



# FILL POWER TOLERANCE AND VARIANCES

## Why can Fill Power results vary so much?

Fill Power is a very sensitive test measuring the volume of a prescribed weight of down and feathers. Fill Power results can vary because of many factors including: characteristics of the 30g tested, handling and shipping treatment before arriving in the laboratory, length of conditioning period, climate conditions in the testing room, individual testing routines and condition of the testing cylinders.

## What is the generally accepted tolerance for Fill Power testing?

IDFL reports results on the basis that the test result could be  $\pm 5\%$  of the actual fill power of a shipment.

## What factors cause differences in Fill Power results?

### Characteristics of the 30g sample tested.

Each 30g sample from a shipment of material will be different. Some 30g samples will have more feathers or more fibers. For example a 30g test sample with more feathers will have a slightly lower fill power.

### Handling and shipping of the sample before arriving at the laboratory.

The fill power can be affected if a sample is compressed, or very moist or very dry. Even with steam conditioning (which is the most consistent of all fill power conditioning methods) slight differences can occur based upon the shipment and handling. Normally, sleeping bags, jackets and compressed material have the most difficulty in reaching the original fill power tested immediately after washing and drying.

### Length of Conditioning Period.

Normally a 72 hour conditioning period will give an optimal fill power value. Some samples test similar after 24 or 48 hours. Some samples increase each day of conditioning.

### Climate Conditions.

Samples should be conditioned and tested at textile conditions of 20°C and 65% relative humidity. Variances from this can cause a different result. It is possible that atmospheric pressure, static electricity and other climate factors influence fill power.

### Individual Testing Routines.

Each person has a unique testing routine that may affect fill power. Each person has different speeds of filling the cylinder, different levels of static electricity and other small differences. These can all affect the outcome of the fill power test.

### Condition of the Testing Cylinder.

Each testing cylinder has slight variations in texture, static load, etc. These factors change from day to day even when every procedure is followed carefully. A 1-2% difference can be 8-16 FP points. New cylinders often give an inflated fill power result until after a "break-in" period.

## What can be done to improve accuracy of Fill Power results?

Three important things can be done:

1. Always use the Steam Fill Power conditioning method. This will give the most consistent results.
2. Follow the IDFB test procedure very carefully.
3. Most important is double or multiple testing. *The June 2008 version of the IDFB test method recommends that 2 separate samples be prepared and tested by separate staff, if possible. If only one sample is prepared, IDFL recommends that the material be tested by 2 different analysts at different times of day.*

## Can separate fill power tests be different even if testing conditions are identical?

Yes, even if testing conditions are identical, fill power results vary because of the factors listed above.

## IDFL LABORATORY AND INSTITUTE

Certified Laboratory: IDFB • EDFA • DPSC

Member: AATCC • ADFC • ASTM • CFDA • EDFA • IABFLO • IDFB

©2010

[www.idfl.com](http://www.idfl.com)

### IDFL

Tel: +1 801 467 7611

email: [info@idfl.com](mailto:info@idfl.com)

### IDFL EUROPE

Tel: +41 52 765 1574

email: [europe@idfl.com](mailto:europe@idfl.com)

### IDFL CHINA

Tel: +86 571 8273 6561

email: [china@idfl.com](mailto:china@idfl.com)

Page 1  
February 12, 2010