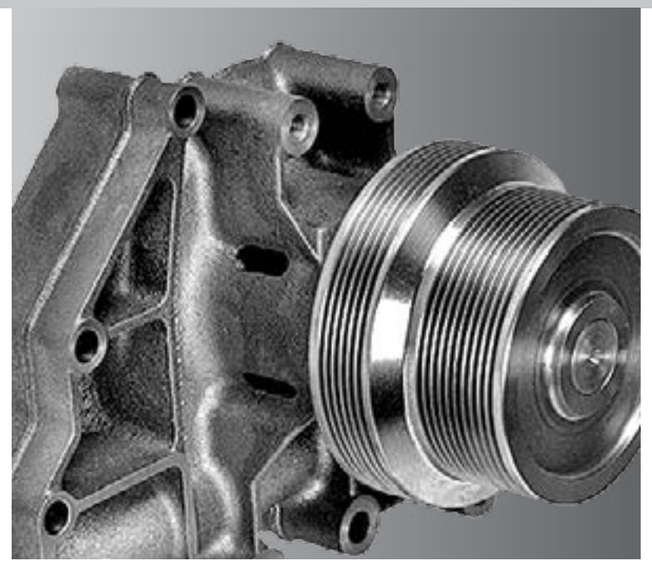
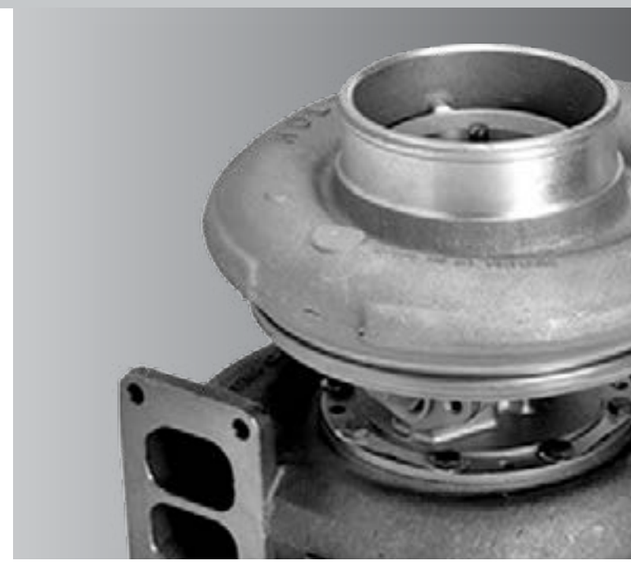




Parts Professional 69

Genuine Cummins DPF vs. Non-Genuine DPF

CLICK HERE TO ENTER

69

PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

INTRODUCTION

In Parts Pro 65: DPF (Diesel Particulate Filter), you learned the basics of the Cummins Aftertreatment System and specifically how the DPF works within the system to reduce engine emissions (to optimize your learning potential in this module it will be beneficial to go back and take Parts Pro 65). In this training we will take an even closer look at the **Genuine Cummins DPF** and why Customers benefit from choosing the Genuine option over non-genuine.

After this training you wil be able to:

- Understand what takes place inside a DPF.
- Understand what functional advantages the **Genuine Cummins DPF** has over a non-genuine DPF.
- Be able to explain to customers the positive impact for them in choosing **Genuine Cummins** over non-genuine.

GENUINE CUMMINS PARTS VS. NON-GENUINE PARTS

Before we start learning about the **Genuine Cummins DPF,** lets take a look at a video showing the difference between Genuine and non-genuine parts.

Click here to view video at YouTube

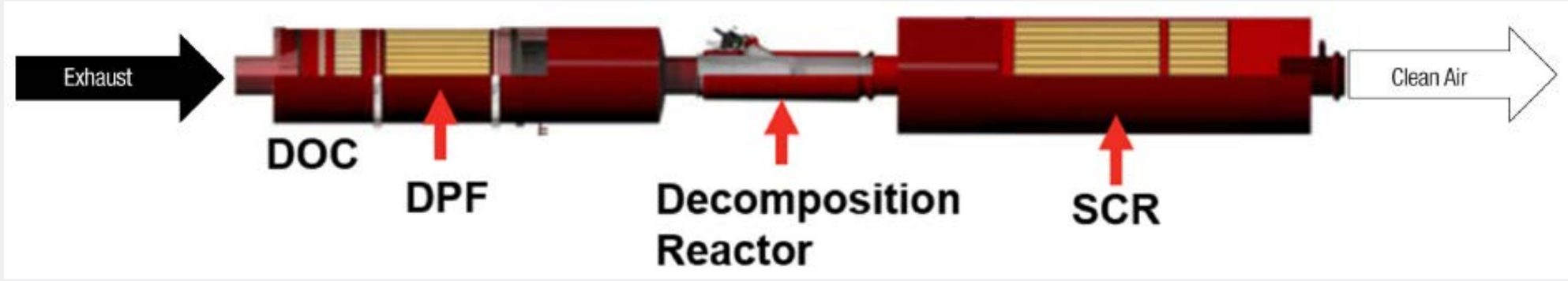
or go to https://youtu.be/6F97PjLfaFs

Now lets look at the **Genuine Cummins** parts specific to the aftertreatment system.

Genuine Cummins DPF vs. Non-Genuine DPF

AFTERTREATMENT REFRESHER

The aftertreatment system is what allows an engine to meet emissions requirements. The components that make up the aftertreatment system work together to reduce different types of emissions such as nitrogen oxide (NOx), particulate matter (PM), hydrocarbon (HC) and carbon monoxide (CO). The image below shows the main components of the aftertreatment system.



