



### Clear Polycarbonate Black Spot Case Study

Test conducted on Krauss Maffei four color molding machine with four screws feeding one central multi color mold. A 70 mm General Purpose 4140 feed screw was coated with XC4000, .010" overall, mirror polish 16/32 Ra finish. The coated screw went into service 5/15/2005, data collected 7/31/2005

Manufactured Component: SUV tail light assembly, JIT assembly line supply, Class A part polycarbonate with red, clear & clear overcoat

Part Weight: 8.3 ounces.

Material Costs: +/- \$1.75/LB (Market price from August, 2005 Plastics News Magazine.)

Part rate per hour: 55

	70 mm Chrome Plated Feed screw	70 mm XC4000 Coated Feed screw
Average scrap rate	13%	4.5%
Parts per hour	55	55
Scrap Parts per hour	7.15	2.47
Scrap material cost per hour	\$6.48	\$2.24
Total hours 24/5 operation	1300	1300
Value of scrap material	\$8400	\$2900

This difference, \$5500, meant the coating more than paid for itself and the payback period was calculated to be about 8 weeks. Over 50 weeks of operation, this will save \$25,000 per machine in direct material expense. Previous feed screws produced black specks within 1-3 days of operation after cleaning. The XC4000 coating, during this test period, operated for 65 days with no black specks produced and this included purging from colored to clear material.

This customer plans to achieve less than 1% scrap by coating all screws with XC4000. Furthermore, a more predictable process will eliminate unscheduled screw cleaning/downtime and free maintenance personnel to attend to less reliable equipment. Costly scrap disposal will be dramatically reduced and equipment utilization will increase.

