



# Monarc Clean Oilseed Processing™ Q&A

Safe. Scalable. Sustainable.  
**Hexane-free.**

For over seven decades, the global oilseed processing industry has relied on hexane-based solvent extraction to produce the oils that feed billions of people worldwide. While this technology has been instrumental in scaling food production to meet growing global demand, the industry has long sought a cleaner alternative that could deliver comparable efficiency and economic viability.

Today **CPM|Crown** announces a breakthrough that industry experts once thought impossible: **Monarc Clean Oilseed Processing™** is a revolutionary, patent-pending alcohol-based solvent extraction technology that is projected to have comparable operational efficiency to traditional hexane systems while delivering significant advantages in safety, environmental impact and consumer appeal.

This innovation represents more than an incremental improvement—it's a shift that makes clean-label food production economically viable at industrial scale. What was once considered impossible is now not only possible, but practical.

## **What is solvent extraction and why is it important in food production?**

Solvent extraction is the industrial process used to remove oil from oilseeds such as soybeans, canola, sunflower and others. This process is critical to global food security—it produces the cooking oils, protein meals and ingredients that form the foundation of countless food products consumed worldwide. Without efficient extraction methods, the world simply

couldn't produce enough affordable protein and oil to feed today's population of over 8 billion people.

The extraction process works by using a solvent to dissolve and separate oil from the solid seed material, achieving oil recovery rates of 95-99%—far higher than mechanical pressing alone.

## **What is hexane and why has the industry used it for 75 years?**

Hexane is a petroleum-derived chemical solvent that has been the industry standard since the 1940s. The industry adopted hexane for compelling practical reasons.

### **Advantages of hexane:**

- Extremely efficient at extracting oil with minimal energy requirements
- Cost-effective and readily available
- Enables high-volume processing that helps keep food affordable
- Well-understood technology with established safety protocols
- Allows for nearly complete solvent recovery and recycling







**Challenges with hexane:**

- Derived from petroleum, raising sustainability concerns
- Requires careful handling due to flammability and vapor concerns
- Creates regulatory and workplace safety considerations
- Prevents “clean label” claims that consumers increasingly prefer
- Environmental impact concerns, despite significant industry improvements

Hexane became the standard because it offered the most economical way to extract oil efficiently. While alternatives like alcohol existed, the energy costs associated with alcohol recovery made them economically unviable at industrial scale—until now.

**What makes alcohol-based solvents different?**

Alcohol-based solvents, particularly ethanol, offer several inherent advantages over petroleum-based alternatives.

**Benefits of alcohol-based extraction:**

- Solvent is already present in or utilized to produce many foods and beverages
- Enables clean-label products that appeal to health-conscious consumers
- Significantly improved worker safety profile
- Reduced environmental impact compared to petroleum derivatives
- Better alignment with sustainability goals
- Renewable source material (ethanol can be produced from plants)
- Facilitates easier permitting of new extraction facilities compared to hexane

**Historical challenges with alcohol:**

- Much higher energy requirements for solvent recovery
- Significantly higher operational costs
- Complex engineering requirements
- Economic infeasibility at industrial scale

The breakthrough achieved by CPM | Crown’s Monarc technology directly addresses these historical challenges, making alcohol-based processing economically competitive for the first time.

**How safe is hexane-based processing for consumers?**

Current hexane-based processing is considered safe for consumers when properly executed. The food industry has developed sophisticated methods to reduce hexane residues to undetectable levels in final products. Rigorous testing and quality control measures ensure that processed foods meet strict regulatory standards worldwide.

Additionally, over the past four decades, the industry has made remarkable environmental progress, reducing solvent losses by over 90% through improved recovery and recycling technologies. This demonstrates the industry’s commitment to continuous improvement and environmental responsibility.

However, even with these safety measures and improvements, the shift to clean-label alcohol solvents reduces or eliminates these concerns while providing significant additional benefits.

**What makes CPM | Crown’s Monarc technology revolutionary?**

Monarc Clean Oilseed Processing™ solves the fundamental economic challenge that has prevented alcohol-based extraction from becoming viable at industrial scale for commodity seeds. The breakthrough lies in engineering innovations that dramatically reduce the energy requirements for alcohol recovery, making the process economically competitive with hexane systems.