Click each section to learn more. For further training on the DPF, click here to take Parts Pro 65.

Now that you know about the **Genuine** parts in the aftertreatment system and how they function to reduce the emissions from the engine, you are ready to take a detailed look at the **Genuine Cummins DPF.**

Genuine Cummins DPF vs. Non-Genuine DPF

AFTERTR

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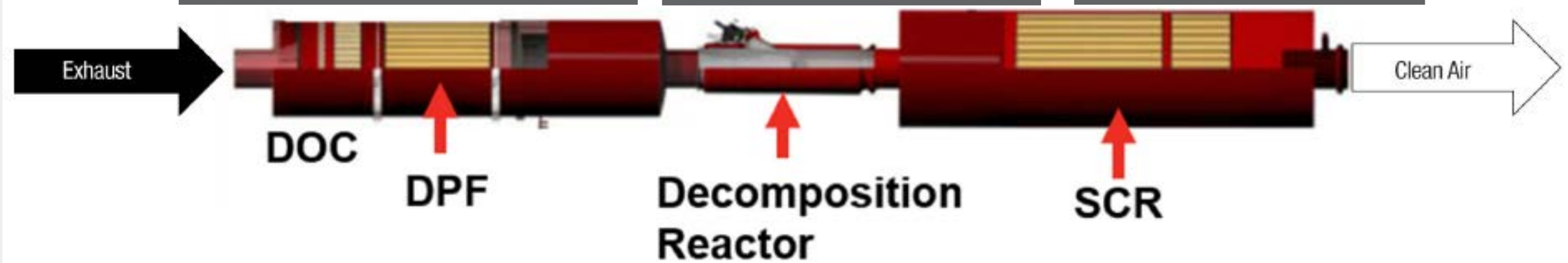
The **Diesel Particulate Filter (DPF)**, within the Cummins Particulate Filter, contains a wall-flow filter that collects and oxidizes carbon to remove particulate matter (PM) by more than 90%; the **Diesel Oxidation Catalyst (DOC)** aids this process. On all EPA 2007 and 2010, Euro VI and Tier 4 Engines.

The **Decomposition Reactor** connects the DPF and SCR catalysts, and includes the Diesel Exhaust Fluid (DEF) dosing valve. On all EPA 2007 and 2010, Euro VI and Tier 4 Engines.

The **SCR** system reduces NOx levels by converting the DEF/ exhaust mixture to nitrogen and water. On all Euro IV, Euro V, Euro VI and EPA 2010 Engines.



Click each section to learn more. For further training on the DPF, click here to take Parts Pro 65.

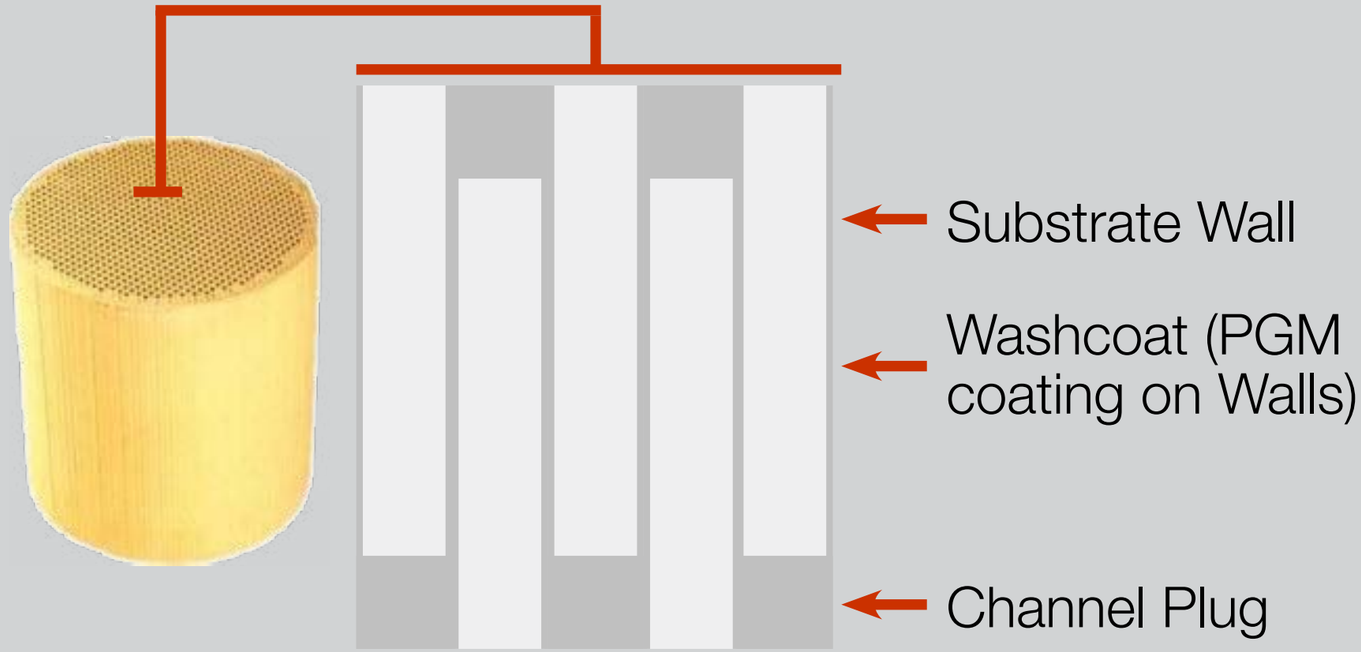
Before we get into the functional advantages of the Genuine Cummins DPF, let's take a look at the evolution of the Cummins Aftertreatment System and then an explanation in detail of what happens inside the DPF.

