Determining the Carbon Black Content in Geonets

The American Society for Testing Materials (ASTM) has two methods for determining carbon black content in polyolefin: ASTM D1603 and ASTM D4218. Both methods are developed and approved by the ASTM Plastics Committee D20.

Test Method ASTM D1603 is the “Standard Test Method for Carbon Black Content in Olefin Plastics.” This test method describes the determination of the carbon black content in polyethylene, polypropylene, and polybutylene plastic. The apparatus is a tube furnace with combustion boat placed inside.

Test Method ASTM D4218 is the “Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle Furnace Technique.” This test method covers the determination of black polyethylene compounds containing channel or furnace black.

Conclusion

Both ASTM D1603 and D4218 can measure the carbon black content of a polyethylene geonet. ASTM D4218 is specifically for polyethylene material, and it the more efficient test method to setup and run compared to ASTM D1603. Results from these two methods are similar, within 2% difference. Therefore,

GSE uses ASTM D4218 in its Manufacture Quality Control (MQC) test for determining the carbon black content of geonets. Note that ASTM D4218 is also the preferred method of most GSI-GAI accredited laboratories.