

IDFL NEWS

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FILL POWER CONDITIONING

IDFL now offers two new conditioning procedures.

The new methods help determine **original fill power in finished products and compressed down bales**. Original Fill Power is defined as the rated fill power immediately after washing and sorting of raw material.

Our research is related to the finding that Fill Power increases (or returns to its original value) after cleaning or even using a comforter, jacket or sleeping bag. Our research confirms findings by other testing laboratories.

STANDARD CONDITIONING PROCEDURE.

A sample is placed in a screened conditioning box for 3-5 days. Air is circulated in the screened box daily. After conditioning the Fill Power is tested.

What is the problem with the conditioning procedure?

The current procedure does not always return the fill power of finished products & compressed down bales to the original value.

Two alternate conditioning procedures are proposed for

finished products and compressed bales of down.

TUMBLE DRY CONDITIONING

1. Remove sample of down material and place 50-100g in conditioning box as per standard procedure.
2. Re-sew finished product or prepare a separate small pillow with 50-100g of down.
3. Tumble finished product or small pillow in home dryer for 45 minutes at medium heat.

4. Place 50-100g of tumble dried material in a separate conditioning box.
5. Test both samples the same day and after 72 hours.

Tumble dry conditioning returns the down more quickly and much closer to the original fill power. IDFL will complete further conditioning studies with IDFB and Hohenstein in Germany.

COMPARING FILL POWER CONDITIONING METHODS

<u>Examples of Product Tested</u>	<u>Tumble</u>					
	<u>Normal</u>	<u>Air-Dry</u>		<u>Water-Rinse</u>		
Down processed and tested in USA	600	600	0%	605	1%	
Down processed and tested in USA	680	690	2%	670	-1%	
Down processed in China, ship to USA	570	630	11%	640	12%	
Down processed in China, ship to USA	370	400	8%	410	11%	
Comforter made in USA ship to USA	460	500	9%	500	9%	
Comforter made in USA ship to USA	500	540	8%	530	6%	
Sleeping bag made in China ship to USA	440	540	23%	590	34%	
Sleeping bag made in China ship to EU	430	550	28%	640	44%	
Jacket made in China ship to USA	470	530	13%	555	18%	
Vest made in China ship to USA	500	570	14%	650	30%	

The following down was washing in the USA and certified at 600 Fill Power. Jackets were assembly in Asia and IDFL tested:

<u>Testing Detail using both USA and Lorch Cylinders</u>	<u>Same-day Test</u>		<u>3-day Test</u>	
	<u>USA</u>	<u>Lorch</u>	<u>USA</u>	<u>Lorch</u>
Fill Power after Normal Conditioning	465	470	510	510
FP After Tumble Dry Conditioning	530	540	570	575
FP After Water Rinse Conditioning	545	555	625	620

Is Tumble Dry Conditioning appropriate for Fill Power?

Some have argued that the tumble dry procedure "artificially" increases the Fill Power.

IDFL believes that the tumble dry conditioning method replicates the natural increase in Fill Power that occurs when the consumer uses and cares for the product.

Studies show that Fill Power increases after the following:

1. Wearing of a down jacket.
2. Sleeping in a down bag.
3. Sleeping under a comforter.
4. Consumer care of down products by washing, rinsing or tumble drying.

If the consumer can achieve original fill power through the normal use and care of a down product, then a tumble dry conditioning method is appropriate.

WATER RINSE CONDITIONING

1. Remove sample of down material and place 50-100g in conditioning box as per standard procedure.
2. Re-sew finished product or prepare a separate small pillow with 50-100g of down.
3. Wash finished product or small pillow with warm water only (no detergent) in a home washing machine at a normal cycle. Then tumble dry until completely dry.
4. Place 50-100g of tumble dry material in a separate conditioning box.
5. Test fill power for both samples the same day and after 72 hours.
6. (A 3rd test of tumble dry is also recommended to compare with the normal and water rinse results.

For some jackets and sleepings bags compressed in overseas

shipments, the Water Rinse Method appears to be the only way to return Fill Power to the original value.

Is Water Rinse Conditioning appropriate for Fill Power?

Care must be taken with the water rinse method. If the down material is dusty and/or has high amounts of residue, the water rinse method can "artificially" improve the down.

However, if the material has excellent turbidity and a very low oxygen number, the water rinse will have no effect.

IDFL recommends Water Rinse Conditioning in cases where Original Fill Power cannot be replicated even with the tumble dry method. (Jackets, vests, and sleeping bags compressed for long periods do well with the water rinse method.)

IDFL will continue research on Water Rinse Conditioning.

OTHER RESEARCH IN FILL POWER TESTING.

Based upon several thousand Fill Power tests in recent years, IDFL offers the following summary of Fill Power research:

Testing Tolerance. IDFL gives results with a tolerance of $\pm 5\%$.

New vs. Old Cylinders. In some cases, abnormally high results are obtained when brand-new plastic fill power cylinders are used. Use of anti-static spray, proper climate conditions and a "break-in" period for new cylinders help eliminate this problem. IDFL will provide additional information in future newsletters.

Lorch vs. USA Cylinder. In general the two methods yield very similar results. IDFL has compared hundreds of samples on both systems. For Fill Power values of 400-600 results are nearly identical. The Lorch gives slightly higher results (1-3%) for fill powers less than 400 and slightly lower results (1-4%) for fill powers greater than 600.

Improving Accuracy of Fill Power Results. IDFL does the following to improve accuracy.

1. **Sequential tests.** Fill Power is tested on multiple days for comparison.
2. **Re-testing.** A re-test of the sample eliminates errors.
3. **Multiple conditioning methods.** Additional tests are made for comparison.
4. **Multiple cylinders.** Testing on 2 separate cylinders provides cross-checking.
5. **Multiple Systems.** Using both the Lorch and USA methods provide additional cross-checks.

In summary, Fill Power accuracy will improve each time additional tests are completed and then evaluated and averaged.

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