Genuine Cummins DPF vs. Non-Genuine DPF

INSIDE THE DPF: HOW IT WORKS

The DPF is responsible for capturing particulate matter(soot and ash), burning off the soot and collecting ash. The process of burning the soot in the DPF is called regeneration, also referred to as a regen. To better understand this process of regeneration, lets look at an illustration of this as it happens in the DPF.

Inside the DPF wall flow filter



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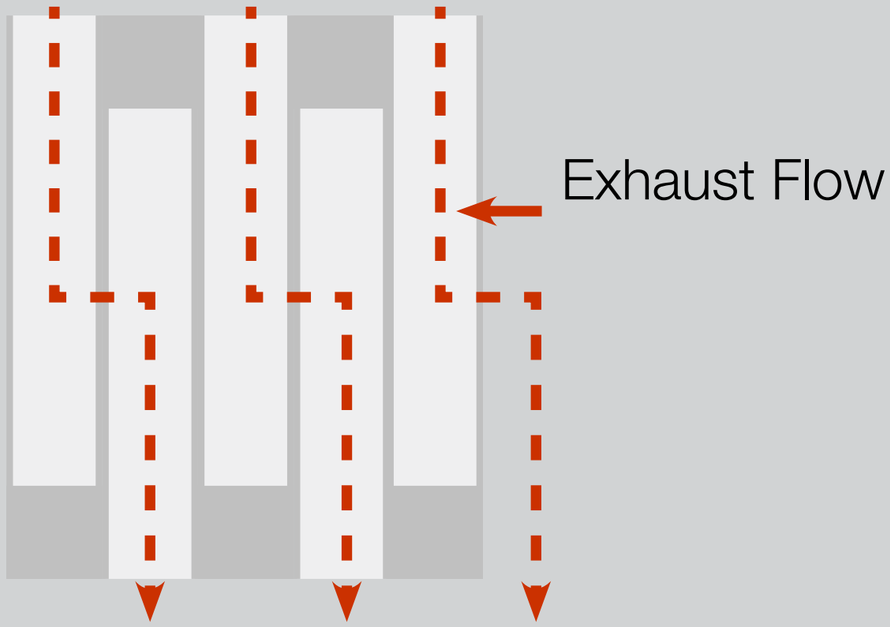
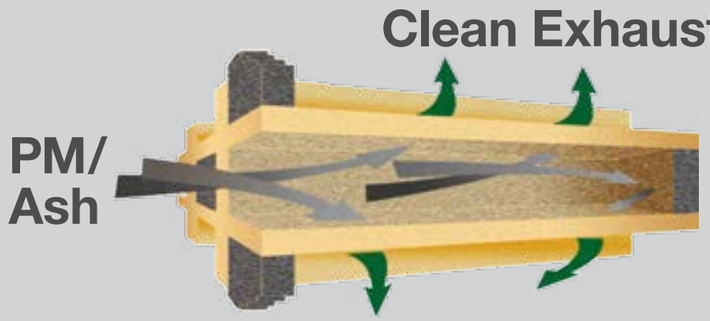
1. Exhaust flows through the wall flow filter of the DPF.





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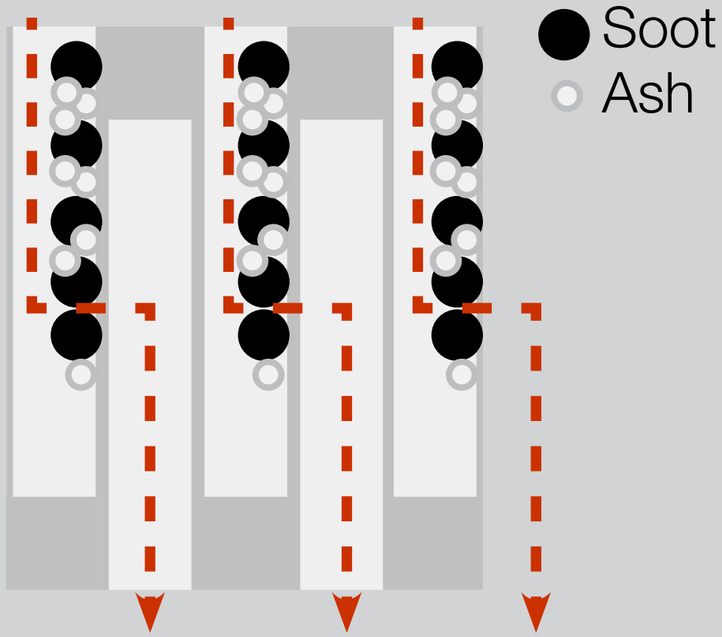
2. Soot and ash from exhaust is captured on the walls of the filter.



