Requirements:

NASA requires Kapton coated Kevlar as part of the HIAD Flexible TPS ground test effort and IRVE3 inflatable structure thermal protection system. This fabric shall be the gas barrier of the vehicle's TPS protecting the inflatable structure and is needed for various testing required by the project, including high temperature tests.

The material specifications:

Three-layer Kapton/Kevlar/Kapton laminate material, 4-5mil thick x 48 inch wide, 150ft length

- front and back layer of ½ mil Kapton HN film
- middle layer of Kevlar 49 plain weave fabric, with 34 +/-2 yarns per inch in warp & fill direction, see more details below
- bonded together with low-outgassing* adhesive
- no metallic metal shall be on final product

*Definition of a low-outgassing: Nonmetallic materials which are exposed to space vacuum shall have been tested using the technique of ASTM-E595, Total Mass Loss and Collected Volatile Condensable Materials From Outgassing In A Vacuum Environment, Test Method for, with acceptance criteria of <0.1 percent Collected Volatile Condensable Materials (CVCM) and <1.0 percent Total Mass Loss (TML).

The cloth shall be made from Kevlar 49 yarn. 1.8+/-10% oz/yd. per ASTM-D-1910

Min breaking strength on the Kevlar 100lb/in warp and fill per ASTM-D-1682 1" Ravel Strip

Yarn type 195 - 1/0 per AMS 3902