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SAFETY INFORMATION

RESERVE GROUNDINGS - ACID/MESH

The report of the BTTG is attached. As you can see it concludes that acid attack on canopy material can be anticipated over time.

The grounding of reserves which have failed the Bromocresol test must therefore remain.

Also attached is a letter which has been sent with copies of the BTTG report to manufacturers. This letter urges manufacturers to replace those canopies which have failed the Bromocresol test.

We believe that, at present, insufficient information and knowledge exists regarding the suitability of any treatments for this problem, and any attempts at this may void the owners rights of redress.

We are believe that if any satisfactory remedial treatment is devised then this should only be carried out by manufacturers who are prepared to certify each canopy as safe after treatment.

Tony Knight  
Chairman, Safety & Training Committee

Tony Butler & John Hitchen  
Joint National Coaches and Safety Officers

25th November 1988

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# CONFIDENTIAL TEST REPORT

Ref. No. 11/951 DG/DL

1/2

The British Parachute Association  
5 Wharf Way  
Glen Parva  
Leicester



SHIRLEY TESTING SERVICE

Attention: Mr. A. Knight

22nd November 1988

## TESTS ON PARACHUTE CANOPIES

### Samples submitted

Five parachute canopies identified as follows:

Type	Date	Serial No.	Sample No.
Type 370R	Oct. 85	75776	0
Pioneer KXX	May 82	600083	1
Invader 370R	Oct 85	75781	2
GQ Security 26'	Oct 81 (84?)	20275	3
Phantom 24'	Feb 87	242805	4

### Background

The nylon fabric in several canopies has been known to become degraded due to acid contamination from polyester net present in those canopies.

Field tests using indicators had revealed that a number of canopies contained net which gave an acidic reaction to these indicators.

The above samples 0-4 were submitted for verification of acidity to identify the fibre present in the nets.

### Lab. Work

The net in each sample was spotted with bromo-cresol green indicator which shows a colour change from yellow to blue over the pH range 3.8 - 5.4.

Each test produced a yellow colouration indicating a highly acidic condition. It should be noted that pH 5.4 indicated by a blue colouration is also an acidic condition but more mildly so.

The same samples were then spotted with BDH Universal Indicator which has a colour change from pink to blue over the pH range 4-11. In each case a pink colouration was produced indicating a pH of 4 or less, i.e. highly acidic.

Similar tests were carried out on the ribbon stitched between the net and the nylon fabric which indicated that some acidity had been transferred by direct contact, particularly through the stitching thread.

The nylon fabric was not found to be highly acidic in any of the canopies.

Microscopical examination of fibres taken from the net of each of the canopies revealed that they all consisted of polyester. In some cases this was dull and in some semi-bright possibly indicating different sources.

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2/2

The British Parachute Assn.  
Leicester



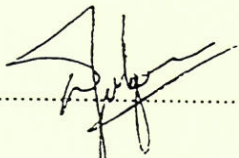
SHIRLEY TESTING SERVICE

## Conclusion

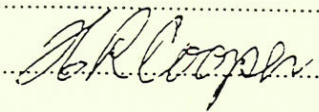
The degree of acidity present on the polyester net in each of the submitted samples was found to be high enough to cause potential problems due to acidic attack on any nylon in contact with the netting.

This type of attack does not appear to have taken place so far on the submitted samples, but can be anticipated in the event of long storage times.

It should be possible to neutralise the acid and therefore remove the problem by washing the canopies in dilute alkali solution. It would then be necessary to establish whether such treatment would affect the finish on the nylon and its air permeability.

Reported by.......... D. Gudgeon

Laboratory Manager..... D. GUDGEON.....

Business Manager.......... Dr. H.R. COOPER  
Specialised Analytical Services

Enquiries concerning the technical content of this report should be addressed to the Laboratory Manager named above.

Terms and conditions applying to the operations of Shirley Testing Service are printed on the back of the cover page of this report.

# BRITISH PARACHUTE ASSOCIATION

Wharf Way

Glen Parva

Leicester LE2 9TF

Telephone: Leicester (0533) 785271 + 5 Lines



Date: 25th November 1988

Dear Sir,

Enclosed are copies of BPA Safety & Information Notices and the report of the BTTC laboratory report on the acid/mesh problem.

We believe that this report is sufficient to warrant the grounding of reserve canopies which show yellowish staining when subjected to the Bromocresol test.

In view of this we would strongly urge that you replace all affected canopies that are returned to you.

Whereas we accept that some acid levels may not immediately affect material strength we feel that no guarantee can be given that material strength will not be affected over a period of time or in unusual environmental circumstances.

If remedial treatments are researched and proved to be effective then we believe that these should only be carried out by manufacturers who are prepared to certify (for each individual canopy) the effectiveness of the treatments.

This is a problem we do not willingly take on board, particularly when it keeps so many skydivers on the ground. In the long term interests of safety, however, we believe the current grounding to be the only course of action available to us, and that manufacturers are the only agencies able to offer a solution.

We have no doubt that reputable manufacturers will act quickly (as they have in the past in both Britain and America) to offer their customers a swift remedy. We hope that this will consist of an unconditional offer to replace affected canopies, and that this offer will be quickly forthcoming.

Yours faithfully,

Tony Knight  
Chairman, Safety and Training Committee

Tony Butler & John Hitchen  
Joint National Coaches and Safety Officers

