

BrilLanCe[®] 380 *in our exclusive*

It's what's Inside that Counts!

NxGen[®] Ti *detector packaging*

It's what's Inside that Counts!

Features

Sharper PHR

Faster Counting

Higher Light Output

Greater Linearity

Benefits

Less Pulse Pile-up

More Accurate Isotope Identification

More Accurate Energy Level Determination

Better Fidelity at High Temperatures



Saint-Gobain Crystals recommends complete BrillanCe™ detector integrations for geophysical applications to maximize detector performance and survivability downhole.

Scintillator Properties Comparison					
Material	Density	Light Yield photons/kev	Decay Time tau (ns)	Timing FOM* $\sqrt{\tau/(\text{photons/keV})}$	Peak Emission Wavelength (nm)
BrilLanCe™380	5.1	63	16	0.5	380
NaI(Tl)	3.7	38	250	2.6	415
BGO	7.1	9	300	5.8	480
CsI(Na)	4.5	41	630	3.9	420
				*Figure of Merit	

BrilLanCe™ 380 Scintillator in our NxGen™ packaging -

The BrilLanCe™ 380 scintillator* packaged in our new NxGen™ titanium sapphire housing is the newly qualified addition to our line of downhole tools.

Compared to NaI(Tl), BrilLanCe™380 has a higher density, has nearly half the FWHM (full width at half maximum) photopeak resolution and twice the light output at high temperature. Also, the degradation of the light yield as a function of temperature for BrilLanCe 380 is less than 5% in the range of -65°C to +140°C.

Crystals are available in almost all standard geophysical sizes up to 2" diameter, and production quantities are being ordered now.

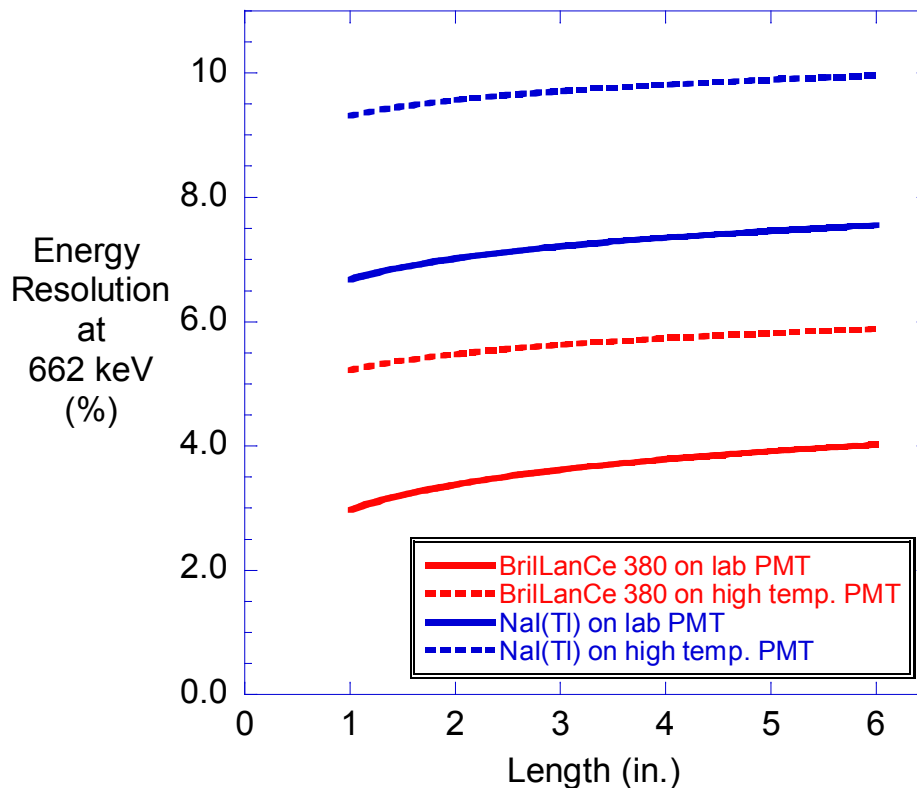
*BrilLanCe is Saint-Gobain's trade name for the lanthanum bromide patented by Delft/Bern University and licensed exclusively to Saint-Gobain Cristaux & Detecteurs.

