

Properties of PYREX[®], PYREXPLUS[®] and Low Actinic PYREX Code 7740 Glasses



Introduction

Most PYREX glassware is made from Code 7740 PYREX borosilicate glass, the most widely known of Corning's family of low expansion Type 1, Class A borosilicate glasses (ASTM E438 **Standard Specification for Glasses in Laboratory Apparatus**). It comes closest to being the ideal glass for most laboratory applications. It will withstand nearly all temperatures used in normal laboratory use. It is highly resistant to chemical attack. Its low coefficient of expansion allows it to be manufactured with relatively heavy walls giving it mechanical strength, while retaining reasonable heat resistance. It is the best glass available for laboratory use (Tables 1, 2, 3 and 4)

PYREX Low Actinic glassware is also made from Code 7740 glass by firing a red stain fired into the exterior surface. The resulting product is as durable as the base glass. PYREX Low Actinic Labware was originally developed for work in the vitamin field, but it has found other uses in applications with chemicals sensitive to light in the 300nm to 500nm range.

PYREXPLUS glassware is made from Code 7740 borosilicate glass to which is added a tough transparent polyvinylchloride coating. It is designed to resist exterior surface abrasion and also helps minimize loss of contents if the glass vessel is accidentally broken. Prolonged and/or repeated chemical exposure of the coating to aldehydes, ketones, chlorinated solvents and concentrated acids should be avoided.



Corning provides the temperature and chemically resistant, durable glassware that Chemistry and Life Science laboratories require.

Standards

PYREX® Code 7740 glass is Type I, Class A Borosilicate conforming to federal specification DD-G-54 lb and ASTM E-438. It also meets the U.S. Pharmacopoeia specifications for Type I Borosilicate Glass.

Applications

PYREX Code 7740 glass is designed for use in all laboratory glassware requiring very high resistance to strong acids, alkalis and products intended for use in heat applications such as autoclaves, hot plates and open flame.

Properties		Composition (%approx.)	
Coefficient of Expansion	$32.5 \times 10^{-7} \text{ cm/cm/}^\circ\text{C}$	SiO ₂	80.6%
Strain Point	510°C	B ₂ O ₃	13.0%
Anneal Point	560°C	Na ₂ O	4.0%
Soften Point	821°C	Al ₂ O ₃	2.3%
Density	2.23 g/cm ³	Miscellaneous Traces	0.1%
Youngs Modulus	$6.4 \times 10^3 \text{ Kg/mm}^2$	Warnings	
Refractive Index	1.474 @ Sodium D Line	<ol style="list-style-type: none"> 1. Thick-walled glassware, such as bottles, jars and desiccators, should not be heated over a flame, a hot plate, or other comparable source of heat. 2. Do not use hydrofluoric or hot phosphoric acid in glass. 3. Do not use scratched or abraded glassware. 4. Hot alkali will etch glass. 	
Temperature Limits	490°C (Extreme Service)		
	230°C (Normal Service)		
Maximum Thermal Shock	160°C		

Light Transmittance

The visible light transmittance (400-760nm) of Code No. 7740 glass is 92% at 2mm thickness. (See Tables 3, 4 and 5 for additional information.)

