



MATRIC

Mid-Atlantic Technology,
Research & Innovation Center

Life-changing Research and Development

BQ-9000

DIANA HOLLEY

dfholley@aol.com

West Virginia BioEnergy Forum

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MATRIC

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Life-changing Research and Development

BQ-9000



**Chemical and Environmental
Technologies**



Health and Life Sciences



**Advanced Engineering
Systems**

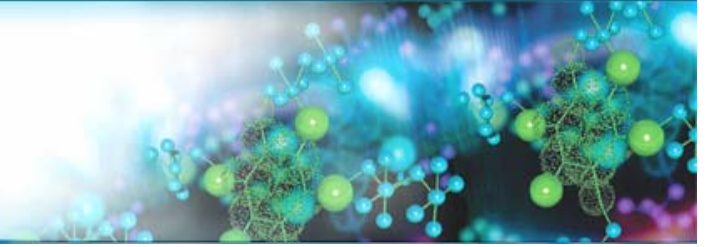
Keith Pauley

Keith.Pauley@matric.cc

800-611-2296

www.matric.cc

Table of Contents



- **Importance of Quality**
- **Biodiesel Defined**
- **What is BQ-9000?**
- **What are BQ-9000 Criteria?**
- **Who is Accredited as BQ-9000 Certified?**
- **Criteria for an Accredited Producer**
- **Why BQ-9000?**



The Importance Of Quality

What is quality?

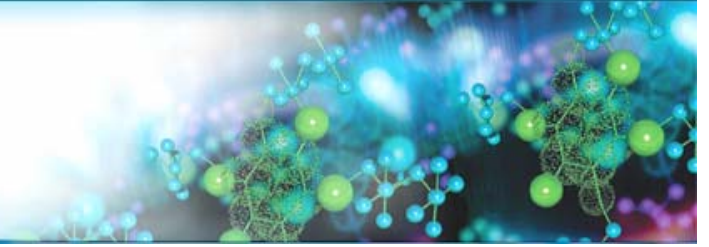
- “A degree of excellence”
- “Superiority in kind”
- “An intelligible feature by which a thing may be identified”

What is quality assurance?

- “A program for the systematic monitoring and evaluation of the various aspects of a project, service, facility to ensure standards of quality are being met”.

(Merriam Webster Dictionary)

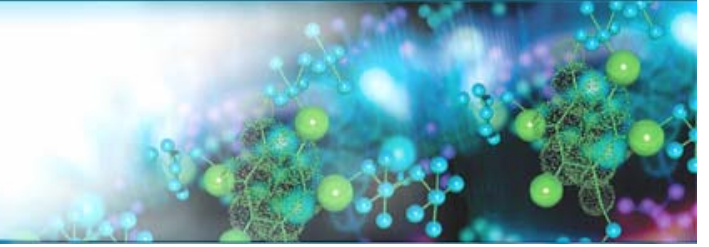
The Importance Of Quality



Two of W. Edwards Deming's 14 key principles of management for transforming business effectiveness:

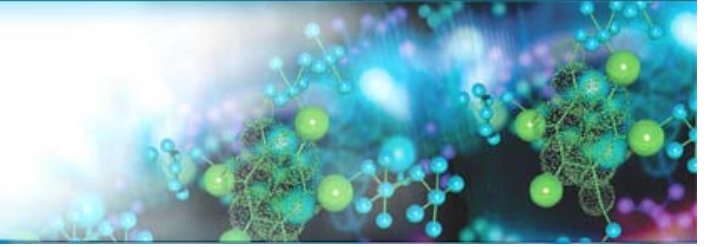
3. Cease dependence on mass inspection to achieve quality. Instead, minimize the process and build quality into the product in the first place.
5. Improve constantly, and forever, the system of production, service, and planning of any activity. This will improve quality and productivity and thus constantly decrease costs.

Biodiesel Defined



- An alternative or additive to standard diesel fuel that is made from biological ingredients instead of petroleum (or crude oil).
- Biodiesel is usually made from plant oils or animal fat through a series of chemical reactions.
- Biodiesel is non-toxic and renewable.
- Environmentally “good” – minimal impact to our environment.