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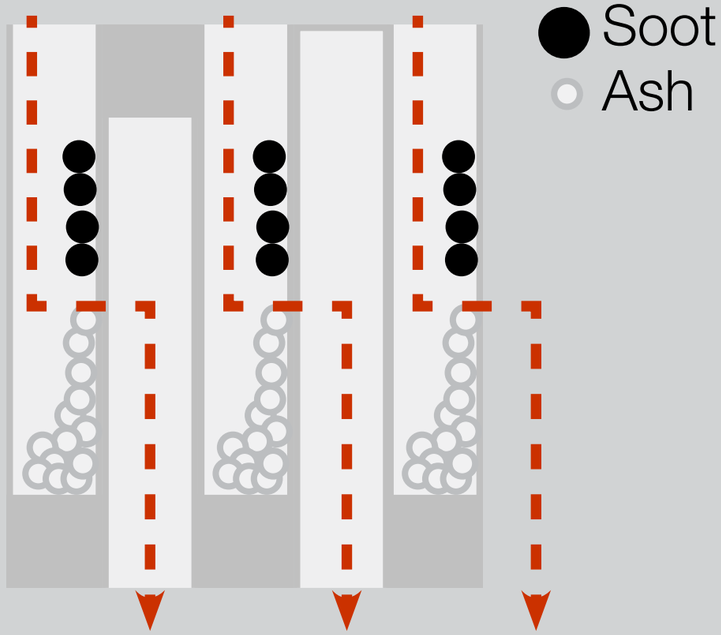
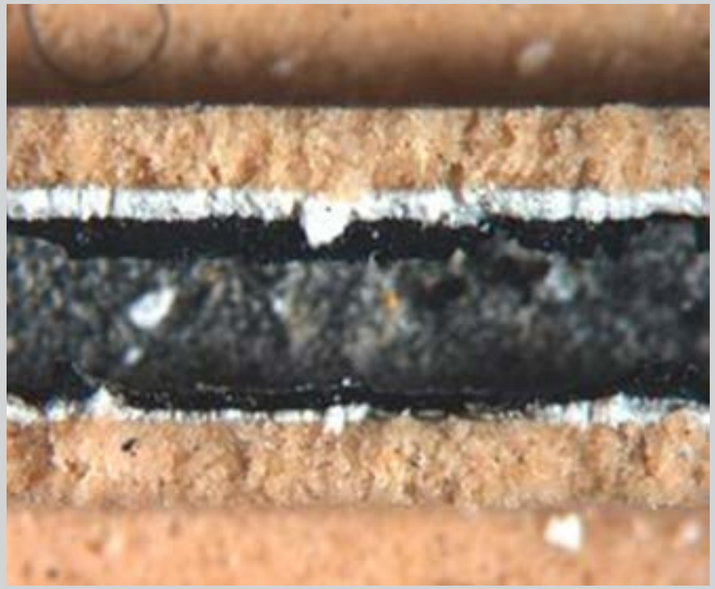
3. Regeneration oxidizes (burns) off the soot; ash is not burned off, but collects in the DPF.



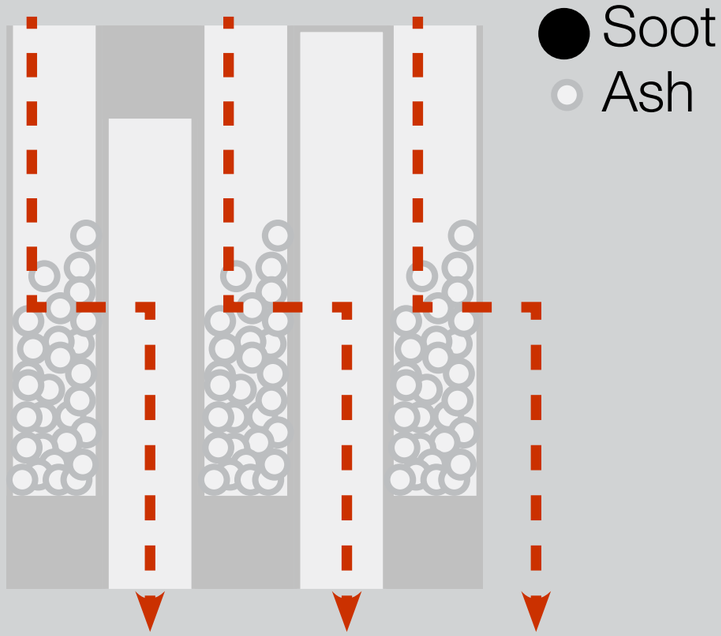


INSIDE THE DPF: HOW IT WORKS

The DPF is responsible for capturing particulate matter(soot and ash), burning off the soot and collecting ash. The process of burning the soot in the DPF is called regeneration, also referred to as a regen. To better understand this process of regeneration, lets look at an illustration of this as it happens in the DPF.

For more on the DPF watch this Cummins Emission Solutions video on YouTube

4. Ash accumulates in the filter over time until the DPF will need to be cleaned or replaced.



INSIDE THE DPF: SOOT VS ASH

Understanding the difference between soot and ash is important to understanding the regeneration process (regen). Both soot and ash are in the exhaust as they come into the DPF and are captured. Soot and ash are not the same thing. Click on the video to the right to see an illustration.

Soot	Ash
Partially burnt fuel	Burnt oil additives
Harmful gas that must be burnt off	Incombustible material
Burnt off completely by regeneration	Collects in the DPF over a long period of time
Higher amount than ash comes from engine	Lesser amount than soot comes from engine

TYPES OF REGENERATION

There are two types of regeneration: passive and active. Passive regeneration is the main type of regeneration in the DPF. However, the duty cycle of an engine will dictate how often each type of regen occurs in the DPF. Active and passive regens work together to make the best fuel economy and uptime for the engine. Click on the red button to see bullet points.

Passive regeneration

- Takes place only during the normal operation of the engine
- Happens naturally when the heat in the DPF is greater than 482°F/250°C
- Gas (NO2) from the DOC oxidizes (burn off) soot in the filter
- No additional fuel added

Active regeneration

- Happens when passive regen is not adequate to maintain low soot level in the DPF
- Takes place mainly during normal operation of the engine
- Sometimes requires engine to pull over for stationary/parked regen(dash lamp alerts)
- Triggered by Engine Control Module (ECM); additional fuel is dosed into the exhaust stream
- DOC converts fuel into heat which allows active regeneration to take place in the DPF.
- Additional fuel added

Next Bullet

INSIDE THE DPF: HOW IT WORKS

Test yourself with the examples below by selecting which type of regen is most likely to occur given the duty cycle of each truck.

