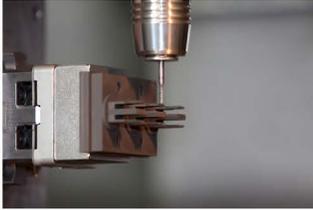




KRUIS

Mold & Engineering, LLC

65 years of excellence
in inject mold tooling

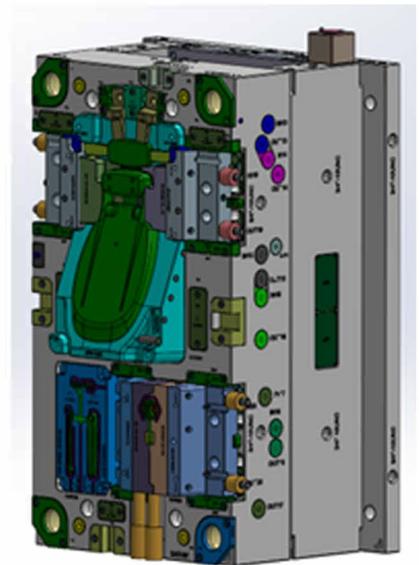
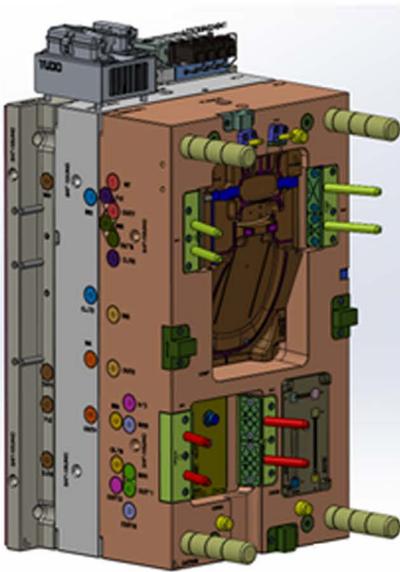


Precision and attention to detail have been the keys to success from the beginning.



Direct fit, CNC/EDM to mold, No hand fitting

With customers in Agriculture, Automotive, Industrial, Defense and Medical, Kruis Mold & Engineering has wide breadth of experience to meet the needs of demanding projects.



Recognizing the need to support customers with lower cost options, Kruis Mold entered the overseas tooling market in 2003. Since that time, we have built close relationships with trusted partners. Matched with our domestic partners, we can provide absolute quality at price points required for the demanding injection molding industry.



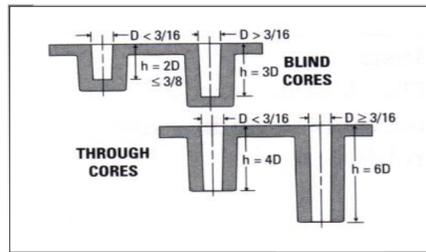
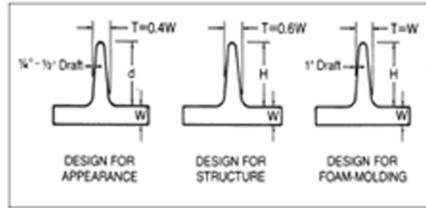
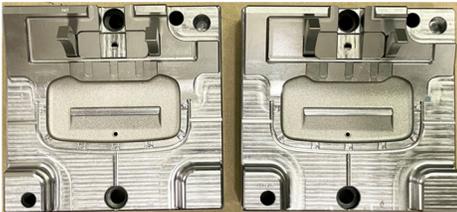
How can Kruis Mold & Engineering, LLC help your project succeed?



KRUIS

Mold & Engineering, LLC

Maximum Mold Size:
Weight: 14 metric tons
Size: 2 meter CNC



Material	Rule of Thumb Tons per in ²	Shrink Values	Vent Depth (in.)
Acrylonitrile Butadiene Styrene (ABS)	2.5 - 3.5	.004 - .008	.0010 - .0020
ABS/Polycarbonate Blend (PC/ABS)	3.0 - 4.0	.004 - .007	.0015 - .0030
Acetal (POM)	3.0 - 4.0	.020 - .035	.0005 - .0015
Acrylic (PMMA)	3.0 - 4.0	.002 - .010	.0015 - .0020
Ethylene Vinyl Acetate (EVA)	2.0 - 3.0	.010 - .030	.0005 - .0007
Ionomer	2.5 - 3.5	.003 - .020	.0005 - .0007
High Density Polyethylene (HDPE)	2.5 - 3.5	.015 - .030	.0008 - .0010
Low Density Polyethylene (LDPE)	2.0 - 3.0	.015 - .035	.0005 - .0007
Polyamide - Nylon (PA) Filled	4.0 - 5.0	.005 - .010	.0003 - .0010
Polyamide - Nylon (PA) Unfilled	3.0 - 4.0	.007 - .025	.0005 - .0020
Polybutylene Terephthalate (PBT)	3.0 - 4.0	.008 - .010	.0005 - .0015
Polycarbonate (PC)	4.0 - 5.0	.005 - .007	.0010 - .0030
Polyester	2.5 - 3.5	.006 - .022	.0005 - .0010
Polyetheretherketone (PEEK)	4.0 - 5.0	.010 - .020	.0005 - .0007
Polyetherimide (PEI)	3.0 - 4.0	.005 - .007	.0010 - .0015
Polyethylene (PE)	2.5 - 3.5	.015 - .035	.0005 - .0020
Polyethersulfone (PES)	3.0 - 4.0	.002 - .007	.0005 - .0007
Polyphenylene Oxide (PPO)	3.0 - 4.0	.005 - .007	.0010 - .0020
Polyphenylene Sulfide (PPS)	3.5 - 4.5	.002 - .005	.0005 - .0010
Polyphthalamide (PPA)	3.5 - 4.5	.005 - .007	.0005 - .0020
Polypropylene (PP)	2.5 - 3.5	.010 - .030	.0005 - .0020
Polystyrene (PS)	2.0 - 2.5	.002 - .008	.0015 - .0020
Polysulphone (PSU)	4.0 - 5.0	.006 - .008	.0010 - .0015
Polyurethane (PUR)	2.5 - 3.5	.010 - .020	.0004 - .0010
Polyvinyl Chloride (PVC)	2.5 - 3.5	.002 - .030	.0005 - .0020
Thermoplastic Elastomer (TPE)	2.5 - 3.5	.005 - .020	.0008 - .0010

Table 2 Tolerances for Dimensions by Material Type and Tolerance Grade for Injection Molded Parts

Material Type	Tolerance Grade	Dimensional Tolerance (±)	
		mm	%
A	General	0.18	0.29
	Commercial	0.17	0.18
	Fine	0.11	0.12
B	General	0.20	0.43
	Commercial	0.18	0.28
	Fine	0.11	0.12
C	General	0.23	0.64
	Commercial	0.20	0.43
	Fine	0.18	0.28

Example of Calculating Applicable Dimension Tolerance

Commercial tolerance for a dimension of 150 mm in Type A material:

$$\pm [0.17 \text{ mm} + (0.0018)(150 \text{ mm})] = \pm 0.44 \text{ mm}$$

Example of Calculating Applicable Position Tolerance

Commercial tolerance for a position dimension of 40 mm in Type A material (see Figure 3):

$$\pm [0.17 \text{ mm} + (0.0018)(40 \text{ mm})] = \pm 0.24 \text{ mm} = \text{Ø } 0.48 \text{ mm}$$

