Summary

The following points can be made from the experimental data and their analysis:

- The ANOVA for seam strength and for seem efficiency clearly show that the parameters selected for the study are extremely significant.
- The fractions of the dependent variable variation explained by the independent variables chosen are very high (better than 0.7 in all cases and better than 0.9 for several)
- In all fabrics, the plain one seems to give the strongest seam with rip-stop in the middle, with the twill being the weakest. Lock stitch provides the strongest seam type, followed by the chain stitch, with zig-zag being the weakest seam.
- In considering seam efficiency, the plain fabric is the most efficient, with rip-stop in the middle, and twill fabrics the least efficient. This is in the same order as the seam strength, therefore this pattern is likely to arise from the basic nature of the fabrics. Of the stitch types, the chain stitch provides the highest efficiency, then zig-zag, and lock stitch is the least efficient.
- The seam strength and efficiency show a decrease with the number of rows of stitches and an increase in stitch density. This can be explained in terms of damage to the yarn sheets by the stitching needles, and a simple model to test this idea provides some evidence for the hypothesis.

Conclusions

In conclusion, it would seem that the behaviour of canopy seams under a load can be 'engineered' over a wide range by suitable selection of values of various parameters going into the construction of the seam. The regression equations give reference values which can be used as a fundamental guideline in understanding the load bearing capabilities of parachutes made of seamed cotton fabrics.

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