

## **Description of a Diesel Oxidation Catalyst**

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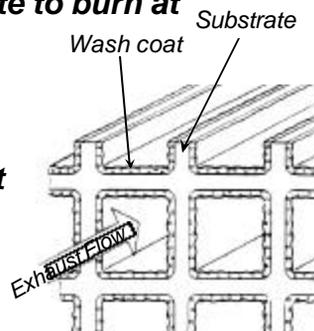
- **DOC's are typically flow through designs**
- **The design is composed of the following elements**
  - **Catalyst wash coat - Base Metal Oxide and Precious Metal**
  - **Substrate - ceramic or metallic**
  - **Canning - separately as a converter or in the muffler**

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## **How the DOC Functions**

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- **The catalyst interacts with the exhaust as it passes through the converter**
- **The Catalyst causes the particulate to burn at normal exhaust temperatures.**
- **The DOC burns the gaseous HC and CO emissions, and the lube oil, unburned fuel and carbon soot of the TPM**



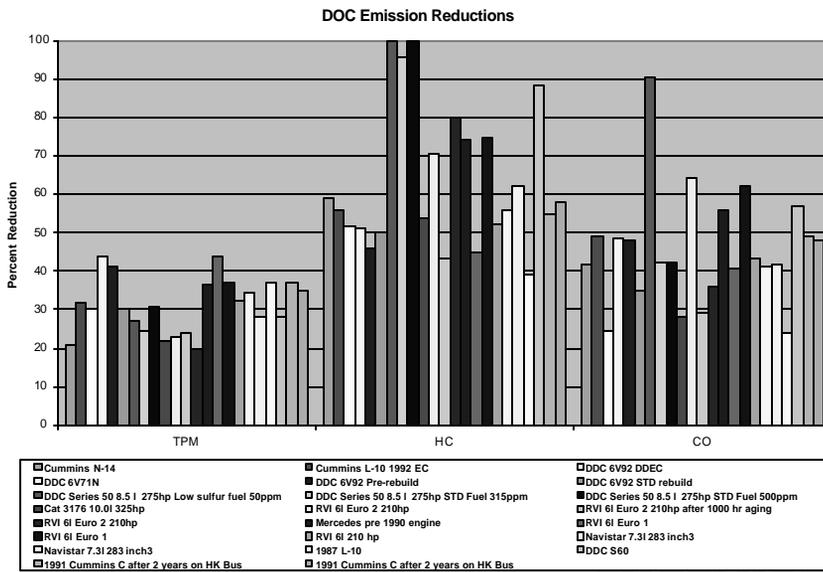
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## Typical DOC Performance

- **Total Particulate Matter Reduction of 25% to 50%**
- **Hydrocarbon reduction of more than 50%**
- **Carbon Monoxide reduction of more than 40%**

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## DOC Technology Diesel Emissions



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## **DOC Field Performance**

Location	Vehicle	Engine	Percent Reduction				
			CO	NOx	HC	TPM	Smoke
Mexico City	Truck	Perkins	89.6	0	81.1	46	NA
Mexico City	Truck	Mercedes	72.1	0	74.8	28.8	NA
Hong Kong	Bus	Gardner	NA	NA	NA	38	35
USA	Truck	Cummins	38.7	0	18.5	23.5	NA
USA	Truck	Caterpillar	38.1	0	65.6	44	NA
USA	Bus	DDC	22.7	0	34.9	24.5	NA
USA	Bus	Cummins	48	0	54	32	NA
USA	Dozer	Caterpillar	NA	NA	NA	26	NA
France	Bus	RVI	22	0	27	52	NA
Average			47.31		50.84	34.98	

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## **Conclusions**

- If ARB wants some particulate reduction for all vehicles a 30% minimum is to high
- A properly sized DOC can obtain 25% TPM reduction on diesel engines
- The lower the sulfur in the fuel the greater the ability to of the DOC to reduce TPM emissions
- This technology is proven and available for all on and off road diesel engine applications

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