The Packaging -

BrilLanCe™ 380 crystals are very tough, but require special handling and packaging techniques. Saint-Gobain Crystals has developed new techniques to get the absolute best performance for BrilLanCe crystals - first for laboratory applications and now for geophysical applications.

All standard geophysical BrilLanCe crystals are packaged in NxGen™ titanium housings with our proprietary sapphire window assemblies. These allow the greatest possible light transmission from the BrilLanCe crystals. The NxGen™ design allows more crystal volume than in standard designs and offers an increase of up to 30% in light output versus the standard designs with stainless steel housings and conventional welded or soldered glass-to-metal seals or windows. The BrilLanCe line of scintillation detectors has been fully qualified in MWD environments, including testing at temperatures from -55°C to +175°C survival. For operations, we recommend and rate detectors from -20°C to +150°C.

Energy Resolution Comparison of 1" diameter Integrated Detectors



The Outstanding Benefits of BrillLanCe™380 Scintillator –

The fast pulse of the BrillLanCe™380 crystals, with an intrinsic decay time of 16 nanoseconds, lends itself to high count rate applications. A naturally-occurring gamma ray peak at about 1.4 MeV from ¹³⁸La could be used for internal calibration. Therefore, the use of additional radioactive, electronic calibration sources for high voltage and gain stabilization circuits may not be necessary.

The high density and phenomenal pulse height resolution of the BrillLanCe™380 crystals makes this material, especially in a NxGen™ scintillation package, suited for spectral wireline and spectral MWD applications.

The high light output minimizes the power consumption to operate the probe downhole and increases the equipment lifetime.

The unmatched energy resolution will help to get an accurate carbon to oxygen ratio and improve the overall accuracy of the measurement.

The remarkable properties of BrillLanCe™380 crystals are almost entirely preserved as temperature increases, as shown in Figure 1, and light output is much greater at high temperatures than it is for all other tested scintillation crystals. Recent testing confirms that BrillLanCe™380 emits 160% of the light output of NaI(Tl) at room temperature.

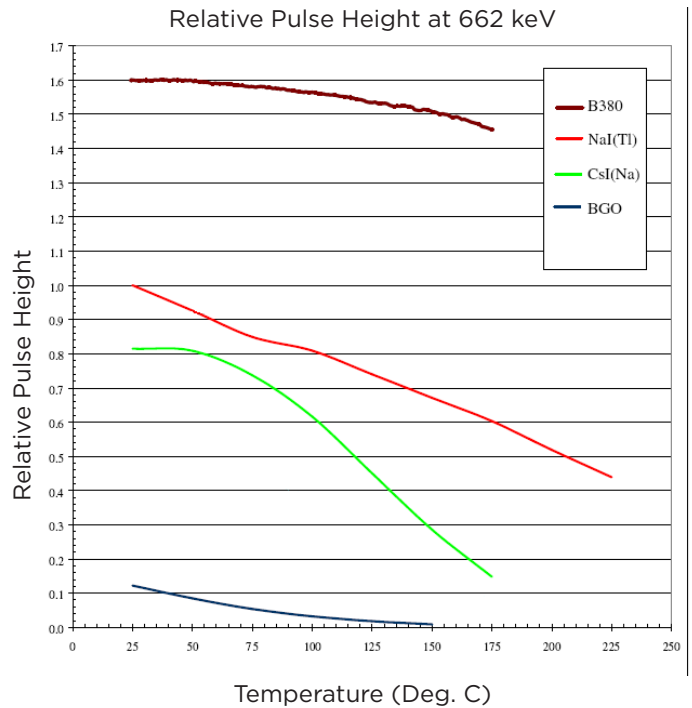


Figure 1. Response of scintillator at temperature with Photomultiplier tube held at constant temperature.

