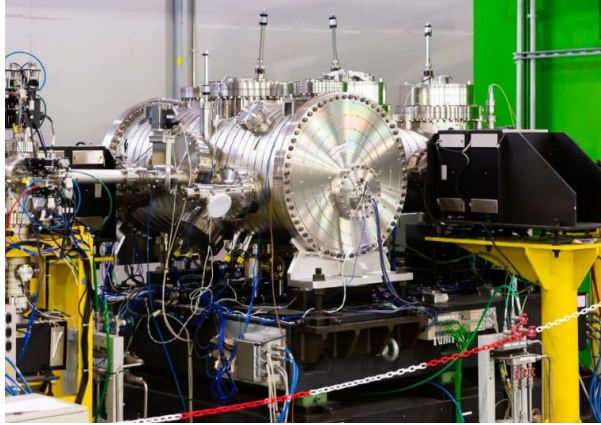


Neutron Imaging Supplies



What are Neutron Imaging Supplies?

Neutron imaging supplies are essential tools used to improve the accuracy and quality of [neutron radiography](#). These supplies are essential for visualising the internal characteristics of [materials](#), detecting defects and ensuring the integrity of components in various industries such as [aerospace](#), nuclear and manufacturing.

[Applus+ Laboratories](#) (through our subsidiary [Applus+ NRAY](#)) offers a wide range of neutron imaging supplies, all manufactured and tested to meet ASTM standards, ensuring that your neutron radiography projects achieve the highest levels of quality and reliability.

Frequently distributed Neutron Imaging Supplies

Applus+ Laboratories distributes a full range of supplies needed for neutron imaging, ensuring you have everything you need for accurate and efficient imaging.

Divergence and Alignment Indicators (ASTM E2861)

Divergence and alignment indicators are key tools for optimising the performance of neutron beamlines. Most neutron beam lines have a divergence angle of less than 10 degrees, which can cause significant image distortion if not aligned correctly. This device helps set the divergence angle and ensures that the imaging plane is aligned with the beam line, which is especially important for accurate computed tomography (CT) reconstructions.

Made of aluminium and cadmium, the divergence and alignment indicator provides a reliable means of assessing and correcting beam line divergence and alignment, ensuring high quality, distortion-free neutron images.

NU Device (ASTM E803)

The NU device is designed to measure the L/D ratio (length-to-diameter ratio) of neutron imaging beam lines, which is a key factor in determining the resolution and exposure time of neutron images. Low L/D ratios allow for faster exposure times, but can compromise image resolution, so it is essential to find the optimal balance for specific imaging needs. The NU device creates a neutron shadow of the cadmium wires, allowing the L/D ratio to be measured directly from a neutron image.

This device is essential for setting up new beam lines, making modifications or validating system parameters, ensuring that the neutron imaging system operates under optimal conditions for high quality imaging.

Image Quality Indicators (ASTM E545, fabricated to E2003 and E2023)

Image quality indicators (IQI) are vital for assessing the quality of neutron radiographs. ASTM E545 specifies two main devices: the Beam Purity Indicator (BPI) and the Sensitivity Indicator (SI).

The BPI measures the types of radiation that make up the image, ensuring a high proportion of thermal neutrons and minimal interference from higher energy neutrons or gamma radiation. The SI, a stepped wedge with holes and gaps, provides a rough measure of resolution. These indicators are generally used together in every neutron radiography to confirm that the image quality meets the required standards. They are particularly useful for both commercial neutron radiography and research purposes, as they provide a valuable measure of image quality and beam characteristics.

Indium Conversion Screens

Indium conversion screens are used in the neutron image transfer method, which is ideal for imaging radioactive objects or beam lines with high gamma content. These screens work by becoming radioactive when exposed to neutrons, storing the image which is then transferred to a film or CR X-ray screen.

This method is preferable when dealing with highly radioactive samples, such as spent nuclear fuel, or when the neutron beam contains a high proportion of gamma radiation. Indium is applied as a thin layer on an aluminium base plate, providing a durable and effective means of capturing neutron images. Thinner screens offer better resolution, but are more prone to defects such as folds and tears.

Vacuum Film Cassettes

Vacuum film cassettes are essential to ensure high-quality neutron radiographs, as they eliminate air gaps between the film and the conversion screens. These cassettes use metal foils or gadolinium vapour deposited foils to convert neutrons into gamma radiation or high energy electrons, which then expose the film.

Designed to operate without continuous pumping during exposure. Standard sizes include 5 x 7 inches, 8 x 10 inches and 14 x 17 inches, with custom sizes available upon request.

Vacuum film cassettes are a critical component in neutron imaging, ensuring that images are sharp, clear and not blurred by air gaps.

Why choose Applus+ Laboratories for Neutron Imaging Supplies?

Choosing Applus+ Laboratories for your neutron imaging supplies means partnering with a trusted leader in [non-destructive testing solutions](#). We provide high-quality, ASTM-compliant supplies that ensure the accuracy and reliability of your neutron imaging projects. Our wide range of products, coupled with our commitment to customer satisfaction, makes us the ideal partner for all your neutron imaging needs.

Let us provide you with standard or customised supplies tailored to your specific project requirements.

- **Wide range:** From divergence and alignment indicators to vacuum film cassettes, we offer a complete range of neutron imaging supplies.
- **Quality assurance:** All our products meet rigorous ASTM standards, ensuring the reliability and accuracy of your imaging processes.
- **Customisation:** We can tailor our products to meet your specific needs, ensuring you have the right tools for your unique applications.
- **Expert assistance:** Our team of experts is always available to provide guidance and support, ensuring you get the most out of our products.
- **Global reach:** With a presence in multiple countries, we can deliver our products and services to customers around the world, ensuring you have access to the best neutron imaging supplies no matter where you are. Let Applus+ Laboratories be your trusted partner for all your neutron imaging supply needs. We can support your projects with our high quality products and expert services.