Choose Active or Passive Below.

1. Typical line-haul fully loaded truck with steady operation on state highway

Active Regeneration

Passive Regeneration

2. Urban firetruck with stop and go duty cycle

Active Regeneration

Passive Regeneration

Genuine Cummins DPF vs. Non-Genuine DPF

INSIDE THE DPF: HOW IT WORKS

Passive Correct x

A typical line-haul fully loaded truck will have a low soot rate due to steady state highway operation and lots of exhaust heat for passive regen to work well. With this type of duty cycle, active regens likely are not needed as passive regens will be enough to keep DPF soot levels low.

Active Correct x

An urban bus, firetruck, garbage truck, or bobtail truck will have higher soot rates due to a stop & go duty cycle, and also have low exhaust temperatures. In this duty cycle, a passive regen may not be adequate, so an active regen will be required at some frequency. Generally, this still does not require operator input. Active regens will complete throughout the day, as needed. Sometimes, if the duty cycle is light enough, it may require the operator to stop and perform a non mission regen(parked/stationary regen) with the dash switch.

1. Typical line-haul fully loaded truck with steady operation on state highway

Active Regeneration

Passive Regeneration

2. Urban firetruck with stop and go duty cycle

Active Regeneration

Passive Regeneration

Genuine Cummins DPF vs. Non-Genuine DPF

OPTIMAL REGENS

The **Genuine Cummins DPF** has the optimum frequency of both active and passive regens. They have up to **2 to 4 times fewer regens** vs. non-genuine. This means customers will get 3 to 4% better fuel economy with a genuine DPF as well as consistent emissions compliance. Click “Next Tab” button below to see more information.

Wash Coat | **PGM** | **Optimal PGM Loading** | **Customer Benefits**

Washcoat: A chemical coating called **washcoat** is applied to the DPF substrate. It is a catalyst that helps with regeneration.

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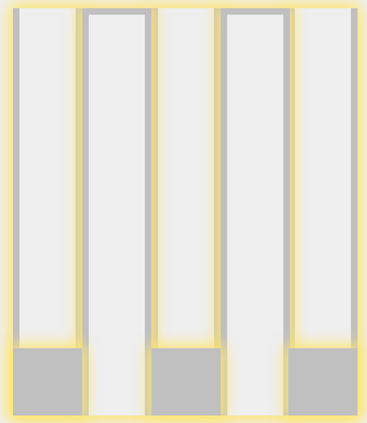
DPF Filter



Washcoat (PGM coating) on DPF Substrate

Genuine Cummins DPF vs. Non-Genuine DPF

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Wash Coat | **PGM** | **Optimal PGM Loading** | **Customer Benefits**

PGM: The washcoat is made up of expensive precious group metals (PGM) such as platinum and palladium. **Genuine Cummins DPFs** have much higher amounts of this in their washcoat than non-genuine DPFs, which means the **Genuine Cummins DPF** oxidizes soot better and has higher fuel economy.

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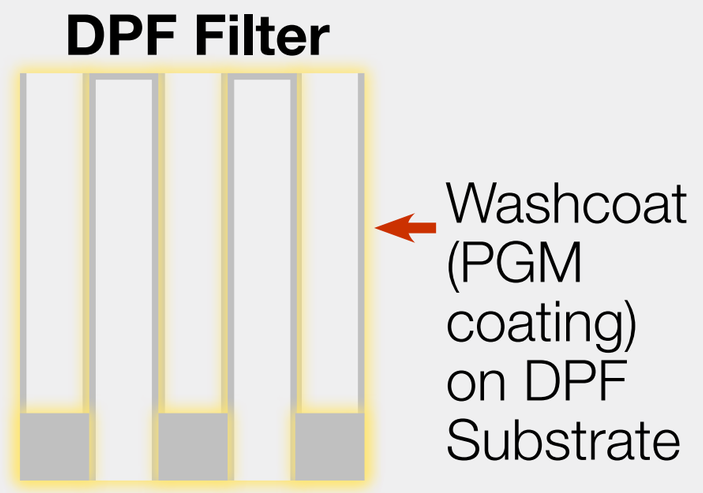

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Wash Coat | **PGM** | **Optimal PGM Loading** | **Customer Benefits**

Optimal PGM Loading: Without the proper combination of materials in the correct proportion, referred to as **Optimal PGM Loading**, in the **washcoat**, frequent regens could occur due to low efficiency of active/passive regeneration, causing excessive fuel consumption, higher backpressure and cracking of the DPF substrate due to a thermal event.

