

Detection of Rubber and Plastic Using Photon-Counting X-ray Technology

X-rayReclaim

Executive Summary

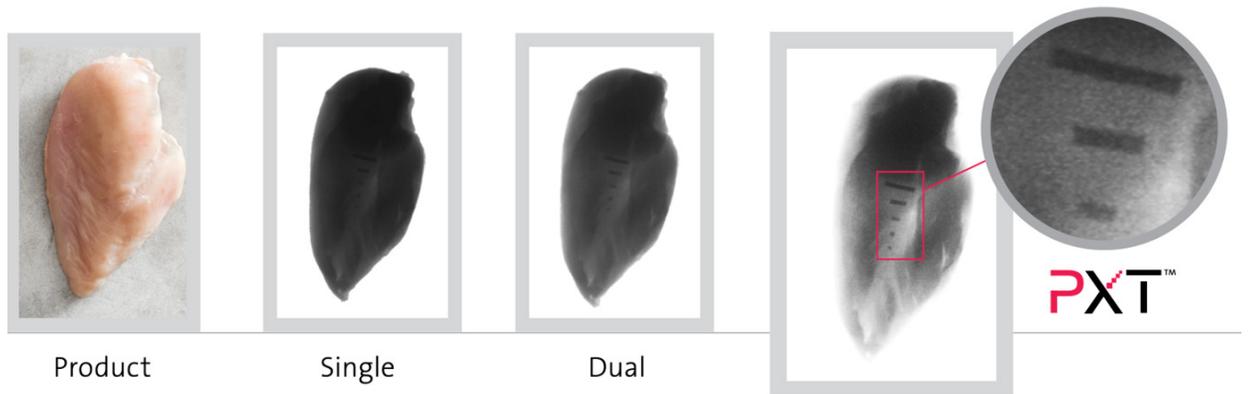
Foreign material contamination involving rubbers, plastics, and gasket materials presents a complex inspection challenge. X-ray Reclaim leverages PXT photon-counting X-ray technology and advanced multialgorithm imaging software to detect low-density inorganic and semi-organic materials at thresholds not achievable with conventional X-ray systems.

Scope and Material Disclaimer

X-ray detectable impregnated gasket materials have not been formally tested, as they are not commonly used. While high detectability is expected, application-specific testing is required to establish accurate detection thresholds.

Primary Drivers of Detection Performance

- X-ray Imaging Capability: PXT photon counting creates high-resolution images using time-delayed interface detection, scrubbing organic product background while retaining inorganic foreign material characteristics.
- Simultask 4 Imaging Software: Sim4 runs dozens of independent algorithms concurrently, allowing simultaneous detection of sub-millimeter low-density materials and very large foreign objects without trade-offs.



Product and Packaging Considerations

Detection thresholds increase with product height and density. Single-unit inspections typically detect rubbers and plastics at approximately 1.0–2.0 mm³. Glass and steel containers significantly reduce detection capability.

Foreign Material Characteristics

Detection depends on material chemistry, additives, and coloring agents. Each rubber or plastic must be tested to establish a probability of detection (POD).

Highly Detectable Materials (Typical Ranges)

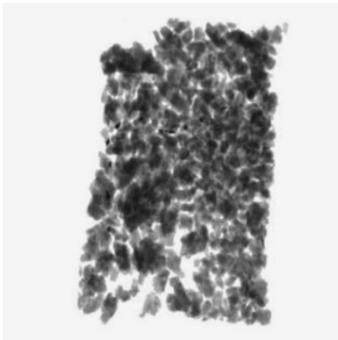
Viton (>1.0–2.0 mm³), Silicone (>1.0–2.0 mm³), Buna (>2.0–3.0 mm³), Teflon (>2.0–3.0 mm³), Metaldetectable and X-ray detectable rubbers/plastics (>1.0–2.0 mm³) in single-unit inspection.

Inspection Study and Testing Methodology

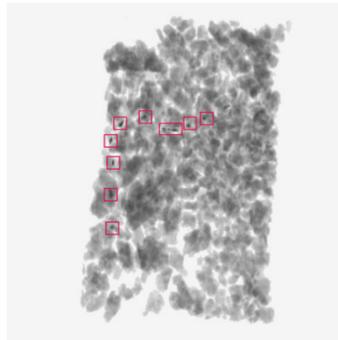
Inspection studies involve embedding reduced-size foreign material samples into product, running 30-pass testing, and establishing detection thresholds based on empirical results. Reports are typically issued within 48 hours.

Conclusion

Every product and foreign material combination is unique. X-ray Reclaim focuses on validated testing, transparent reporting, and rapid deployment when detection is achievable.



Single Energy



Dual Energy



PXT Technology

To learn more, contact JP Perreault at (519) 943-2800 or visit our website

► www.xrayreclaim.com

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