



XpresS-141

Technical Data Sheet

Processing Aid for Styrenics

XpresS-141 is a processing aid for styrene containing plastics such as ABS or HIPS. When added to the resin in conjunction with the color concentrate **XpresS-141** can provide the following benefits:

- Improved Mold Release
- More Uniform Color Dispersion
- Less Rejects Due to Degradation
- Faster Molding Cycle Time
- Improved Reprocessing Characteristics

Used at levels up to 1% the above benefits can be achieved without significant negative effects to the physical properties of the base resin.

	HIPS Control ¹	HIPS with 1% XpresS-141
Tensile Strength (psi)	4507	4452
% Elongation	45%	43%
Elongation at Yield	5-6%	5-8%

Molding Cycle Improvements

Cycle times can also be reduced due to the nucleating, mold release, and surfactant qualities of **XpresS-141**.

	Example 1	Example 2
Initial Cycle Time without Additive (sec.)	22.9	22.0
Cycle Time with XpresS-141 (sec.)	18.0	15.9
Cycle Time Savings (sec.)	4.9	6.1
Increase Production ² (parts per hour)	69	62

In addition, there is normally a savings resulting from lower color concentrate usage. This results from the improved color dispersion caused by the breaking up of pigment agglomerates by the surfactant-like qualities of **XpresS-141**.

Benefits

Improved Mold Release: XpresS-141 behaves similar to other competitive mold release which are added to the resin before or during processing. It provides release from cores and other areas in a mold where the part(s) may stick.

More Uniform Color Dispersion: Pigment agglomeration and streaking is minimized by the surfactant-like qualities of XpresS-141.

Faster Molding Cycles: The better color dispersion allows the use of lower back pressures resulting in fast screw repositioning and shorter overall cycle time.

Lower Reject Rates: XpresS-141 contains thermally stabilizing ingredients which lessen the thermal degradation of the resin and minimize black specks.

Quicker Start-Up of Hot Runner Molds: The stabilizing effect of XpresS-141 minimizes thermal degradation in hot runner molds. This results in quality parts sooner after start-up.

Improved Regrind Reprocessing: The resin with XpresS-141 retains its thermal stability longer than virgin resin. This allows greater regrind usage and more reprocessing before physical properties begin to deteriorate.

Color Enhancement

XpresS-141 is a proprietary blend of dispersants designed for color enhancement. In ABS at a concentration of 0.25% on the weight of the polymer the following improved color values were obtained. The pigments were added as dry pigment at a 0.25% level with 1.0% TiO₂.

Formulation

	Delta C	Delta H	Strength
Ultramarine Blue with standard dispersion aid	-	-	-
Ultramarine Blue with XpresS-141	+5.0	+1.7	+60%
Perylene Red with standard dispersion aid	-	-	-
Perylene Red with XpresS-141	+0.7	+2.8	+20%

Physical Properties

	XpresS-141	Standard Dispersion Aid
Tensile strength (psi)	6921	6400
Yield Elongation (%)	8	8
Ultimate Elongation (%)	23	28

Process

The above formulations were blended in a high intensity mixer, compounded through a single screw extruder with a mixing section and injection molded to produce plaques for color evaluation on spectrophotometer.

¹ Both the control and the sample with additive contained an identical color concentrate usage, at a 25:1 ratio (resin to concentrate)

² Assuming a one cavity tool.