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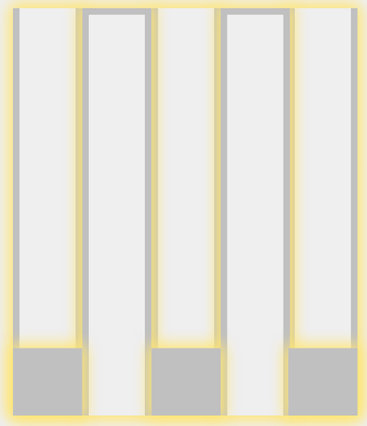
DPF Filter



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Wash Coat | **PGM** | **Optimal PGM Loading** | **Customer Benefits**

Customer Benefits from Optimal Regens:

- Optimal Fuel Economy
- Emissions Compliance
- Durability of the DPF

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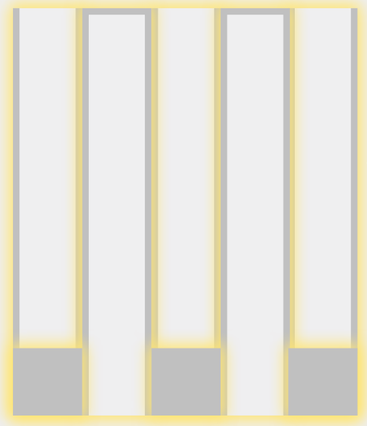
DPF Filter



Washcoat (PGM coating) on DPF Substrate

Genuine Cummins DPF vs. Non-Genuine DPF

HIGH ASH CAPACITY

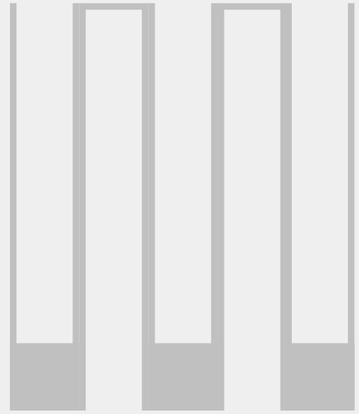
The **Genuine Cummins DPF** has a higher ash capacity than non-genuine DPFs, holding **up to 20% more ash**. This means a non-genuine DPF service interval is much shorter and you will start cleaning it much sooner and incurring costs associated with more cleanings than with a **Genuine Cummins DPF.** Click “Next Tab” button below to see more information.

Design | **Backpressure** | **Service Intervals** | **Customer Benefits**

Design: The substrate walls of the **Genuine Cummins DPF** are optimally designed with low wall thickness to hold a large amount of ash, while still maintaining lower backpressure.

Next Tab →

DPF Filter



← Optimally designed substrate walls that maintain lower back-pressure and higher ash capacity

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Design | **Backpressure** | Service Intervals | Customer Benefits

Backpressure: Excessive backpressure in an engine results in less fuel efficiency. An overfilled DPF leads to backpressure in the engine, as the exhaust cannot move easily through the DPF. The Genuine Cummins DPF has lower backpressure which means higher fuel efficiency for the engine.

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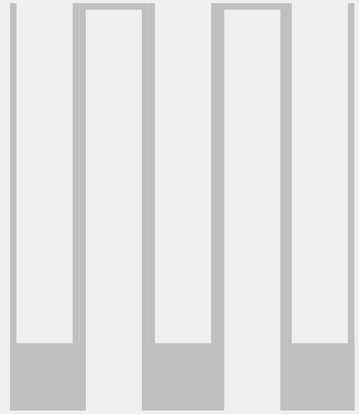
DPF Filter



Optimally designed substrate walls that maintain lower back-pressure and higher ash capacity

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Design | Backpressure | Service Intervals | Customer Benefits

Longer Service Intervals: The more ash a DPF can hold, the longer the service intervals are, meaning customers can go longer without having to clean or replace their DPF, which means cost savings$$$ and reduced downtime$$$. Competitors DPFs fill up faster. Cummins DPF takes longer to fill.

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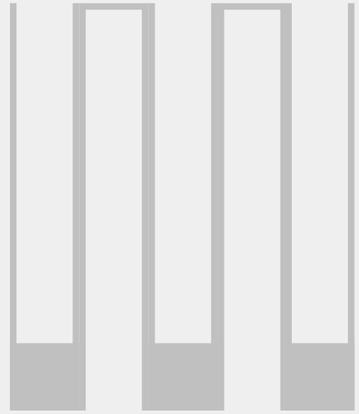
DPF Filter



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Design | Backpressure | Service Intervals | Customer Benefits

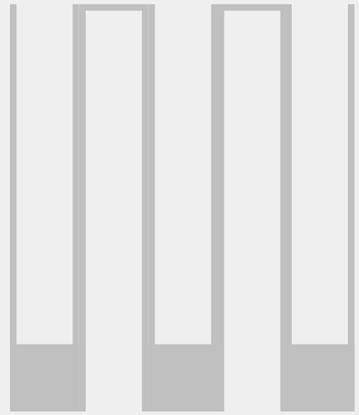
Customer Benefits from high ash capacity:

Optimal Fuel Economy

Longer Service Intervals

◄Previous Tab

DPF Filter



Optimally designed substrate walls that maintain lower back-pressure and higher ash capacity

Genuine Cummins DPF vs. Non-Genuine DPF

MECHANICAL AND THERMAL STRENGTH

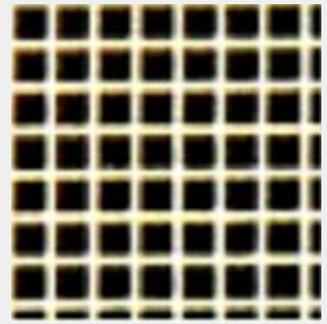
The **Genuine Cummins DPF** is made with **optimum material** making it up to **1.5 times more durable** than non-genuine DPFs. This is due to its mechanical and thermal robustness. This means a non-genuine DPF is prone to failing early and often, requiring costly replacements. Click “Next Tab” button below to see more information.

