ABOUT VACUUM IN CANS

Technical Bulletin CAN-02

When a customer purchases any canned product he expects the can ends to be concave. If they are not he rightly supposes that the can is spoiled. He should and does reject it. So you must have a vacuum in your canned product. There are other reasons for having a vacuum in canned foods. It helps preserve color, flavor, and vitamins. Oxygen in the headspace is usually detrimental. By reducing the oxygen content a good vacuum helps prevent internal can corrosion. The dark substance which sometimes occurs on the inside of canned seafood consists in part of iron oxides. Without a vacuum the pressure within a can, during processing, become high enough to cause buckles or strains. Low vacuums can cause other problems. If you have only 1 or 2 inches of vacuum at the cannery at sea level, and at a temperature of 65ºF and ship the product either to a high elevation, to cities in the mountains, or to a warm climate, then the can may become a flipper. There is no longer a pressure difference to keep the ends concave. In many products the vacuum in the can gradually drops with age. Can corrosion and other factors may release gases into the headspace. You need a good vacuum to have a long shelf life.

Sometimes people ask if you can sterilize a can with no vacuum. The answer is yes, you can. Vacuum doesn't enter into the sterilizing except in a few products such as vacuum pack corn and then high vacuum is necessary. Low vacuums can be caused by a number of things. Overfilling is probably the most common cause. Most vacuum machines stop if there is no vacuum in the machine but you can run with too low vacuum to properly evacuate the cans.

With steam flow machines you have to have headspace to get good vacuums. You have to have adequate dry steam pressure. Too high steam pressure can also result in low vacuum by sucking in air.

Can defects can also bring about low vacuum. Damaged flanges, too tight a clinch, excess compound or misplaced compound in the lids, all can contribute to low vacuums.

Many canners draw samples immediately after the closing machine, measure the vacuum, and use the same cans for seam tear down.