



Artisan™ AR7300
PRE-COLORED FORMULATIONS

Artisan™ Pre-Colored Thermoplastics

Artisan™ AR7300 pre-colored thermoplastics are customized ABS formulations to help manufacturers achieve brilliant and high-gloss metallic effect, excellent chemical resistance, and scratch resistance. Compared with a traditional painting process, injection-molded Artisan materials also offer additional sustainable benefits: energy use and VOC emissions are reduced by eliminating secondary painting or in-mold labeling. These materials can be widely applied in consumer electronics applications with high performance requirements.

BASE RESIN	ABS
Drying Temperature	80–90°C
Drying Time	2–3 Hours
Barrel Temperatures	°C
Rear Zone	180–210
Center Zone	190–220
Front Zone	200–230
Nozzle	210–240
Mold Temperature	50–80
Screw Speed	Moderate
Back Pressure	3–10 bar
Cushion	5–15 mm
Injection Speed	Low to medium
Injection Pressure	Moderate to high
Holding Pressure	10–30% of injection pressure
Screw Type	General purpose
Screw L/D	20:1
Screw Compression Ratio	2.0:1–2.5:1
Non-return Check Valve	Free flow check ring
Nozzle Type	Reverse taper
Barrel Capacity	30–80% of barrel should be used

STARTUP & SHUTDOWN	RECOMMENDATIONS
Purge Compound	2–3 melt flow PP or purging compound. HDPE is not recommended for purging as it can cause delamination or lead to black specks.
Regrind	Regrind is not suggested. Can cause issues with color variation, surface defects, loss of properties and may affect the weatherability.

MOLD DESIGN	RECOMMENDATIONS
Gates	<ul style="list-style-type: none"> • Many different types of gates can be used, such as fan, tunnel, tab, and edge gates. • Moderate gate size according to the part geometry. Gate thickness should be 50–75% of wall thickness. • Avoid gating into thin part region.
Runners	<ul style="list-style-type: none"> • Full-round runners or modified trapezoid runners are the best designs. • Half-round runners are not recommended. • Only naturally balanced runner systems (“H” pattern) are recommended. • Runner diameters should not be less than the part thickness. • Runner diameter should be 1.5x the part thickness. • Step each 90° bend in the system down in size. • Place vents at each 90° intersection and vent to atmosphere. • Hot runner molds are acceptable and should be sized by the manufacturer.
Cold Slug Wells	<ul style="list-style-type: none"> • Place these wells at the base of the sprue to capture the cold material first emerging from the nozzle. • Place wells at every 90° bend in the runner system. • Well depths approximately 2.5 times the diameter of the runner provide the best results.
Venting	<ul style="list-style-type: none"> • Place vents at the end of fill and anywhere potential knit/weld lines will occur. • All vents need to be vented to atmosphere. • For circular parts, full perimeter venting is recommended. • Cut vent depths to 0.0007”–0.0015”.
Draft Angle	<ul style="list-style-type: none"> • Maintain a minimum draft angle of 1° per side.

TROUBLESHOOTING RECOMMENDATIONS

PROBLEM	CAUSE	SOLUTION
Incomplete Fill	Melt and/or mold temperature too cold	<ul style="list-style-type: none"> • Increase nozzle and barrel temperatures • Increase mold temperature • Increase injection rate • Check thermocouples and heater bands
	Shot size	<ul style="list-style-type: none"> • Increase shot size • Adjust transfer position to 98% full • Increase cushion
	Mold design	<ul style="list-style-type: none"> • Enlarge or widen vents and increase number of vents • Check that vents are unplugged • Check that gates are unplugged • Enlarge gates and/or runners • Perform short shots to determine fill pattern and verify proper vent location • Increase wall thickness to move gas trap to parting line
Brittleness	Degraded/overheated material	<ul style="list-style-type: none"> • Decrease melt temperature • Decrease back pressure • Use smaller barrel • Decrease injection speed
	Gate location and/or size	<ul style="list-style-type: none"> • Relocate gate to non-stress area • Increase gate size to allow higher flow rate and lower molded-in stress
	Wet material	<ul style="list-style-type: none"> • Check moisture. If material is not in the recommended moisture percentage for molding, dry material until it is in the acceptable range for molding.
Fibers on Surface (Splay)	Melt temperature too low	<ul style="list-style-type: none"> • Increase melt temperature • Increase mold temperature • Increase injection speed
	Wet material	<ul style="list-style-type: none"> • Check moisture. If material is not in the recommended moisture percentage for molding, dry material until it is in the acceptable range for molding.
Sink Marks	Melt too hot	<ul style="list-style-type: none"> • Decrease nozzle and barrel temperatures • Decrease mold temperature
	Insufficient material volume	<ul style="list-style-type: none"> • Adjust transfer position • Increase shot size • Increase injection rate • Increase packing pressure
	Part geometry too thick	<ul style="list-style-type: none"> • Reduce wall thickness • Reduce rib thickness

