



EVALUATION OF STAINS ON WHITE JACKETS

The staining of fabric in white or pastel down filled jackets is a re-occurring problem that has puzzled manufacturers and laboratories for several years.

IDFL has done a number of tests to determine the possible causes of this staining and we offer the following information from the jackets.

Evaluation of Down Cleanliness

Our first concern is the cleanliness of the down and feathers. If the down & feathers were not washed or rinsed properly washing of the jacket may cause a stain. Unclean down is a very rare occurrence in the down jacket industry

We completed the following test to determine cleanliness on the down filling:

1. Oxygen Number (determines amount of organic material on surface of feathers)
2. Turbidity (determines amount of non-organic and other dust/residue on surface)
3. Fat & Oil content (determines fat content of entire feather)

Oxygen Number

The oxygen number for both the stained jacket and the unwashed jacket is 1.6 This is the cleanest reading possible. The feathers have no organic material on the surface.

Turbidity

The turbidity is 1000+ for both the stained and unstained jacket – which is the best possible reading. This material is dust free.

Oil & Fat

Excessive oil and fat would be a worry for staining. The allowable range for oil and fat is 0.5% to 2.0%. The stained jacket had 1.1% oil and the unwashed jacket had 0.9% oil. Both are normal for very clean down and feathers.

CONCLUSION:

The down and feathers are extremely clean. We do not believe that any residue or material from the down and feathers is causing the problem.



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WASHING EXPERIMENTS

Experiment # 1

To make sure that the fabric itself was not the source of the stain, we removed a sleeve from an unwashed jacket. We carefully removed all of the down from the sleeve, sewed it up again and washed it with detergent. No staining occurred

Experiment # 2

We took the other sleeve from an unwashed jacket and followed care instructions. We washed it with detergent and immediately dried it thoroughly in the dryer. (About 1 hour for just the sleeve. No staining occurred!!

Experiment # 3

We took that same sleeve that had been washed and dried. We washed it again with detergent and then let it line dry overnight .

Staining in 4-5 places occurred. This staining was very similar to the existing staining of the washed jacket

Experiment # 4

Using another piece of an unwashed jacket, we completed the wash and line dry test again with "soft" water conditions to determine if staining occurs.

Staining still occurred with soft water.

CONCLUSION

Staining only occurs when drying is not completed immediately after washing.



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VISUAL EVALUATION OF STAINS

The staining is always occurring near the seam and near seams with a great deal of fabric and inner lining material.

Also, staining appears to occur near very small panels where the down is a very small, tight space.

The staining looks like water stains in other textiles.

CONCLUSION

The location of the staining indicates that certain areas of the jacket may have had a difficult time drying properly.

DISCUSSION WITH PROFESSIONAL CLEANERS

Professional laundry managers agree that the stains look like water stains that occur when certain textiles are not dried immediately or completely.

CONCLUSION

Other experts conclude that it appears to be water stains from improperly dried textiles.



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FABRIC CONSTRUCTION

Some of the jacket panels have a very peculiar construction that may not help the drying effort.

In several cases the down was NOT encased in the inner “pillow” lining. The layers in these places were as follows:

1. Outside shell fabric
2. 2-part white lining
3. A 2nd 2-part white lining layer
4. Down & feathers
5. Inner shell

We believe that the down was meant to be contained with the 2-part lining inner pillow. This is likely a manufacturing error

CONCLUSION

The excess fabric on one side may contribute to the drying problem. These five outside layers may add to the difficulty of quickly drying the down and feathers.



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GENERAL CONCLUSIONS

Based upon our testing and experiments, we believe that the staining is due to a delayed or improper drying of the jacket after washing.

A contributing factor is the construction of the jacket itself, which may make certain panels to be “drying” resistant compared to other panels. It is possible that most of the jacket appeared dry but a small section remained wet causing the water stains.

SOLUTIONS

Consumers must receive instructions to immediately tumble dry after washing. Lining drying is not acceptable. The jacket may require 1-2 hours of drying. The consumer must check all small pockets of down to make sure everything is dry.

The construction errors should also be examined to make sure the fabric itself is not contributing to an inability of the down to dry properly.