SUMMARY – IS 16008 : PART 2 : 2016, AGRO TEXTILES - SHADE NETS FOR AGRICULTURE AND HORTICULTURE PURPOSES – PART 1 SHADE NETS MADE FROM HDPE MONOFILAMENT YARNS

Shade net is a knitted polyethylene fabric that provides plants and people with protection from the sun. They are an integral part of protective agriculture systems which results in lengthening of the growing season as well as flexibility of off season cultivation of crops. They can be made either from tape yarns or monofilament yarns. Equipped with its abilities to protect crops from natural disturbances such as Ultraviolet Rays and Heat Waves from the Sun, wind, rain, hail, frost and snow it has been brought to much use within the agricultural sector. With its temperature controlling features, it provides the nursery vegetation with a preferable environment which stimulates photosynthesis.

Shade nets modify the micro-environment through the control of solar radiation, temperatures, relative humidity and improving soil & plant water availability. Shading improves vegetables' growth, yield, and quality attributes through formal microclimate control. Yield is augmented through the reduction of sunscald, blossom end rot, and decay fruits, and decreased incidence of diseases and pests.

The Primary Role and Purpose of Shade Nets Solutions in Protected Agriculture

Protection from Extreme Sunlight and Heat

The shading percentage of shade nets as given in Sl. No. vi) (Clause 6.2) of the Standard addresses this issue. Clause 5 of the standard classifies the product into 4 types based on shading percentage. These types are recommended based on the practical requirements of various crops for which the shade net is applied.

Defence Against Wind, Hail, and Extreme Weather Conditions

The following requirements in Clause 6.2, Table 1 of the Standard addresses the issue :

1) Sl. No. i) Mass, g/m^2 : The minimum value of mass ensures that the material has the quantity in it which adds to the physical properties of the net helping in a proper defence during extreme conditions.
2) Sl. No. ii) Average breaking strength of shade net fabric, N : The minimum values for the breaking strength ensures that fabric of high quality material is used which can ensure high defence against extreme weather conditions like wind, hail and dust storms for the crops.
3) Sl. No. iii) Retention of breaking strength after UV exposure, N : The deterioration of polyethylene fabrics due to UV exposure through continuous sunlight is a serious concern as it would decrease the shelf life of the product and effect its durability in

long run. Clause 4.1 of the standard specifies that HDPE monofilament yarn used in the manufacture of the shade net shall be manufactured from HDPE granules (see IS 6192), which shall be UV stabilized by adding suitable UV stabilizer. Using yarnss not conforming to the clause shall result in poor breaking strength after UV exposure thus resulting in product not suitable for the purpose. The colour fastness to artificial light as per Sl. No. iv) of the Table ensures that deterioration due to artificial light in the protected agriculture systems.

Pest and Insect Control.

Mass, g/m2 as stipulated in Clause 6.2, Table 1, Sl. No. i) not only ensures desirable physical properties but also ensures that the mesh size is appropriate to ensure protection against entry of pests and insects into the crop area.

Improved Climate Control

Sl. No. v) Bursting pressure, kgf/cm2 : Again this is also a measure of the strength of the product with respect to resistance to extreme climatic conditions.

The installation guidelines for shade nets as given in Annexure D of the Standard is a proper guidance to farmers on the planning, design, installation, operation and post installation precautions for the overall benefits to be accrued from a protective agriculture systems having a covering of shade nets.