Biodiesel Defined

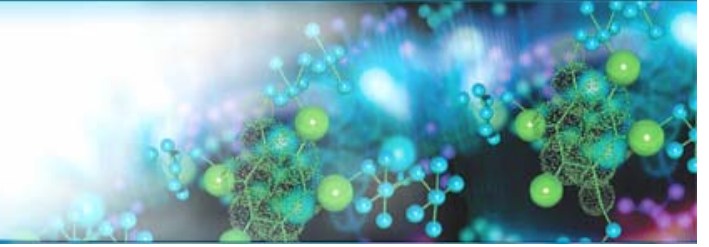


- According to the National Biodiesel Board (NBB), the technical definition of biodiesel is as follows:

“A fuel comprised of mono-alkylesters of long chain fatty acids derived from vegetable oils or animal fats designated B100 and meeting the requirements of ASTM D 6751.”

- American Society for Testing and Materials (ASTM) International is the organization responsible for providing industry standards.

Biodiesel Defined



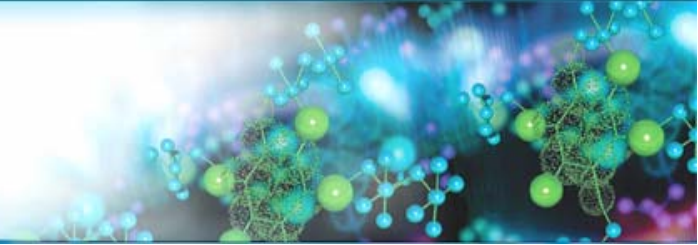
Rudolph Diesel designed diesel engine in 1894 to run on peanut oil

“The use of vegetable oils for engine fuels may seem insignificant today. But such oils may become in the course of time as important as petroleum and the coal tar products of the present time.”

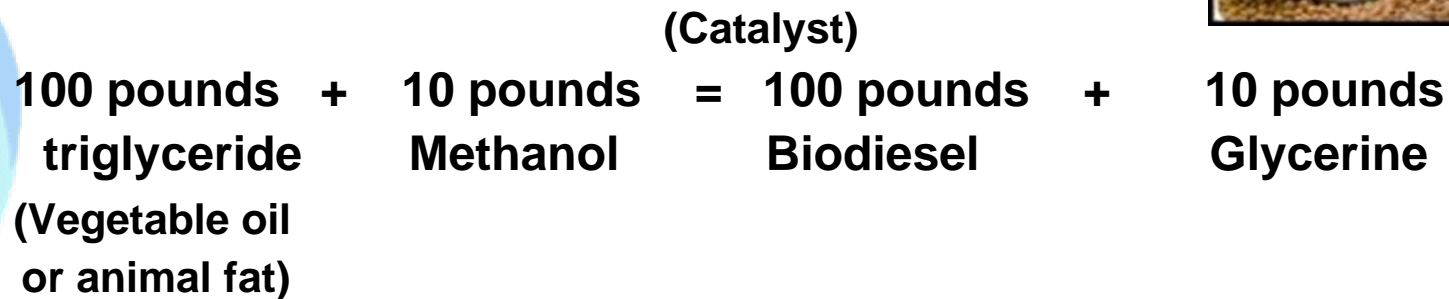
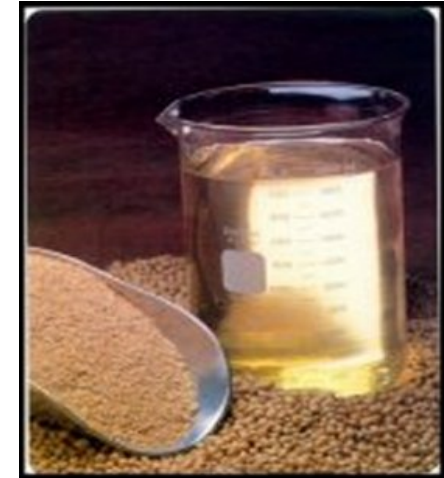
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Biodiesel Defined



Production



B100 = Biodiesel
Specified by ASTM D 6751

What is BQ-9000?

