MATERIAL SELECTOR GUIDE

Figure 4® Material Properties and Applications Guide

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Figure 4® Material Properties and Applications Guide

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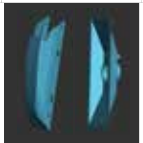
		SUITABILITY FOR PART GEOMETRIES (% PRINTABILITY POTENTIAL)*								MECHANICAL PROPERTIES			
		 Fine Details and Features	 Thin Wall Parts	 Fitted Part Assemblies	 Medium Cover Parts	 Large Cover Parts	 Non-Uniform Wall Thickness Parts	 Large Cross Sectional Area Parts	 Jigs and Fixtures	Tensile Modulus MPA	Elongation @ Break %	Impact Strength (Notched) J/M	HDT @ 0.455 MPA °C
PROTOTYPING AND DESIGN VERIFICATION	TOUGH-GRY 10	75	85	45	75	85	35	15	25	2180	25	29	59
	TOUGH-GRY 15	75	85	75	75	85	35	15	25	2120	35	32	59
	TOUGH-BLK 20	95	90	85	85	90	75	35	65	1780	36	27	55
	FLEX-BLK 10	85	85	55	75	85	75	15	35	1400	104	55	52
	FLEX-BLK 20	90	90	90	90	95	95	55	85	1150	76	91	41
PRODUCTION	PRO-BLK 10	95	95	95	95	95	95	65	95	2320	12	24	70
	Rigid White	95	95	95	95	95	95	95	95	2100	20	21	65
	Rigid Gray	95	95	95	95	95	95	95	95	2400	30	21	72
	Rigid 140C Black	95	95	95	95	95	95	95	95	2800	5.6	16	140
	Tough 65C Black	90	95	90	95	95	95	95	95	1700	35	31	70
	Tough 60C White	90	95	90	95	95	95	95	95	1500	23	34	65
	High Temp 150C Black	95	95	95	95	95	95	95	95	2600	4	10	>150
	HI TEMP 300-AMB	95	95	90	95	95	95	65	95	4100	2.3	10	300
	MED-AMB 10	95	95	90	95	85	95	65	90	2765	4	18	119
	MED-WHT 10	95	95	90	95	85	95	65	90	3090	3	17	102
	RUBBER-65A BLK	50	50	65	90	85	85	65	65	23	126	8.5**	65***
	EGGSHELL-AMB 10		98	95		95				2765	5	15	89
APPLICATION SPECIFIC	RUBBER-BLK 10	80	80	85	95	85	90	65	90	540	80	76**	97***
	ELAST-BLK 10	75	75	60	90	85	85	40	65	3.6	83	11**	65***

* Top 8 types of part geometries based on years of additive experience. Each part was printed with the suite of Figure 4 materials and assigned a % of parts in that category that the material was well suited for producing.

** Tear Strength Type-C kN/m

*** Shore A Hardness

RATING SYSTEM

- = VERY HIGH
- = HIGH
- = MEDIUM
- = LOW

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		PERFORMANCE							
		Long Term Indoor Environmentally Stable	Long Term Outdoor Environmentally Stable	Differential Shrink	Bottom Surface	Warp	1st Article Success	Supports	NOTES
PROTOTYPING AND DESIGN VERIFICATION	TOUGH-GRY 10			●●●	●●●	●●●	●●●	●●●●	• Fast printing prototyping material • Good surface quality for prototyping • Light gray material good for contrast and definition
	TOUGH-GRY 15			●●●	●●●	●●●	●●●	●●●●	• Midline mechanical properties for prototyping including modulus, elongation, and notch impact • Good surface quality for prototyping
	TOUGH-BLK 20	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	●●●●●	• Long-term stable material for UV and humidity • Better accuracy from low differential shrink & bottom surface quality • No settling in resin tray
	FLEX-BLK 10			●●●●●	●●●	●●●●	●●●	●●●	• Long term stable material for UV and humidity • Better accuracy from low differential shrink and bottom surface quality • Easier to clean
	FLEX-BLK 20	●●●●●	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	• Faster printing FLEX material good for prototyping
PRODUCTION	PRO-BLK 10	●●●●●	●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	• Best Figure 4 Material performance for 1st article success • Long term stable material for UV and humidity • Better accuracy from low differential shrink & bottom surface quality
	Rigid White	●●●●●	●●●●●	●●●●	●●●●	●●●●	●●●●	●●●●●	• Biocompatible, capable of meeting ISO 10993-5 and -10 standards for cytotoxicity, sensitization and irritation • Long term stable material for UV and humidity
	Rigid Gray	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	• Long term stable material for UV and humidity • Better accuracy from low differential shrink and bottom surface quality
	Rigid 140C Black	●●●●	●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	• 2 part material for Figure 4 Standalone only • Part-in-hand is much faster than the competition due to a short thermal cure required at 135°C • Does not require salt-packs or fixtures to maintain dimensional stability
	Tough 65C Black	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	• Long term stable material for UV and humidity • Better accuracy from low differential shrink and bottom surface quality
	Tough 60C White	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	• Biocompatible, capable of meeting ISO 10993-5 and -10 standards for cytotoxicity, sensitization and irritation • Long term stable material for UV and humidity
	High Temp 150C Black	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●●	• UL 94 V0 @ 2mm, 3mm and FST 2mm, 3mm capable • Long term stable material for UV and humidity
	HI TEMP 300-AMB			●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	• Very high HDT at both low and high pressure (>300 °C) • Better accuracy from low differential shrink & bottom surface quality

Note: Not all products and materials are available in all countries – please consult your local sales representative for availability

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		PERFORMANCE							
		Long Term Indoor Environmentally Stable	Long Term Outdoor Environmentally Stable	Differential Shrink	Bottom Surface	Warp	1st Article Success	Supports	NOTES
PRODUCTION	MED-AMB 10	●●●●●	●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	• Biocompatible, capable of meeting ISO 10993-5 & -10 standards for cytotoxicity, sensitization and irritation • Better accuracy from low differential shrink & bottom surface quality
	MED-WHT 10	●●●●●	●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	• Biocompatible, capable of meeting ISO 10993-5 & -10 standards for cytotoxicity, sensitization and irritation • Better accuracy from low differential shrink & bottom surface quality
	RUBBER-65A BLK	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●	●●●●	• Long term stable material for UV and humidity • Biocompatible, capable of meeting ISO 10993-5 and -10 standards for cytotoxicity, sensitization, and irritation
	EGGSHELL-AMB 10			●●●●●	●●●●●	●●●●●	●●●●	●●●●●	• Easily breaks away from the injected material once cured • Material is compatible with many platinum and tin silicones
APPLICATION SPECIFIC	RUBBER-BLK 10	●●●●●	●●●●●	●●●●●	●●●●	●●●●●	●●●●●	●●●	• High tear strength makes a very tough malleable material • Long term stable material for UV and humidity • Better accuracy from low differential shrink & bottom surface quality
	ELAST-BLK 10			●●●●●	●●●●	●●●●●	●●●	●●●	• Low tear strength combined with low tensile modulus makes parts easy to tear

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