RIGGING ADVISORY CIRCULAR

Issue Date: 01 December 1989 RAC No. 214 Rev. A

SUBJECT: TESTING OF PARACHUTE CANOPY MATERIAL FOR ACID CONTAMINATION

STATUS: ADVISORY

BACKGROUND: In 1987 some reserve canopies were discovered with fabric of severly degraded strength. Investigation showed that this degradation was caused by acid, thought to be derived from the decay of a fire retardent used to treat the mesh used in the modifications. This RAC defines the tests to be undertaken to chech parachute canopy fabric material for the presence of acid.

PROCEDURE: Many means of testing for the presence of acid are available. Any standard test that can discriminate between a pH of below 4.7 and a pH above 4.7 is acceptable. The following testing agents have been deemed acceptable: Bromocresol green, Methyl red, Hydrion Papers type B (range pH 1-11) pH test papers. Indicators which have a single colour change at a pH less than 4.7 are not acceptable.

Fabric with a pH of 4.7 or less is considered acid-affected. Fabric with a pH of greater than 4.7 is considered unaffected by acid.

The pH scale ranges from 0 (very acid) through 7 (neutral) to 14 (very alkaline). A pH of 4.7 is mildly acid. Nylon is not degraded by acids weaker than this (ie. with a pH between 4.7 and 7).

When conducting these tests, it is important to follow the instructions of the manufacturer of the test material, or to follow standard chemical analytical techniques. It is important to realise that where the fabric or test paper is to be moistened, only distilled water may be used. The use of tap water will yield false results, as may the handling of test papers with the fingers.

RELATED INFORMATION: For method of testing the strength of parachute canopy fabric, see RAC 213.

A convenient method of testing with liquid indicators such as bromocresol green or methyl red is as follows:

Stretch the material to be tested over the top of a drinking glass and moisten it with distilled water, encouraging the material to wet, if necessary, by rubbing the water in with the back of a teaspoon,

pre-cleaned with distilled water. Add a single drop of the test solution to the moist fabric and observe any colour change. If bromocresol green changes to a yellow-orange, or if methyl red changes to red, it indicates the presence of acid in the fabric.

If you are unsure of the colour change expected, dilute a little vinegar with water and add a drop of the liquid indicator solution. The colour shown indicates acid.

Tests with pH indicator papers may be made as follows:

Rinse the bottom of a porcelain or enamel saucer with distilled water and place it up-side-down on the bench. Using forceps, place about 2.5 cm of the test paper on the saucer and stretch the fabric over the test strip with a drop of distilled water, rubbing it in, if necessary with the back of a clean teaspoon, as described above. Remove the fabric, and compare the colour of the wet test paper with the colour comparison chart supplied with the paper.

EFFECTIVE DATE: Immediately

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DISTRIBUTION: RAC Holders