



THERMOPLASTIC COMPOUNDS USING LONG GLASS FIBER MASTERBATCH PELLETS

WSS-M99D514-A1

THERMOPLASTIC COMPOUNDS USING DIRECT LONG GLASS FIBER TECHNOLOGY (DLFT) / INJECTION MOLDING COMPOUNDING (IMC)

WSS-M99D514-A2

1. SCOPE

These specifications define the requirements for thermoplastic compounds produced from long glass fibers and/or concentrates in combination with unfilled resins and other additives as appropriate at the molding machine in order to create long glass fiber filled compounds at defined fill levels.

2. APPLICATION

WSS-M99D514-A1 This specification is for compounds with masterbatch long glass fiber pellets that are mixed at the molding facility with unfilled pellets at a defined ratio to achieve the desired glass fiber concentration. Substrates using this specification must comply with all the requirements in the appropriate part performance specification (e.g. *WSS-M15P4-F*, *WSS-M15P45-B*, *WSS-M98P13-C*) as well as the corresponding SDS requirements.

WSS-M99D514 -A2 This specification is for compounds with long glass fibers introduced into melted polymer before transport to the mold. Additional ingredients may also be blended at this point. Substrates using this specification must comply with all the requirements in the appropriate part performance specification (e.g. *WSS-M15P4-F*, *WSS-M15P45-B*, *WSS-M98P13-C*) as well as the corresponding SDS requirements.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to Ford Motor Company's Standard Requirements for Production Materials (WSS-M99P1111-A).

These specifications are based on virgin materials, however materials with recycled content as defined by WSS-M99P42-A (post-consumer and/or post industrial recyclates and repolymerised recycled materials) should be used whenever technically feasible and following all materials and PV testing required by Ford Materials Engineering. The use of regrind is permitted, for economic or environmental reasons, with compliance as indicated in WSS-M99P1111-A.

Date	Action	Revisions	Rev. 2
2014 12 04	Editorial	See Summary of Revisions	L. Soreide, NA
2014 08 21	Editorial	See Summary of Revisions	L. Soreide, NA
2011 03 01	Activated	M. Corley and concurred by Global Material Team	



3.2 VALIDATION AND TEST METHODS

The validation plan for the final compound should be established jointly by the part manufacturer, the responsible Ford component engineering activity, Ford Materials Engineering and the material supplier. Samples are to be produced under conditions (dosing, mixing, injection, tooling) representative of those used for final production parts.

This plan should include, but is not restricted to, the following.

- 3.2.1 Test specimens cut from molded parts or plaques and tested to the agreed upon tests in Supplement A.
- 3.2.2 Determination of part weight over a large sample size ($n > 50$). Sampling should include several charges to demonstrate that filler concentration is consistent over time and agrees with the expected value.
- 3.2.3 Filler concentration should be determined at several locations in parts to demonstrate consistent mixing and fill.

3.3 FIBER ORIENTATION

Appropriate fiber orientation and distribution must be achieved in the part. Upon the request of Ford Materials Engineering, the part supplier must carry out tests as appropriate to demonstrate suitable fiber orientation and distribution or alternatively may be requested to submit parts to Ford Materials Engineering for evaluation.

3.4 IDENTIFICATION OF MATERIALS USED IN THE FINAL COMPOUND

Individual materials that are combined to produce the final compound shall be identified on Supplement A. These include unfilled resin, masterbatch, fillers, fibers, etc. Any additions, deletions, or changes to any of these materials results in a new compound and requires new validation.

3.5 ENGINEERING DRAWING AND CAD GUIDELINES

WSS-M99D514-A1 Unless otherwise indicated by the Ford Materials Engineering activity, individual ingredients mixed at the molding machine are to be listed out on the drawing or the general notes in the CAD documentation.

Example: WSS- M99D514-A1
Stamax 60YM (%)
SabicPP 108MF97 (%)

WSS-M99D514-A2 Unless otherwise indicated by the Ford Materials Engineering activity, individual ingredients mixed at the molding machine are to be listed out on the drawing or the general notes in the CAD documentation. These would include unfilled resin, LGF-concentrate, additives or color master batch, glass fibers, etc.

Example: WSS-M99D514-A2
Dow LGF7600 PolyPropylene Resin
Dow PP Combi-Masterbatch CMPP 13.57 TR770002
Dryblend DA
40% Glass OC SE 4121 (Type 30)

