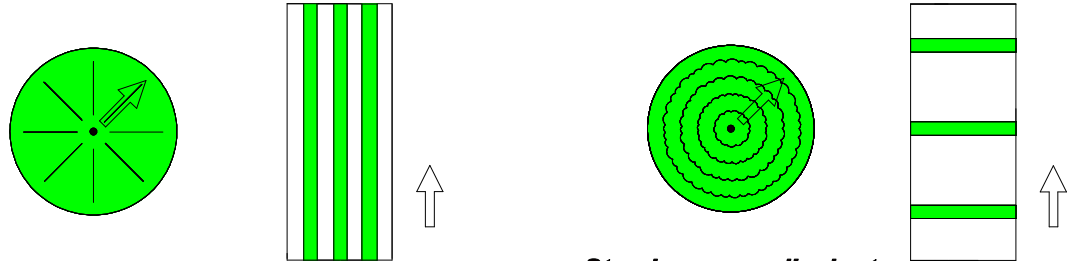# Effect of Static Mixers SMN and SMB
on Injection Molding and Extrusion Processes

Type of flow pattern
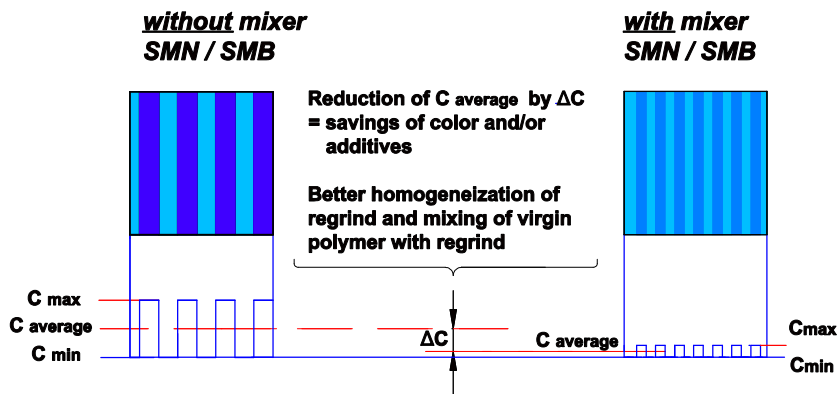

Characteristics

Streaks in direction of flow

Streaks perpendicular to direction of flow

Corrective actions

Installation of SMN Mixing Nozzle
Installation of SMB Melt Blender
→ Mixing in <u>radial</u> **direction, perpendicular to flow direction**

Corrective actions assisting mixing in <u>axial</u> flow direction, e.g.:
→ Changing dosing ratio of colorant
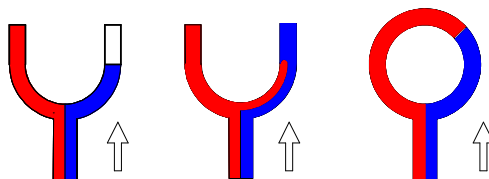**→ Increasing back pressure**

Pattern of concentration distribution

without mixer
SMN / SMB

with mixer
SMN / SMB

Reduction of C average by ΔC
= savings of color and/or additives

Better homogeneization of regrind and mixing of virgin polymer with regrind

C max
C average
C min
ΔC
C average
Cmax
Cmin

Polymer melt with large ΔT (<u>without</u> mixer SMN/SMB)
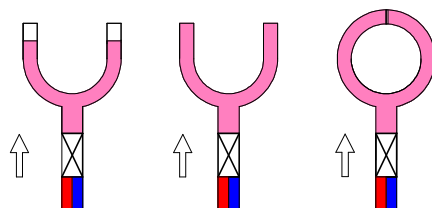
Injection Molding

Extrusion

Result

Asymmetrical filling, uneven cooling
→ parts with distortion and weight
differences, high reject rate

Uneven plate thickness
→ time consuming adjustment
→ high reject rate during start-up

Polymer melt with narrow ΔT (<u>with</u> mixer SMN/SMB)

Result

Symmetrical filling and even cooling
→ parts without distortion and of
constant weight, small reject rate

Uniform plate thickness
→ adjustment in short time
→ small reject rate during start-up