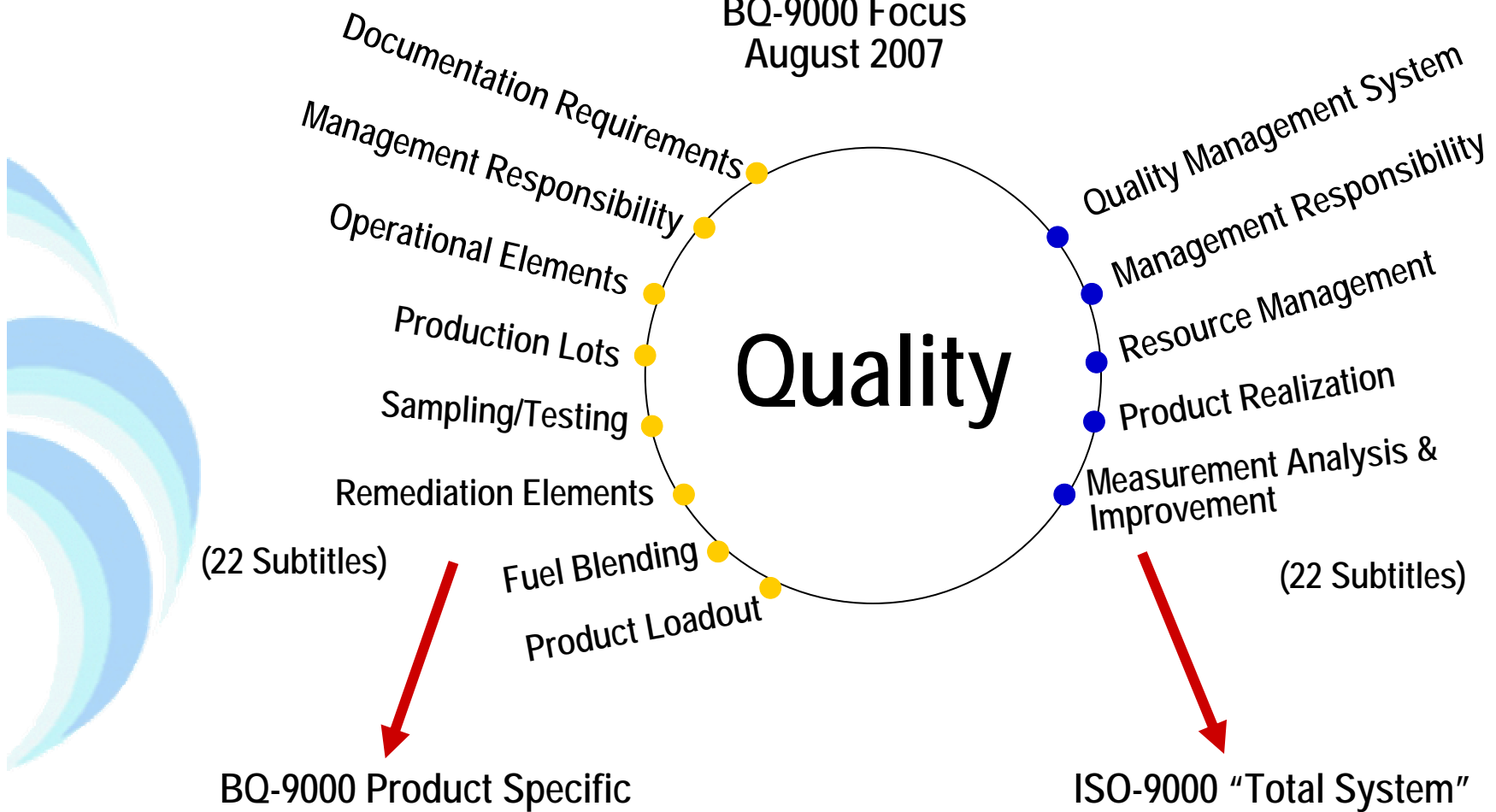
- **Similar to ISO-9000**
 - **Simplified and not as complex**
 - **“Small producers” can manage**
- **Ensures effective quality management system**
 - **Minimizes the chance that fuel from a producer/marketer does not meet ASTM D 6751**

Establishes consistency of the product

- **Promotes the commercial success and public acceptance of biodiesel.**
- **Avoids redundant testing throughout the production and distribution system.**
- **BQ-9000 is the Biodiesel Industry’s response to ensuring quality product in the market place.**

What is BQ-9000?

BQ-9000 Focus
August 2007



Who is Accredited as BQ-9000 Certified?

