

ICON

Injection Molding, Inc.

General Rule for Tonnage, Shrink & Vent Depth Values

The following table consists of tonnage requirements, vent depths and range of shrinkage suggested by material suppliers and the rules of thumb that we typically use. Part geometry is a major consideration and can play an important part in determining the necessary values to be used. All materials should be researched through material suppliers and technical service for the actual values to use.

Material	Tons per in²	Shrink	Vent
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
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
Thermoplastic Elastomer (TPE)	2.5 – 3.5	.005 - .020	.0008 - .0010

When a part is being evaluated for clamp tonnage requirements, keep in mind that a thin wall part will need a higher amount of tonnage, while a thick wall part will be in the lower range. Tonnage is also dependant upon the cycle time of the mold.