TROUBLESHOOTING RECOMMENDATIONS

PROBLEM	CAUSE	SOLUTION
Flash	Injection pressure too high	<ul style="list-style-type: none"> • Decrease injection pressure • Increase clamp pressure • Decrease injection rate • Increase transfer position
	Excess material volume	<ul style="list-style-type: none"> • Adjust transfer position • Decrease pack pressure • Decrease shot size • Decrease injection rate
	Melt and/or mold temperature too hot	<ul style="list-style-type: none"> • Decrease nozzle and barrel temperatures • Decrease mold temperature
	Loose clamp	<ul style="list-style-type: none"> • Reset mold height • Increase clamp tonnage
Shrink	Too much shrink	<ul style="list-style-type: none"> • Increase cooling time • Decrease mold temperature
	Too little shrink	<ul style="list-style-type: none"> • Decrease cooling time • Increase mold temperature
Burning	Process related	<ul style="list-style-type: none"> • Decrease nozzle and barrel temperatures • Decrease mold temperature • Decrease injection rate • Reduce decompression
	Mold design	<ul style="list-style-type: none"> • Clean, widen and increase number of vents • Increase gate size to reduce shear
	Wet material	<ul style="list-style-type: none"> • Verify material is dried at proper condition
Nozzle Drool	Nozzle temperature too hot	<ul style="list-style-type: none"> • Decrease nozzle temperature • Decrease back pressure • Increase screw decompression • Verify material has been dried at proper conditions
	Incorrect nozzle	<ul style="list-style-type: none"> • Use reverse taper tip
Weld Lines	Melt front temperatures are too low	<ul style="list-style-type: none"> • Increase injection rate • Increase pack and hold pressure • Increase melt temperature • Increase mold temperature
	Mold design	<ul style="list-style-type: none"> • Increase gate size • Identify end of fill pattern and verify proper vent location • Add vents or increase vent width • Move gate location