A system for monitoring the quality of biodiesel:

Producers

- Sampling
- Testing
- Storage
- Retaining Samples
- Shipping



Comprehensive Analytical Testing
generating a COA

Marketers

- Sampling
- Testing
- Storage
- Retaining Samples
- Blending
- Shipping



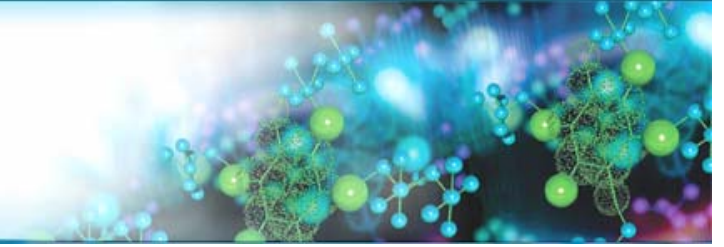
Can accept producer's COA if
producer is BQ-9000 certified

or

Analyze product and develop COA for
non-certified producers



BQ-9000 Overview



Criteria for an Accredited Producer

Documentation Requirements

- A Quality Policy
- A Quality Manual
- Document Procedures required for the BQ-9000 Program
- Records Required by this Standard



Criteria for an Accredited Producer

Management Responsibility

- **Identify a quality management representative (QMR)**
 - Employee with other duties
 - Leads the effort
- **Internal Quality System Audits**
 - Once/year minimal
 - Cite non-conformities and resolve
 - Keep audit records
- **Quality Management Review**
 - Every 6 months
 - Discuss internal audits
 - Customer feedback
 - Continuous improvements



Criteria for an Accredited Producer

Operational Elements

- **Process Changes**
 - **Maintain a record of significant process changes (feed materials, equipment, catalyst)**

- **Toll Producer Requirements**
 - **Subject to NBAC auditing and standards**

- **Inspection and Testing Functions**
 - **Document procedures**

- **Laboratories**
 - **Internal and external**
 - **Audit protocol**

Criteria for an Accredited Producer

Production Lots

- **Organization develops procedure for identifying the product through a unique identification of individual product, batches or lots.**
- **Each separate lot shall be identified in a manner that corresponds to that particular volume of fuel.**
- **Each lot is tested according to specification requirements.**
- **No other product shall be introduced into the lot without reconfirming that it meets the “whole or total” specification.**

Criteria for an Accredited Producer

Sampling and Testing

- **Production Lot Tank Homogeneity**
 - Mechanically mixed or agitated
 - Non-mechanically mixed or agitated
- **Sampling**
 - Retain samples for 60 days

Criteria for an Accredited Producer

Sampling and Testing

• Testing

- ASTM D 4176 (particulate matter, water, unreacted material)
- ASTM D 6751 (full specification testing)
- Procedure in place for the control of non-conforming products
- Critical Specification Testing
- Monthly Specification Testing

• Certificate of Analysis (COA)

- Generated for each production lot

Criteria for an Accredited Producer

Sampling and Testing

- **Storage Tank Inactivity**

- **If a biodiesel storage tank is inactive for 30 days, a sample is collected for a set of tests**
- **If failed, activate procedure for the control of non-conforming products**

Criteria for an Accredited Producer

Remediation Elements

- **Non-Conforming Product**
 - Procedure to prevent a product from being used or shipped
 - Can be reprocessed; re-classified; rejected or destroyed

- **Corrective and Preventive Action Procedures**
 - Managed through documented procedures
 - Identify non-conformities and document

Criteria for an Accredited Producer

Fuel Blending

- **Creating a biodiesel blend (B99 or higher); the blending must be monitored with auditable records of both the biodiesel and diesel fuel kept for 2 years.**

Criteria for an Accredited Producer

Product Loadout

- **The Quality Program shall provide cleanliness specification standards that address material and chemical compatibility issues**
- **Inspections made and records kept**
- **Detailed guidance with respect to who is supplying the transport**
- **All valves to the compartments shall be sealed**

Why BQ-9000?

- Promotes the commercial success and public acceptance of biodiesel
- Reduces time and money spent investigating incidents
- Reduces redundant sample testing
- Customer confidence in the product
- Customer preference for reliability
- Program voluntary for producers and marketers
- Some predict that BQ-9000 will be required to do business
- Quality Product will help increase product demand

Just Good Business !