

Contrast enhancement



What is Contrast Enhancement?

Contrast enhancement is a specialised non-destructive testing (NDT) technique used to **improve the visibility of foreign material** within a product. This method is particularly effective when the foreign material does not naturally absorb enough neutrons to be clearly visible in neutron images.

By introducing a substance that absorbs a **significant amount of neutrons** into the foreign material, even very small amounts, often as small as 0.010 inches, can be detected.

This technique takes advantage of the unique interaction between different [materials](#) and neutrons, a capability unmatched by X-ray imaging, making it an invaluable tool in quality assurance and manufacturing processes.

What is the Contrast Enhancement process?

The contrast enhancement process can be **integrated during manufacturing** (doping) or **applied during the NDT process** (tagging).

Doping

Doping involves adding a strong neutron absorber to the material during production, which ensures the presence of the agent in any unwanted material. This method speeds up the detection process but can introduce complexities in manufacturing.

Tagging

Tagging involves treating the parts with a liquid that adheres to the foreign material. After saturation, the parts are washed and dried to remove any excess contrast agent, leaving it only in the foreign material.. Gadolinium is commonly used for this purpose, although other materials such as boron or lithium can be selected depending on specific requirements.

Benefits of Contrast Enhancement

Contrast enhancement significantly extends the capabilities of [neutron imaging](#) by allowing the **detection of smaller quantities of materials** or defects that would otherwise go undetected. This advanced technique provides an accurate and reliable method for identifying even small quantities of foreign material within complex components, such as **turbine blades** and **jet engine parts**, ensuring **higher product quality** and **safety**.

Contrast Enhancement Accreditations

[Applus+ Laboratories](#) is committed to providing the highest quality [NDT services](#), including contrast enhancement. Our facilities are equipped with the latest technology and staffed by experts trained in the latest NDT techniques. Our **rigorous quality control processes** and compliance with industry standards underline our dedication to providing reliable and accurate testing services.

Why choose Applus Laboratories for Contrast Enhancement

Choosing Applus+ Laboratories for your contrast enhancement needs means **partnering with a world leader in NDT solutions**. Our expertise in advanced NDT techniques through our subsidiary [Applus+ NRAY](#), combined with our innovative approach to testing and quality assurance, ensures that your products meet the highest standards of safety and reliability.

With Applus+ Laboratories, you benefit from our commitment to accuracy, our extensive experience and our ability to detect and analyse foreign materials with unrivalled precision. Trust Applus+ Laboratories to enhance the integrity of your products through superior contrast enhancement services.