



***presents***

***DEF***

# An Introduction to DEF

- DEF= Diesel Exhaust Fluid
- A solution made with 32.5% urea and 67.5% deionized water
- DEF is used in selective catalytic reduction to lower NOx in exhaust.

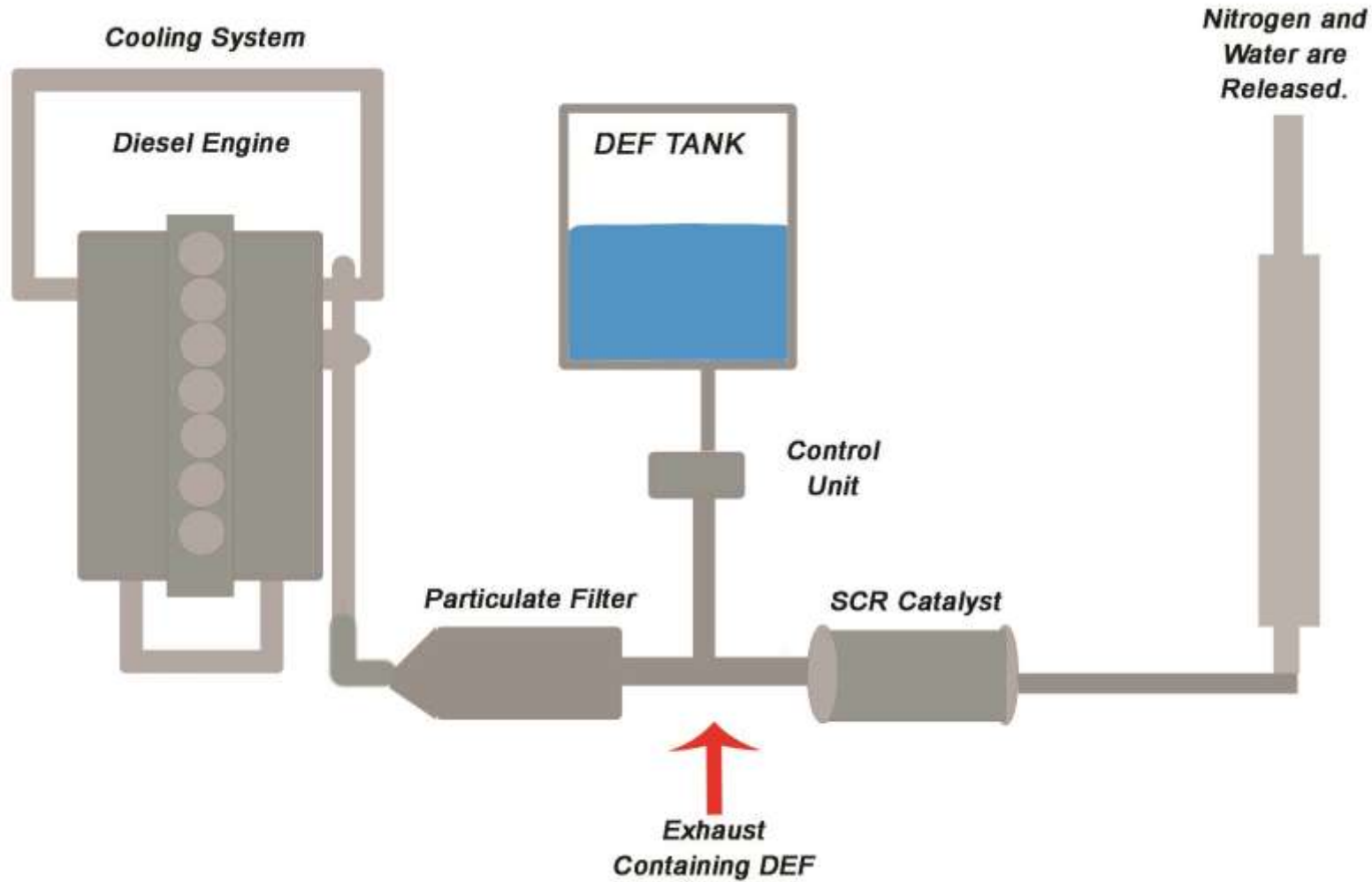


# The Chemical Process

- DEF is injected into the exhaust of a diesel engine
- Solution vaporizes into ammonia and carbon dioxide
- These react with the Nitrogen oxide in the exhaust breaking it down into water and nitrogen.
- The water and nitrogen can then be safely released into the environment.



# A more detailed explanation



# DEF is better than a Catalytic Converter

- DEF does not negatively impact MPG or engine performance unlike a catalytic converter.
- DEF can provide up to 5% better fuel economy in diesel engines.



# What is DEF used in?

- DEF can be used in any diesel engine that is designed to use DEF.
- This includes marine diesel engines, agricultural equipment, construction equipment, train engines, and roadway diesel engines.