**Key advantages of Monarc technology:**

- **Scalable:** Suitable for both new plant construction and facility upgrades
- **Clean label enabled:** Allows manufacturers to meet growing consumer demand for clean-label products
- **Enhanced employee safety:** Eliminates petroleum-based solvent handling concerns
- **Environmental benefits:** Reduces environmental impact while maintaining efficiency
- **Market advantage:** Enables premium positioning for health-conscious consumers
- **Cost parity:** Projected to have comparable operational efficiency to hexane-based systems
- **Retrofittable:** Existing facilities can be upgraded without complete reconstruction

**Why is this breakthrough significant for the food industry?**

This patent-pending technology addresses multiple industry challenges simultaneously. Consumer research consistently shows growing preference for clean-label products—foods made with recognizable,

minimally processed ingredients. Until now, producing clean-label products via efficient oilseed processing at scale has not been practical or available.

Monarc technology addresses this trade-off, allowing manufacturers to produce clean-label oils and protein meals competitively. This opens new market opportunities while maintaining the economic efficiency that keeps food affordable and accessible globally.

**How quickly can the industry adopt this technology?**

Complete industry conversion would likely take 20+ years due to the scale of existing infrastructure and the careful, methodical approach food manufacturers take when implementing new technologies.

**However, the technology offers flexibility for different adoption strategies:**

- **Existing facilities** can be retrofitted with Monarc technology, allowing companies to upgrade without rebuilding
- **New construction** can incorporate the technology from the ground up
- **Market positioning** advantages and increased hexane scrutiny, especially in some regions of the world, may drive faster adoption among companies targeting premium, health-conscious consumers



## Will this eliminate hexane from food processing entirely?

While Monarc technology offers compelling advantages, hexane will continue to play a role in global food production for the foreseeable future. The existing infrastructure represents billions of dollars in investment, and the proven efficiency of hexane systems continues to support global food security.

The transition will be market-driven, with companies adopting alcohol-based processing to meet consumer demand, improve safety profiles and gain competitive advantages. This parallel approach ensures food security remains protected while enabling the industry to evolve.

## What is the quality of products made with Monarc?

Products made with Monarc show superior characteristics: lighter color and lower gums content in oils; higher-protein meal; higher protein content, lighter color and more bland taste in protein concentrate.

## What assurance is there that Monarc isn't just hype?

CPM | Crown has been the global leader in oilseed processing for 75+ years. Experts spent over 5 years developing this revolutionary technology, using cutting-edge process simulation software, the best R&D resources in the industry and dozens of continuous, steady-state runs at the state-of-the-art Innovation Center. CPM | Crown's demonstrated know-how led to the first commercial sale of Monarc in 2025.

## How will CPM | Crown support companies that incorporate Monarc Clean Oilseed Processing into their operations?

CPM | Crown is the industry's trusted partner and supports customers throughout the process—testing and samples, design engineering, delivery, retrofitting or new construction support, start-up and commissioning—with Lifecycle360™ comprehensive support services.

CPM | Crown's **Monarc Clean Oilseed Processing™** represents a defining moment in food manufacturing history. Through innovative engineering and deep industry expertise, the company has achieved what many considered impossible: making clean, alcohol-based oilseed processing economically viable at industrial scale.

By providing an economically competitive solution that can deliver superior safety, environmental and consumer benefits, Monarc proves that the food industry doesn't have to choose between efficiency and responsibility.

The technology opens new possibilities for manufacturers to meet evolving consumer expectations while maintaining the economic efficiency that keeps nutritious food accessible to billions of people worldwide. As the industry begins adopting this revolutionary approach, it marks the beginning of a new chapter in food manufacturing—one where the impossible has truly become possible.

To learn more about this revolutionary processing solution, contact CPM | Crown at **[crownsales@cpm.net](mailto:crownsales@cpm.net)** or **+1-651-639-8900**. We invite customers to test and sample their products using Monarc technology at our Global Innovation Center.

Feeding, Fueling and Building **a Better World.**



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