Failure Prevention | **Testing** | **Research** | **Customer Benefits**

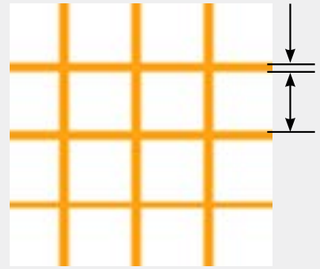
Failure Prevention: If the DPF substrate material is not mechanically and thermally strong, premature failures can occur due to frequent regens and thermal shocks (large and frequent changes in temperature) in the DPF.

Next Tab

Material is measured for strength and porosity



Cell Density



Wall Thickness

Genuine Cummins DPF vs. Non-Genuine DPF

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Failure Prevention | **Testing** | Research | Customer Benefits

Testing: The Genuine Cummins DPF is tested and designed to ensure it is thermally and mechanically strong and will last a long time. The porosity and strength of the material Cummins uses is what makes it mechanically and thermally robust, leading to higher fuel economy and a longer life of the product. Note: Even if a non-genuine competitor also uses the same type of material as Cummins, tests have shown that Cummins material is of a higher quality seen through strength and porosity of the material.

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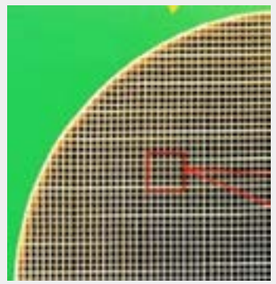
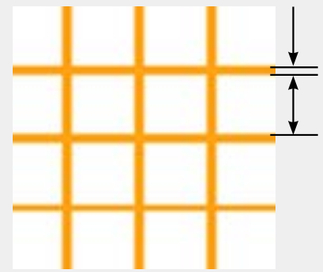
Material is measured for strength and porosity

Cell Density





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Failure Prevention | **Testing** | **Research** | **Customer Benefits**

Research: Materials for the substrate in the DPF are varied and evolving. Cummins uses the most technically advanced material for its DPFs, continuously chooses the highest quality material available and thoroughly tests its integrity and performance.

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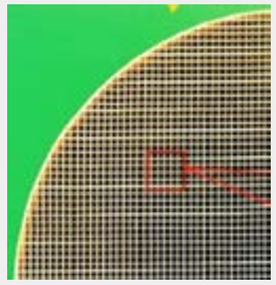
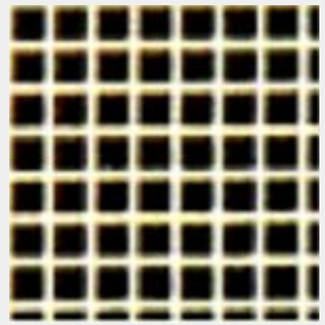
Material is measured for strength and porosity





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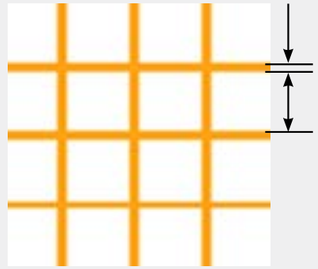

Wall Thickness

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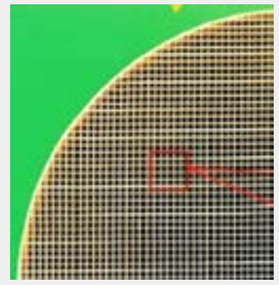
Failure Prevention | **Testing** | **Research** | **Customer Benefits**

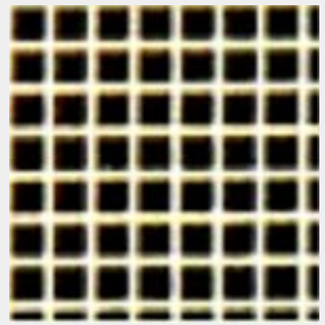
Customer Benefits from mechanical and thermal strength:

