Key Performance Requirements for Windshield Nets:

The performance requirements for windshield nets are critical to ensure they effectively protect crops from high-speed winds. Here are the elaborated requirements:

1. Mass:

- **Type 1:** Minimum mass of 100 g/m².
- **Type 2:** Minimum mass of 150 g/m².
- This requirement ensures that the nets are sufficiently heavy to withstand wind forces while providing adequate coverage .

2. Breaking Strength:

- **Type 1:**
  - Warpway: Minimum breaking strength of 350 N.
  - Weftway: Minimum breaking strength of 350 N.
- **Type 2:**
  - **Warpway:** Minimum breaking strength of 400 N.
  - **Weftway:** Minimum breaking strength of 700 N.
  - The breaking strength is crucial for the durability of the nets, ensuring they do not tear or fail under wind pressure .

3. UV Resistance:

- After exposure to UV light for 144 hours, the nets must retain at least 85% of their original breaking strength. This requirement is vital for ensuring the longevity of the nets when exposed to sunlight, which can degrade materials over time .

4. Colour Fastness:

- The nets must have a colour fastness rating of 4 or better when tested against artificial light. This ensures that the nets maintain their colour and do not fade significantly, which can affect their aesthetic and functional properties .

5. Bursting Pressure:

- The minimum bursting pressure is set at 10 kgf/cm² for Type 1 and 14 kgf/cm² for Type 2. This requirement assesses the net's ability to withstand internal pressure without rupturing, which is important for maintaining structural integrity .

6. Wind Blockage:

- The minimum wind blockage percentage is specified as 18% for Type 1 and 35% for Type 2. This characteristic quantifies how much wind the net can effectively block, which is essential for protecting crops from wind damage .

Measurement of Effectiveness in Terms of Wind Blockage:

The effectiveness of windshield nets is quantitatively assessed through a wind blockage test, which involves the following steps:

1. Setup: The test involves using an anemometer to measure wind speed. The net sample is mounted on a sample holder.
2. Initial Measurement (w1): The wind speed is first measured without the net in place. This reading is denoted as w1.
3. Sample Measurement (w2): The net sample is then placed in the holder, and the wind speed is measured again. This reading is denoted as w2.
4. Calculation: The wind blockage percentage is calculated using the formula:
Wind blockage, percent=(w1−w2)/w1×100. This formula calculates the reduction in wind speed due to the presence of the net, providing a clear measure of its effectiveness in blocking wind .
5. Repetition: The procedure is repeated for multiple samples to ensure accuracy and reliability of the results, with the average of all readings taken as the final wind blockage percentage