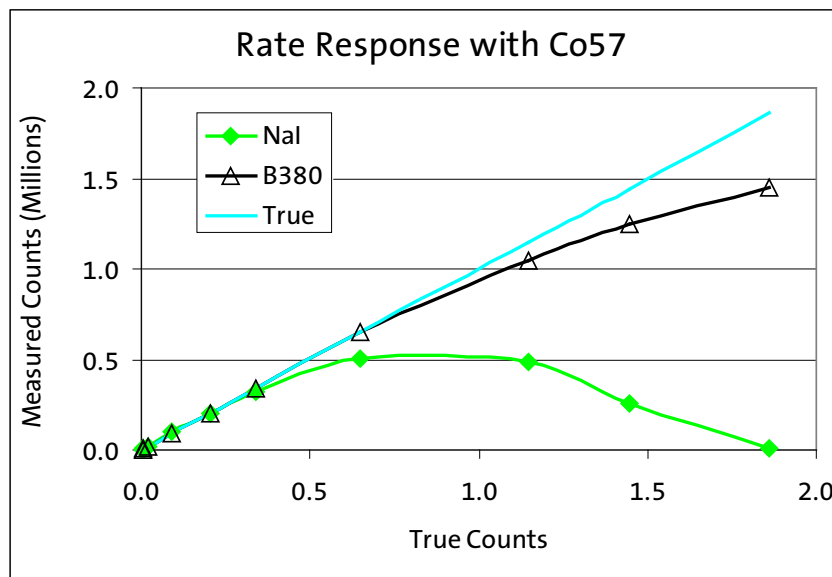


Figure 2. 10X faster decay times enable high count rates in intense radiation fields.

The Outstanding Benefits of BrillLanCe™380 Scintillator

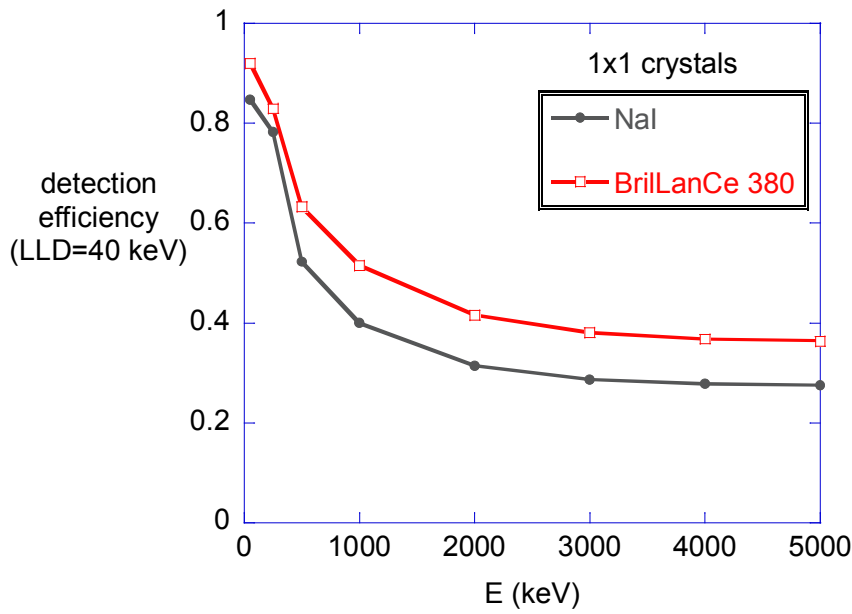


Figure 3. Comparison of detection efficiency of BrillLanCe™380 as compared to NaI.



Contact your regional sales manager or email scintillation@saint-gobain.com to design and quote a BrillLanCe™ 380, ruggedized NxGen™ Ti detector specifically for your application.

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www.crystals.saint-gobain.com

Protected under patents US7,067,816B2, US7250609B2, EP1257612B1, EP1516078B1, ZL03813659.7, UA75066C2, US7067815B2, US7233006B2, EP1255796B1*, EP1516078B1, ZL01805267.3, ZL03813659.7, EP1516078B1, UA75591C2, UA75066C2*
**These original patents were granted to Stichting Voor de Technische Wetenschappen. Inventors are P. Dorenbos, C. W. E. van Eijk, H.U. Gudel, K.W. Kraemer, E. V. D. van Loef.*
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