

Resin	Max Use Temp (C)	HDT ¹ Temp (C)	Brittleness Temp (C) ¹³	Transparency	Microwavability	Autoclaving ⁴	Sterilization ⁴				Specific Gravity	Flexibility	Permeability (cc.-mil/100in ² -24 hr. -atm)		
							Gas	Dry Heat	Radiation	Disinfectants			N ₂	O ₂	CO ₂
LDPE	80	45	-100	Translucent	Yes	No	Yes	No	Yes	Yes	.92	Excellent	180	500	2700
HDPE	120	65	-100	Translucent	No	No	Yes	No	Yes	Yes	.95	Rigid	42	185	580
PP	135	107	0	Translucent	Yes	Yes	Yes	No	No	Yes	.9	Rigid	48	240	800
FEP	205	70	-270	Translucent	Marginal ³	Yes	Yes	Yes	No	Yes	2.15	Excellent	320	750	2200
PFA	260	166	-270	Translucent	Yes	Yes	Yes	Yes	No	Yes	2.15	Excellent	291	881	2260
PTFE/TFE	260	200	-100	Opaque	Yes	Yes	Yes	Yes	No	Yes	2.2	Rigid	-	307.5	-
PETG	70	70	-40	Clear	Marginal ³	No	Yes	No	Yes	Some	1.27	Moderate	10	25	125
PC	135	138	-135	Clear	Marginal ³	Yes ⁵	Yes	No	Yes	Yes	1.2	Rigid	50	300	1075

Resin	Permeability (cc.-mil/100in ² -24 hr. -Bar)			Water Vapor Transmission Rate (g-mm/m ² -24 hr.-Bar at 38 C, 90% RH) ¹⁵	Water Absorption (%)	Non-Cytotoxicity ⁶	Suitability for Food and Bev. Use ⁷	Reg. Part 21 CFR	Refractive Index	Melting Point Range (C)	Glass Transition Temperature Range (C)
	N ₂	O ₂	CO ₂								
LDPE	180	500	2700	15.5-23.3	<0.01	Yes	Yes ⁹	177.1520	1.5400	85-125	-25
HDPE	42	185	580	4.6-6.2	<0.01	Yes	Yes ⁹	177.1520	1.5100	125-138	-25
PP	18.65	93.25	310.84	3.9	<0.02	Yes	Yes	177.1520	1.4735	160-176	-20 to -5
FEP	124.34	291.41	854.82	6.20	<0.01	Yes	Yes	177.1550	1.3380	275	n/a
PFA	118.07	342.31	878.13	2.00	<0.02	Yes	Yes	177.1550	1.3580	302-310	n/a
PTFE/TFE	-	117.48	-	4.0	<0.01	Yes	Yes	177.1550	1.3500	320-330	120-130
PETG	3.89	9.71	48.57	18.13	0.13	Yes	Yes ¹⁰	177.1315	1.57	265	81
PC	19.43	116.57	417.69	115	0.35	Yes	Yes	177.1580	1.5860	n/a	154

- Heat Deflection Temperature is the temperature at which a bar deflects 0.01" at 66 psig (ASTM D648). Materials may be used above Heat Deflection temperatures in non-stress applications; see Max Use Temperature.
- Ratings based on 5-minute tests using 600 watts of power on exposed, empty labware. CAUTION: Do not exceed max temperature, or expose labware to chemicals which heating cause to attack the plastic or be rapidly absorbed.
- Plastic will absorb heat.
- Sterilization:
 - Autoclaving** (121 C, 15 psig for 20 minutes) - Clean and Rinse items with distilled water before autoclaving. Always completely disengage thread before autoclaving. Certain chemicals which have no appreciable effect on resins at room temperature may cause deterioration at autoclaving temperatures unless removed with distilled water beforehand.
 - Gas** - Ethylene Oxide, formaldehyde, hydrogen peroxide.
 - Dry Heat** - 160 C, 120 minutes
 - Disinfectants** - Benzalkonium Chloride, formalin/formaldehyde, ethanol, etc.
 - Radiation** - Gamma irradiation at 25 kGy (2.5 MRad) with unstabilized plastic.
- Sterilizing reduces mechanical strength. Do not use PC vessels for vacuum applications if they have been autoclaved. Refer to Use and Care guidelines for NALGENE labware for detailed information on sterilizing.
- "Yes" indicated resin has been determined to be non-cytotoxic, based on USP and ASTM biocompatibility testing standards utilizing an MEM elution technique on a WI38 human diploid lung cell line.
- Resins meet requirements for CFR21 section of Food Additives Amendment of the Food and Drug Act. End users are responsible for validation of compliance for specific containers used in conjunction with their particular packaging applications.
- Acceptable for aqueous foods only, at temperatures up to 121 C / 250 F. Not sanctioned for use with alcoholic or fatty foods at any temperature.
- Acceptable for Non-acid aqueous products; may contain salt, sugar or both (pH above 5.0), Dairy Products and modifications; oil-in-water emulsions, high or low fat, Moist bakery products with surface containing no free fat or oil, and Dry solids with the surfaces containing no free fat or oil (no end-test required_ and under all conditions as described in Table 2 of the FDA Regulation 177.1520 except condition A - high temperature sterilization (e.g. over 100 C / 212 F).
- Acceptable for Alcoholic foods containing not more than 15% by volume alcohol; fill and storage temperatures not to exceed 49 C / 120 F, and Non-alcoholic foods of hot fill to not exceed 82 C (180 F) and 49 C (120 F) in storage. Not suitable for carbonated beverages or beer or packaging food requiring thermal processing.
- Straight Side Jars, beakers and graduated cylinders only.
- Acceptable for aqueous, oil, dairy, acidic and alcoholic foods up to 71 C / 160 F.
- The brittleness temperature is the temperature at which an item made from the resin may break or crack if dropped. This is not the lowest use temperature if care is exercised in use and handling.
- The tubing will become opaque from absorbed water, see the current Nalgene labware catalog for details.
- WVTR= Water Vapor Transmission Rate in g-mm/m² - 24 hr - 1 BAR at 37 C and 90% Relative Humidity.