# Our DEF Pump Line

- MP Pumps produces a variety of stainless steel pumps that are currently used for DEF transfer in North America.
  - Flomax
    - FM8, FM15, FM30, FM35
  - FRX
    - FRX 75, FRX 75 SP, FRX 75 P, FRX 100
  - Chemflo
    - CF1, CF3, CF5



# FLOMAX<sup>®</sup>

- Flomax models can be used for loading and unloading, and in DEF truck transfer.
- Flows up to 400 GPM
- Engine driven models available
- Sizes from 2" x 2" NPT to 4" x 3" NPT





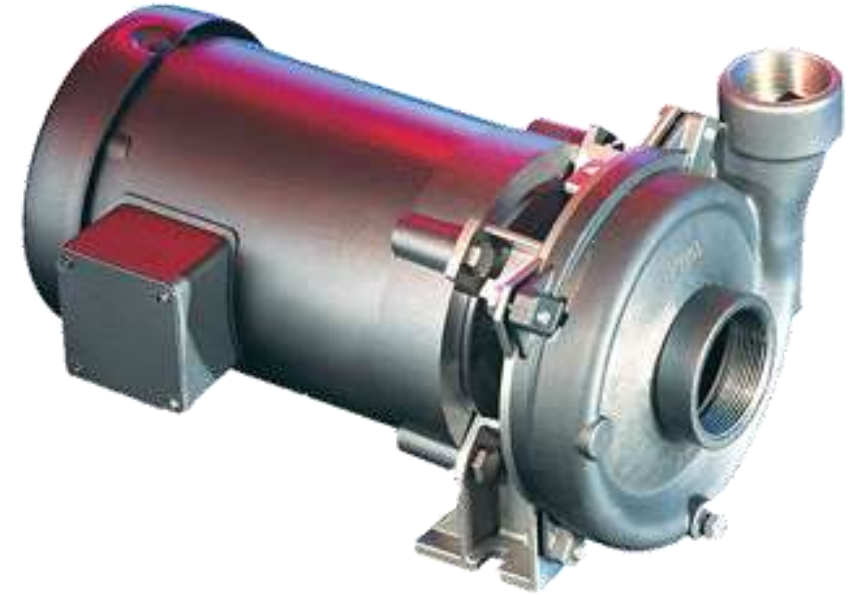
# FRX

- The FRX is ideal for small scale DEF transfer applications.
- Options available with up to 75 GPM.
- Options available with ½" x ½" NPT to 1 ½" x 1" NPT.
- Available in both end suction and self priming models.
- AC, DC, and hydraulic motor options available.



# CHEMFLO®

- Ideal for applications needing flows up to 350 GPM.
- Options available with 1 ½" x 1" to 3"x2"
- Ideal for flooded suction applications that require an end suction pump.



# The Process of DEF Transfer



[mppumps.com](http://mppumps.com)

# Manufacturing to bulk container



[mppumps.com](http://mppumps.com)

Pumps suitable:

**FLOMAX**<sup>®</sup>

**30 & 35**



[mppumps.com](http://mppumps.com)

# Bulk container to tote/barrel



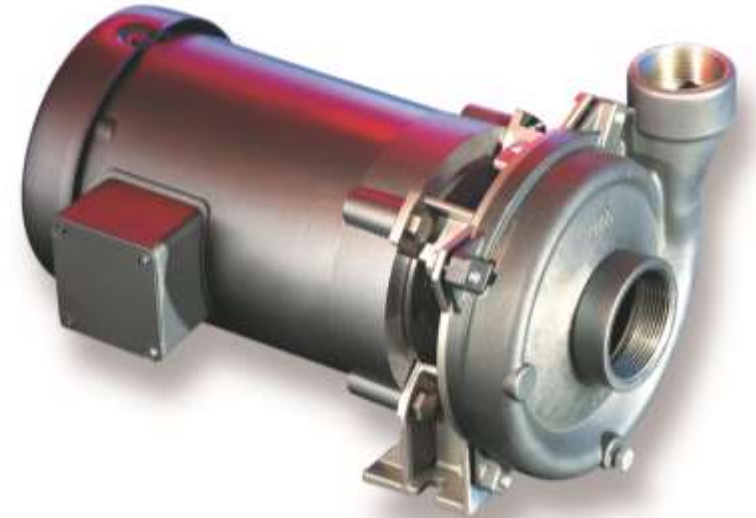
Pumps for this application:

**FLOMAX**<sup>®</sup>

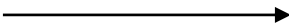
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**CHEMFLO**<sup>®</sup>

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# Tote/Barrel to usage point





Pumps for this application:

**FRX**

**75, 75 SP**



# Application\$ for our Pumps



[mppumps.com](http://mppumps.com)

# DEF engine tank re-filling



[mppumps.com](http://mppumps.com)

# DEF Bulk Transfer Skids



[mppumps.com](http://mppumps.com)

# DEF Portable Transfer Skids



# Railcar DEF Transfer



[mppumps.com](http://mppumps.com)

# DEF Truck Transfer



[mppumps.com](http://mppumps.com)

# More Applications

- Truck and bus depots
- Farm bureau deliveries
- Tote refill
- Manufacturers plant transfer
- Mixing of urea and de-ionized water





# Why MP Pumps?

- Our pumps are high quality, stainless steel investment cast .
- Proven history as a DEF industry leader.



[mppumps.com](http://mppumps.com)

# Why MP Pumps?

- We understand ISO 22241 specifications
- Faster lead times
- Large range of stainless steel pumps



# Viton vs EPDM elastomers

- While there is some contention over the best material, both are acceptable elastomers for DEF transfer.
- MP Pumps offers both options for our DEF line with Viton as our standard.