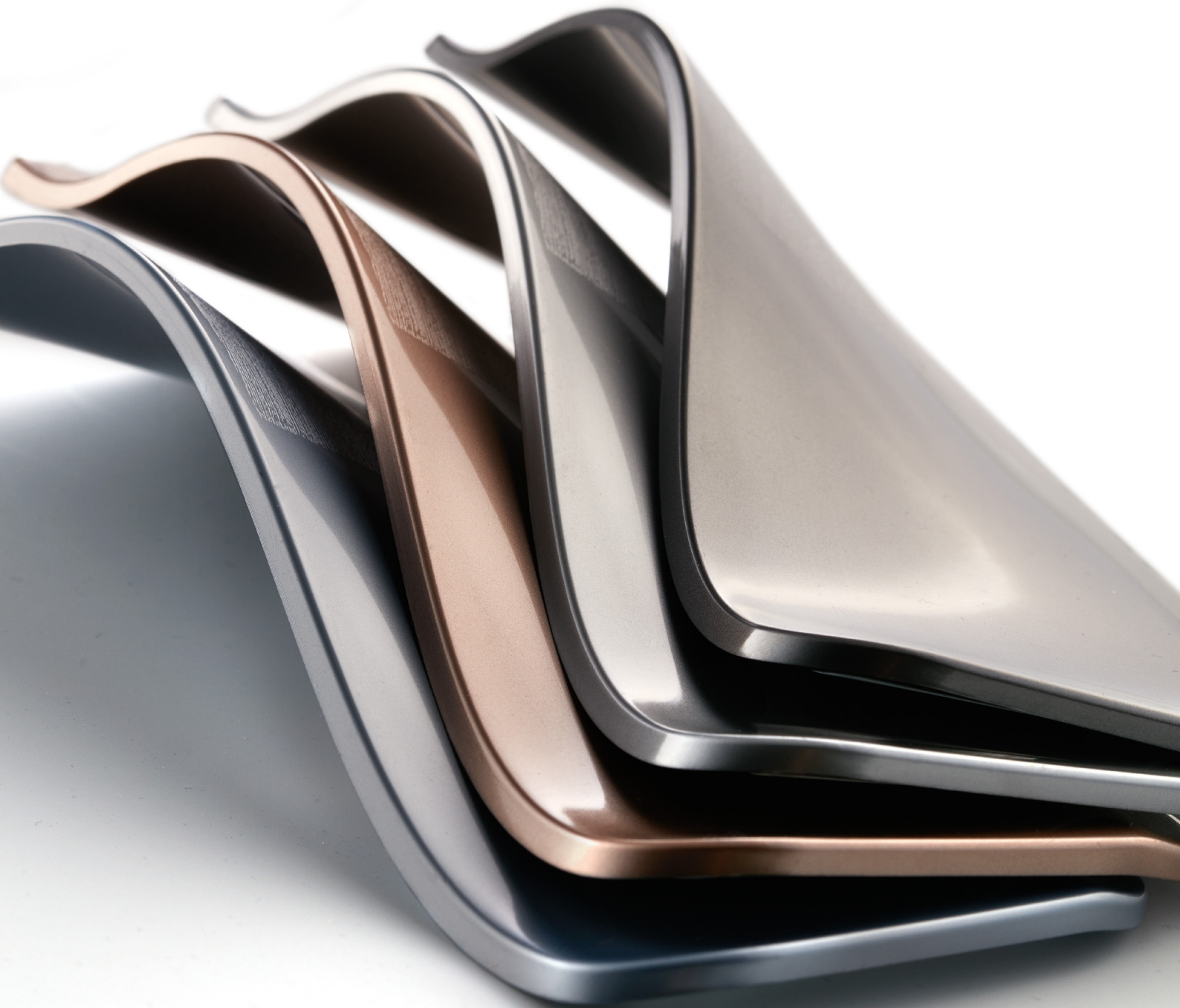
TROUBLESHOOTING RECOMMENDATIONS

PROBLEM	CAUSE	SOLUTION
Warp	Process related	<ul style="list-style-type: none"> • Increase melt temperature • Reduce injection speed • Increase pack pressure • Increase pack time • Decrease mold temperature • Increase cool time
	Mold design	<ul style="list-style-type: none"> • Non-uniform mold cooling
	Part design	<ul style="list-style-type: none"> • Non-uniform wall thickness
	Thermolator incorrect temperature	<ul style="list-style-type: none"> • Check settings • Inspect thermocouple
Sticking in Mold	Overfilled cavity	<ul style="list-style-type: none"> • Decrease injection rate and pressure • Decrease hold pressure • Adjust transfer position • Decrease nozzle and barrel temperatures • Decrease mold temperature • Decrease cooling time
	Part too hot	<ul style="list-style-type: none"> • Decrease barrel temperature • Decrease mold temperature • Increase cooling time
	Mold design	<ul style="list-style-type: none"> • Increase draft angle • Polish cores in direction of ejection
Black Specks	Contamination	<ul style="list-style-type: none"> • Purge machine
	Degradation	<ul style="list-style-type: none"> • Reduce melt temperature • Reduce screw speed • Reduce back pressure
	Machine related	<ul style="list-style-type: none"> • Check for wear on screw, barrel or check ring
Delamination	Process related	<ul style="list-style-type: none"> • Increase melt temperature • Decrease injection speed • Purge barrel to eliminate material contamination
	Mold design	<ul style="list-style-type: none"> • Reduce sharp corners in material flow path • Increase venting

TROUBLESHOOTING RECOMMENDATIONS

PROBLEM	CAUSE	SOLUTION
Discoloration	Oversheared material	<ul style="list-style-type: none">• Decrease melt temperature• Decrease injection speed• Reduce residence time
	Mold design	<ul style="list-style-type: none">• Increase gate sizing
	Dry material	<ul style="list-style-type: none">• Check moisture of material to ensure it is within the recommended moisture percentage for molding





1.844.4AVIENT
www.avient.com



Copyright © 2021, Avient Corporation. Avient makes no representations, guarantees, or warranties of any kind with respect to the information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as "typical" or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the information. Avient makes no warranties or guarantees respecting suitability of either Avient's products or the information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the information and/or use or handling of any product. AVIENT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the information or products reflected by the information. This literature shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.