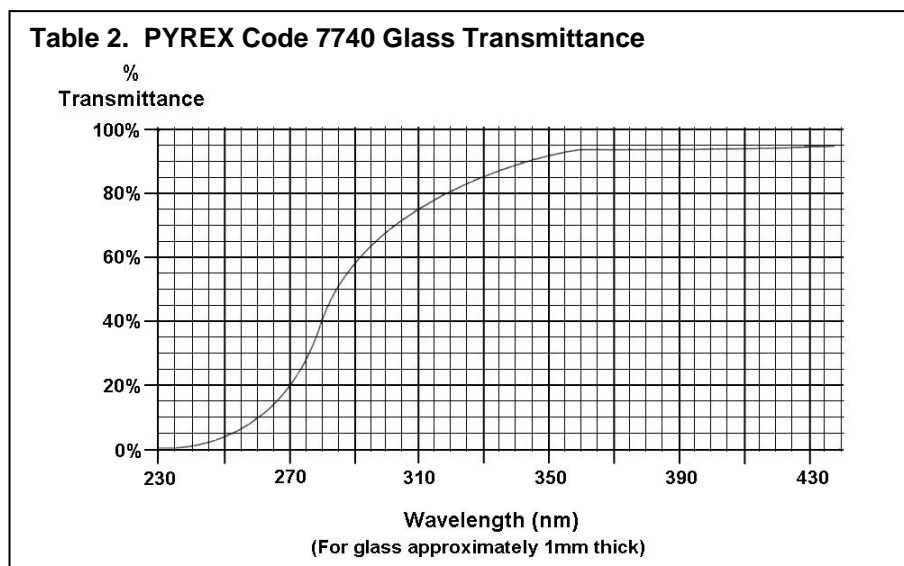


Table 3. PYREX® Code 7740 Red Low Actinic Glass Transmittance

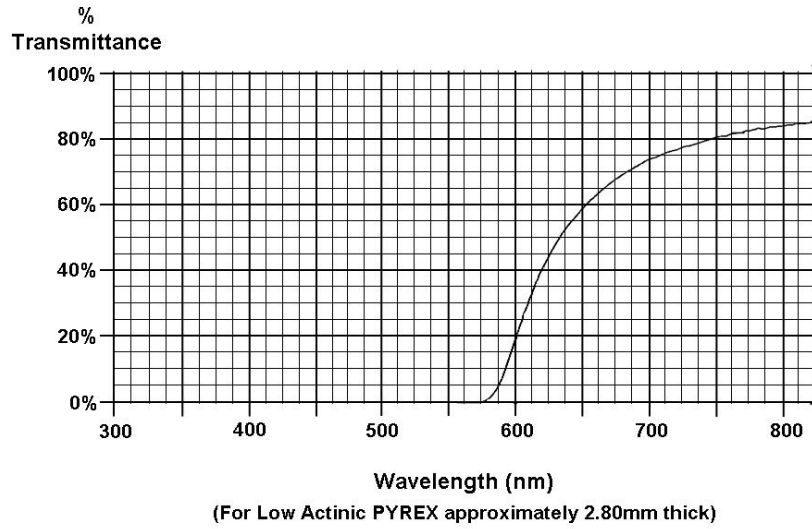
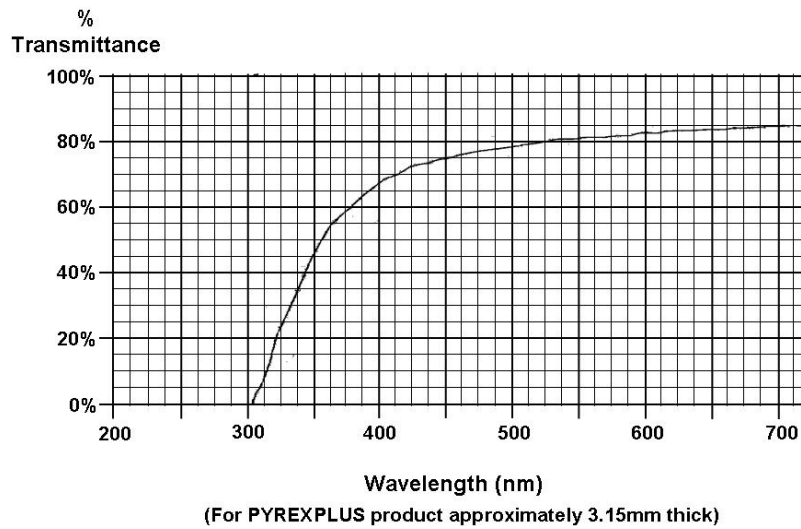


Table 4. PYREXPLUS® Coated Code 7740 Glass Transmittance



For additional product or technical information, please visit our web site at www.corning.com/lifesciences or call at 1-800-492-1110. International customers can call at 978-635-2200.

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