomo Zalman himself writes in a comment to his response that he was never discussing refrigerators with the newer systems. Many other gedolim declared this as well.

Addendum: Using a Timer- Is it a Chumra?

There are two general approaches when dealing with situations that are not clear from the Gemara, specifically when a halachic ruling is required.

A *Accepted stringencies with leniencies to rely on. In this event, those who choose to rely on leniencies are described as one who the chachamim are not pleased with- ain da'as chachamim nocheh hemmenuh.*

B *Accepted leniencies with stringencies for those who are careful. In this case one who chooses to be lenient is not rejected – ain maznichin osso.*

As previously mentioned, many poskim today are of the opinion that there are clear issurim involved in using refrigerators on Shabbos. Others, who lean toward the lenient opinions, nevertheless go with the first approach here and consider one who is lenient as one who the chachamim are not pleased with. One should ask a qualified Rav.

To learn more about the
Fridge Smart Control visit
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