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3M Advanced Materials Division

3M™ Boron Nitride Cooling Fillers Processing Guide

Injection Molding

3M BN cooling fillers are excellent in combination with melted compound granulates for increasing the viscosity and the thermal conductivities of pure polymers such as HDPE, TPE, PP, PA and PC.

Typical 3M BN cooling fillers grades for injection molding

Grade	Type	Description
CFA50M	Agglomerate	Mix (M) of agglomerates, platelets and boron nitride clusters. Excellent for potting resins and encapsulation of electronic devices.
CFF200-3 CFF500-3	Flake	Higher through-plane thermal conductivity. Boosts thermal conductivity of compounds as secondary filler.
CFP006 – CFP012	Platelet	Optimal all-purpose grades for injection molded parts.
CFP012P	Powder	Spray-dried boron nitride platelets for excellent processability, flowability and high dosing velocities

Additional grades may be used depending on processing conditions

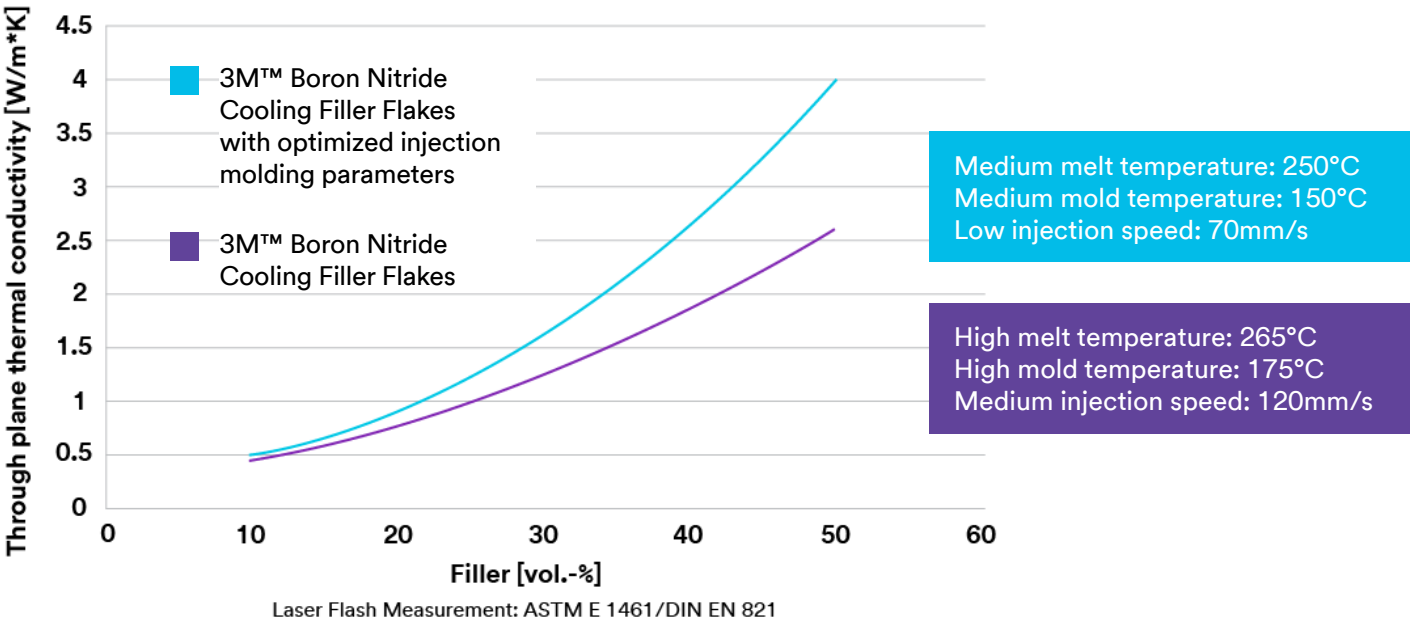
Injection parameters

Due to thermal conductive properties, compounds containing 3M BN cooling fillers require adjusted nozzle and mold temperatures, injection speeds, and injection, dwell and post pressures for complete filling of the mold.

Typical melt and mold temperatures

Thermally-conductive polymers using 3M BN cooling fillers generally require higher temperatures during injection molding, as follows:

Temperature type	Typical increase by:	Typical temperature range
Melt	30° – 50° C	200° – 300° C
Mold	20° – 90° C	100° – 160° C



Laser Flash Measurement: ASTM E 1461/DIN EN 821

Due to the orientation of the platelets, you can optimize the TC through-plane by adjusting the melt temperature and mold temperature.

Safety

3M BN Cooling Filler Platelet grades 001 and 003 SF contain diboron trioxide (CASRN 1303-86-2) as an impurity at levels which may exceed 0.1 % by weight. Diboron trioxide is listed as a Substance of Very High Concern (SVHC) identified according to Article 59 of REACH. All other BN CF products contain less than 0.1 wt% diboron trioxide. See product SDS for information about exposure controls and personal protective equipment.

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