



ACID REQUIREMENT CALCULATIONS: HOW TO DETERMINE THE AMOUNT OF 65% ACID REQUIRED

WHY 65%? Acid is sold at an 85 – 95% concentration. At this concentration, acid evaporates faster, introducing acid at a damaging rate exceeding the bees' ability to ventilate. This causes losses of young and old queens as well as brood. At 73%, formic acid and water evaporate equally at the evaporating surface. At 65%, water evaporates faster. Evaporation of water at the evaporating surface creates a gentle introduction of acid into the hive and eliminates young queen losses and brood mortality. (*Carrey Clark, Dawson Creek, Canadian Research, early 90's*)

First: Acid is sold mostly by weight. Do your calculations in weight. It is easier to check and verify. VOLUME units are for reference only as they cannot be verified .

Second: Find the source of acid: Contact local chemical suppliers, Farm and Grower's supplies. Compare Prices.

Third: You must establish how many pads you will need. Will you use the standard treatment or do you have to modify your treatment? To decide, please read the document entitled "TREATMENT SELECTION."

IN CANADA, OR WHEREVER ACID IS AVAILABLE AT 65%:

In Canada and California, acid is available at a 65% concentration.

ONE COMERCIAL KIT of 162 PADS REQUIRE 43 lbs / 19.25 kg 16.7 l of 65% acid

ONE HOBBY KIT of -22 PADS REQUIRE 5.5 lbs / 2.475 kg or 2.15 l of 65% acid

- **1 PINT or 1 POUND OF ACID WILL FILL APPROXIMATELY FOUR MITEGONE PADS.**
- **1 LITRE WEIGHS 1,150 GRAMS AND WILL FILL EIGHT MITEGONE PADS.**
- **10 LITRES WEIGHS 11.5 KG AND WILL FILL 94 MITEGONE PADS.**
- **20 LITRE KEG WILL FILL 186 MITEGONE PADS.**
- **25 KG – 55LBS KEG WILL FILL 220 MITEGONE PADS.**

IN CANADA, OR WHERE ACID IS SOLD AT 85% CONCENTRATION:

Small kegs and large drums are available. If you need more than five kegs for your treatment, it is more economical to purchase acid by the drum. However, buy some acid in small kegs or jugs recommended in thinning, in order to thin, store, and transport the thinned acid to the bee yard.

- **ONE LITRE or 1.20 kg OF 85% ACID WILL, AFTER THINNING, FILL 10 MITEGONE PADS.**
- **ONE 25 KG KEG OF 85% ACID WILL FILL, AFTER THINNING, 260 MITEGONE PADS (25kg of 85% acid will produce 27,249 ml or 31,400 grams of 65% acid - tare weight of a keg is 3 lbs).**
- **ONE 200 L DRUM WEIGHING 226 KG OF 85% ACID WILL PRODUCE:**
 - **301 kg of 65% ACID AND WILL FILL 2'500 MITEGONE PADS.**
 - **16.6 COMERCIAL KITS OF 162 pads or 133 HOBY KITS of 22 pads.**
- **ONE 1000 l TOTE WEIGHING 1200 KG WILL FILL 90 COMMERCIAL KITS OF 162 PADS**

IN THE USA, OR WHERE ACID IS SOLD AT 90 – 95% CONCENTRATION:

Formic acid in USA is sold in barrels. or Totes. Small kegs / carboys are not available in all states. In addition to buying the acid, you may purchase plastic jugs that hold 5 US gallons and are thick, strong, and suitable for acid thinning and transporting acid into bee yards. See “THINNING FORMULAS.”

- **ONE 50 US GALLON BARREL OF 95% ACID WILL PRODUCE 290 LITRES OF 65% ACID AND WILL FILL 2'900 MITEGONE PADS or. 18.2 COMERCIAL KITS OF 162 pads. OR 145 HOBBY KITS OF 22 pads.**
- **ONE US GALLON OF EITHER 90 OR 95% CONCENTRATION WILL, AFTER THINNING, FILL 40 MITEGONE PADS**
- **ONE US QUART OF EITHER 90 OR 95% CONCENTRATION WILL, AFTER THINNING, FILL 10 MITEGONE PADS**
- **ONE 1000 l TOTE WEIGHING 12080 KG WILL FILL 101 COMMERCIAL KITS OF 162 PADS**