

# THE ROLE OF CERIUM BROMIDE SCINTILLATOR CEBR3 IN REAL-TIME MEASUREMENT WHILE DRILLING

## Blog Post

Measurement while drilling (MWD) is a technology used in the oil and gas industry to provide real-time information about the wellbore while drilling. MWD tools are located directly above the drill bit and measure various parameters such as temperature, pressure, and direction of drilling. The data gathered by MWD is transmitted to the surface in real-time, allowing operators to make immediate decisions to optimize drilling performance and avoid problems.



One of the key components of MWD tools is scintillation detectors, which are used to measure the natural gamma radiation emitted by the surrounding rock formations. Cerium Bromide Scintillator CeBr<sub>3</sub> is a popular choice for MWD applications due to its high light yield and fast response time. In this blog post, we will explore the properties of CeBr<sub>3</sub> scintillator and its role in MWD technology.

### Properties of Cerium Bromide Scintillator CeBr<sub>3</sub>

CeBr<sub>3</sub> scintillator is a crystal that belongs to the halide family. It has a high atomic number ( $Z=54$ ) and high density, making it an effective detector of gamma radiation. The scintillator emits light when gamma rays interact with it, which can be detected by photomultiplier tubes (PMTs). CeBr<sub>3</sub> has a high light yield, which means that it can produce a large number of photons per unit of energy deposited, resulting in better detection efficiency. It also has a fast response time, which allows for real-time measurements.

Another important property of CeBr<sub>3</sub> scintillator is its energy resolution, which is a measure of how well it can distinguish between different energies of gamma rays. CeBr<sub>3</sub> has excellent energy resolution, allowing for the accurate identification of different isotopes and geological formations.



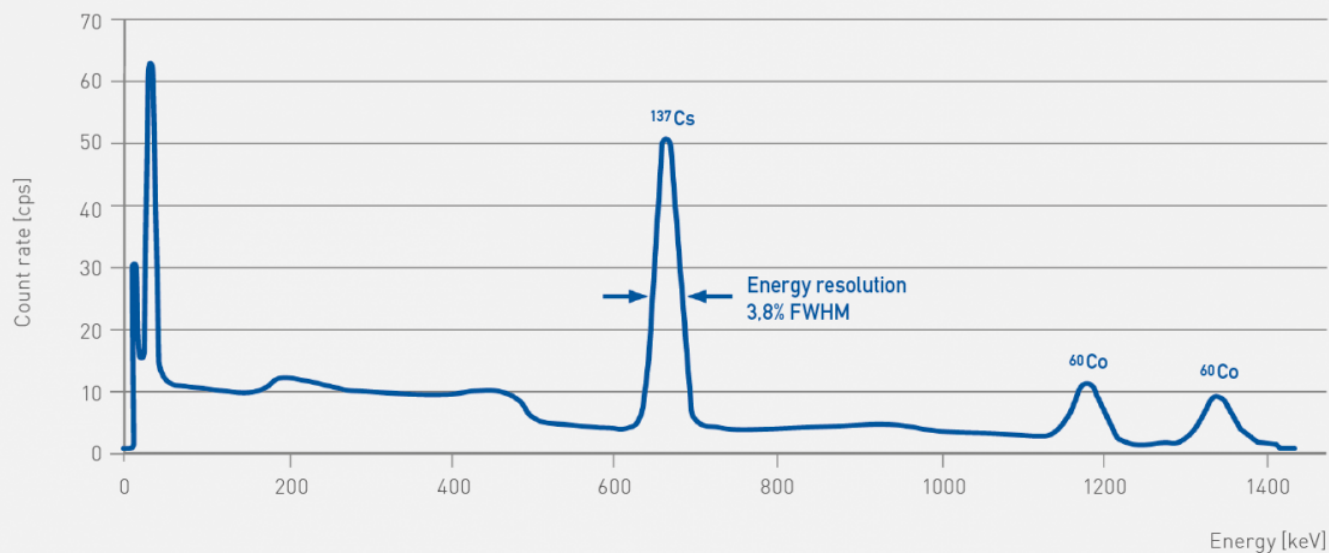
### **Role of Cerium Bromide Scintillator CeBr<sub>3</sub> in MWD**

MWD tools typically use a scintillation detector that is placed close to the drill bit to measure the gamma radiation emitted by the surrounding rock formations. The gamma radiation comes from naturally occurring isotopes such as uranium, thorium, and potassium, which are present in rock formations. By measuring the gamma radiation, MWD tools can determine the lithology and structure of the formations being drilled.

CeBr<sub>3</sub> scintillator is an excellent choice for MWD applications due to its high light yield and energy resolution. It allows for accurate measurements of the gamma radiation emitted by the rock formations, which can be used to identify the lithology and structure of the formations. The real-time data provided by MWD tools helps operators to make informed decisions about drilling performance and avoid problems such as getting stuck or drilling into a formation that could damage the drill bit.

Cerium Bromide Scintillator CeBr<sub>3</sub> is a key component of MWD technology used in the oil and gas industry. Its high light yield, energy resolution, and fast response time make it an excellent choice for measuring the gamma radiation emitted by the rock formations. The real-time data provided by MWD tools help operators to optimize drilling performance and avoid problems, ultimately leading to more efficient and cost-effective drilling operations.

### High resolution gamma spectrum with CeBr<sub>3</sub>



Credit: <https://www.hellma.com/en/crystalline-materials/radiation-detection-crystals/>

Follow [this link](#) to check out BNC's Cerium Bromide Scintillator product page and learn more.