- Optimal Fuel Economy
- Long-Lasting Product

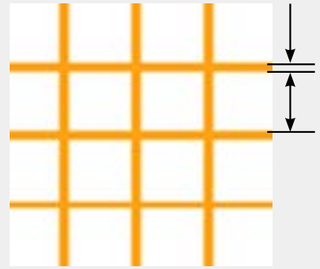
◄ Previous Tab

Material is measured for strength and porosity





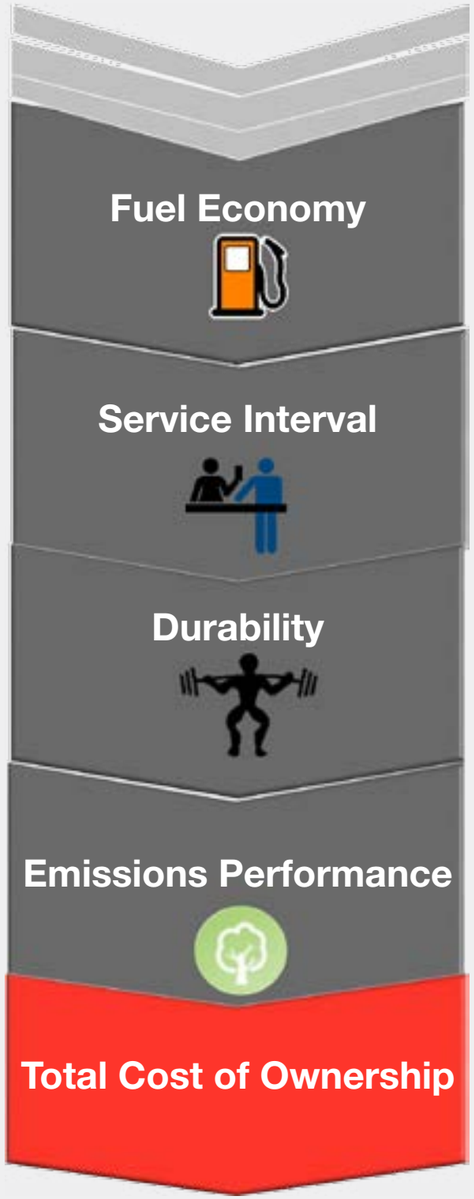
Cell Density



Wall Thickness

Genuine Cummins DPF vs. Non-Genuine DPF

THE GENUINE ADVANTAGE



Genuine Cummins DPF	Non-Genuine DPF
Up to 3-4% **better fuel economy**, translates to up to $4000* annual savings	**Worse fuel economy** than Genuine
Holds up to **20% more ash** than non-genuine leading to longer intervals	Holds **less ash** than Genuine leading to shorter service intervals
Up to 1.5 times **more durable**	**Less durable** than Genuine
100% Emissions Compliance	May not be emissions compliant
Lower Total Cost of Ownership (TCO) due to fuel economy, durability and emissions compliance	**Higher TCO** than Genuine

SELLING THE GENUINE DPF

Now that you have this information, how can you use it to help you sell parts? The goal of this training is to help you convey the value of a **Genuine Cummins DPF** to customers. All of these functional advantages lead to customer savings.

Here is a breakdown of the story:

- **High ash capacity**, **optimal regens** and the **mechanical and thermal strength** are vitally important to the quality, performance and durability of a DPF
- These qualities lead to a long-lasting product that saves on fuel, reduces downtime and maintenance costs, and is compliant with emissions regulations
- Customers **save money** over the long run by using the **Genuine Cummins DPF**

Now, let's try a role play customer interaction of a realistic question you might get from a customer considering buying a **Genuine Cummins DPF.**

Genuine Cummins DPF vs. Non-Genuine DPF

CUSTOMER INTERACTION SCENARIO

Customer: “Why should I buy a Genuine Cummins DPF since this other DPF (non-genuine) is cheaper?” Choose the best of the three answers.

Because Cummins is cool.

The non-genuine products are garbage.

The quality of the *Genuine Cummins DPF* comes from the functional design advantages that will give you long-term savings in fuel economy and maintenance costs.

Correct X

Give your answer in the context of what Cummins is providing customers, not by trashing competitors or giving answers with no logic. Explain the functional advantages of the Genuine Cummins DPF to customers. Our competitors may be cheaper up front but Cummins will save you over time by costing you less downtime due to a DPF that has a higher ash capacity and lower back pressure, etc. Customers need to know this, and now you have the tools to show them how Cummins does this.

SUMMARY

The **Genuine Cummins DPF** is designed by Cummins specifically to function within the entire Cummins engine system. The performance requirements of an aftertreatment system make it vital to have a highly efficient DPF. The **Genuine Cummins DPF** possesses the functional advantage that gives customers fuel and maintenance cost savings:

- The difference in a Genuine and Non-Genuine DPF is that the **Genuine Cummins DPF** provides long term value to customers.
- High ash capacity in the **Genuine Cummins DPF** leads to longer service intervals and lower backpressure for the engine.
- Optimal regens of the **Genuine Cummins DPF** leads to fuel cost savings and emissions compliance.
- The mechanical and thermal strength of the **Genuine Cummins DPF** leads to a long-lasting product.

Now, lets test your learning with a quiz!

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PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

Summary

CONGRATULATIONS!

You have completed **Parts Pro 69.**

Now let's test your knowledge with a quiz.

QUIZ

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PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

How are customers taking risks by buying non-genuine products?

A. Lack of quality in non-genuine products

B. Missing out on Cummins continuous improvements

C. Missing out on savings

D. All of the above.

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

The DPF is responsible for:

A. Removing PM

B. Burning fuel

C. Dosing fluid

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

True or False: Soot and ash are not the same thing.

A. True

B. False

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PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

When can an active regen happen?:

A. During normal operation of the engine

B. When the vehicle is parked or stationary

C. When the engine is off

D. Both A and B

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

Optimized total cost of ownership (TCO) for customers can be measured in:

A. Fuel Economy Savings

B. Maintenance Cost Savings

C. Emissions compliance

D. All of the above

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

The higher ash capacity of the Genuine Cummins DPF leads to:

A. A faster engine

B. More fuel costs

C. Longer service Intervals and lower backpressure for an engine

D. Lack of strength

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

The washcoat (PGM coating) on the DPF substrate is a catalyst that helps to:

A. Lubricate the DPF

B. Store Ash

C. Maximize soot oxidation

D. Oxidize Ash

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PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

When comparing the Genuine Cummins DPF washcoat to the washcoat of a non-genuine DPF, the Genuine Cummins DPF has higher amounts of this, leading to optimal regens:

A. Soot and Ash

B. Oil

C. Honeycomb Substrate

D. Precious Group Metals (PGM)

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Genuine Cummins DPF vs. Non-Genuine DPF

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

When comparing a Genuine Cummins DPF to a non-genuine DPF, which of the following advantages of the Cummins DPF should be explained to customers:

A. Long-term savings over the long run

B. High-ash capacity and optimal regens

C. Mechanical and thermal strength

D. All of the above

QUIZ

Get all questions correct and receive a Cummins branded tape measure. Prizes shipped to North America Only

If a DPF substrate is not mechanically and thermally strong, premature failure can occur due to:

A. Frequent Regens and Thermal Shocks

B. Oil leakage

C. Excessive fuel waste

D. Both A and B

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PARTS PROFESSIONAL

Genuine Cummins DPF vs. Non-Genuine DPF

CONGRATULATIONS!

You have completed **Parts Pro 69.**