

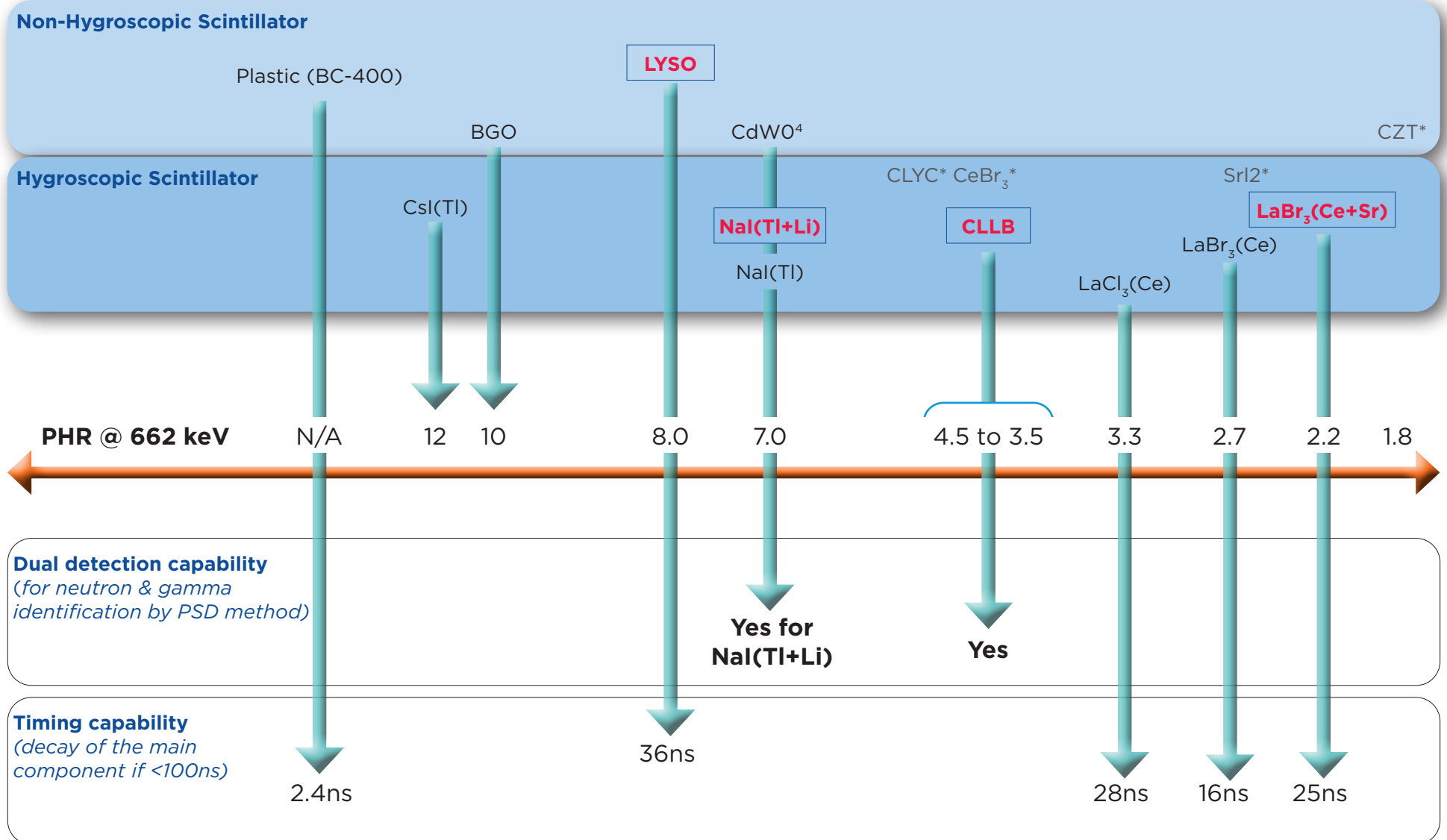
Saint-Gobain Crystals

Physical Properties of Common Inorganic Scintillators

Scintillator	Light yield (photons/keV)	Light output(%) of NaI(Tl) bialkali pmt	Temperature coefficient of light output(%/C) 25°C to 50°C	1/e Decay time(ns)	Wavelength of max emission lm(nm)	Refractive index at lm	Thickness to stop 50% of 662 keV photons (cm)	Thermal expansion (/C)x10 ⁻⁶	Density g/cm ³	Hygroscopic	Comments
LaBr₃(Ce+Sr)	73	190	0	25	385	-2.0	1.8	8	5.08	yes	Ultimate energy resolution (2.2% @ 662keV)
LaBr₃(Ce) BrilLanCe™ 380	63	165	0	16	380	-1.9	1.8	8	5.08	yes	General purpose, excellent energy resolution
CLLB Cs ₂ LiLaBr ₆ (Ce)	43	115		180 1080	420	-1.85	2.2	--	4.2	yes	Dual Gamma-Neutron detection, excellent
NaI(Tl)	38	100	-0.3	250	415	1.85	2.5	47.4	3.67	yes	General purpose, good energy resolution
NaI(Tl+Li)	35	100	-0.3	230, 1.1μs 240, 1.4μs	419	1.85	2.5	47.4	3.67	yes	Neutron-Gamma Scintillator
LaCl₃(Ce) BrilLanCe™ 350	49	70-90	0.7*	28	350	-1.9	2.3	11	3.85	yes	General purpose, good energy resolution
CsI(Na)	41	85	-0.05	630	420	1.84	2	54	4.51	yes	High Z, rugged
LYSO Lu _{1.8} Y _{0.2} SiO ₅ (Ce)	33	87	-0.28	36	420	1.81	1.1	--	7.1	no	Bright, high Z, fast, dense, background from ¹⁷⁶ Lu activity
CdWO₄	12-15	30-50	-0.1	14000	475	-2.3	1	10.2	7.9	no	Low afterglow, for use with photodiodes
CaF₂(Eu)	19	50	-0.33	940	435	1.47	2.9	19.5	3.18	no	Low Z, α & β detection
CsI(Tl)	54	45	0.01	1000	550	1.79	2	54	4.51	slightly	High Z, rugged, good match to photodiodes
BGO	8 - 10	20	-1.2	300	480	2.15	1	7	7.13	no	High Z, compact detector, low afterglow
YAG(Ce)	8	15	--	70	550	1.82	2	-8	4.55	no	β-ray, X-ray counting, electron microscopy
CsI(Pure)	2	4-6	-0.3	16	315	1.95	2	54	4.51	slightly	High Z, fast emission
BaF₂	1.8	3	0	0.6-0.8	220(195)	1.54	1.9	18.4	4.88	slightly	Fast component (subnanosecond)
	10	16	-1.1	630	310	1.50	1.9	18.4	4.88	slightly	Slow component
ZnS(Ag)	-50	130	-0.6	110	450	2.36	--	--	4.09	no	Coated on BC-400 or acrylic for α detection

When the most important parameter is the density and the fast emission

Typical values at 662 keV (for design standards)



... not only the PHR has to be considered

*For reference only, not supplied by Saint-Gobain