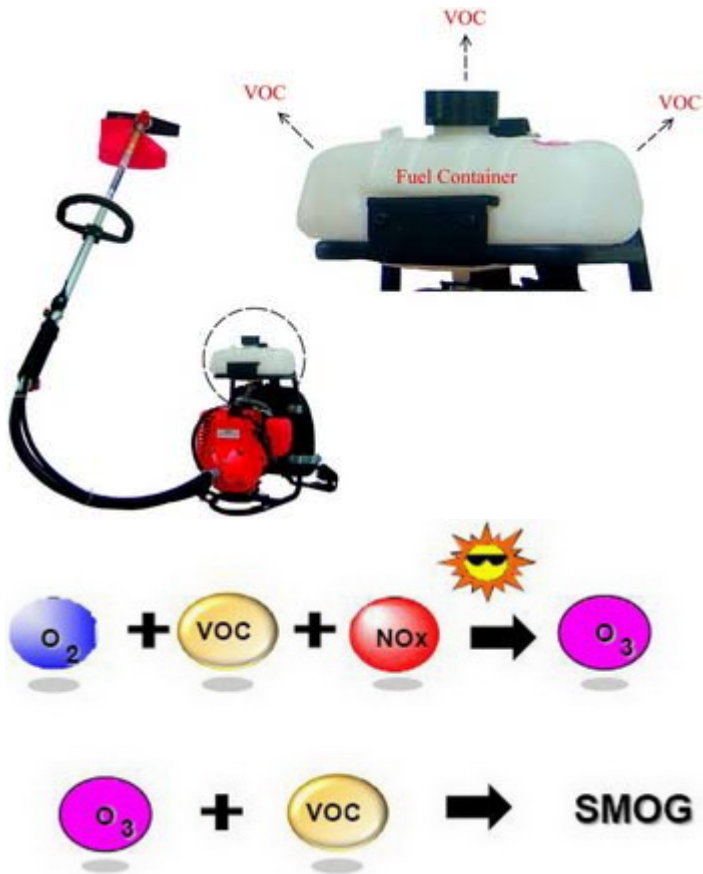


## High Barrier Performance Nylon Series

Lawn mowers and other gas tanks are usually made of polymer materials. The molecular structures of polymer materials are similar to the structure of gasoline, which are the hydrocarbons volatile organic compounds (VOC). It will easily volatile into the atmosphere through the tank wall and oil pipeline. VOC emission in the atmosphere will not only result in waste of energy, but also hazard people's life after going through the following steps



## USA Federal Regulations on the Hydrocarbon VOC Emission

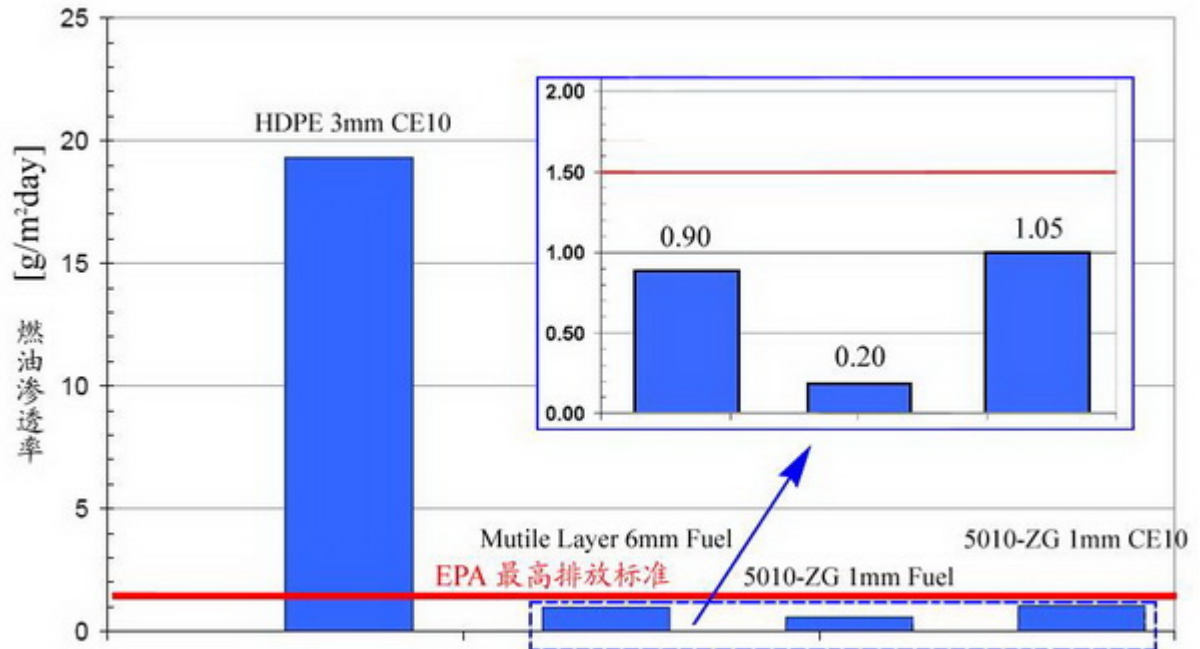
EPA: In 2008, emission of all the mountain bikes, Jet ski in USA: 1.5g/day.m2

EPA: In 2010, emission of all the small gasoline tanks in USA: 1.5g/day.m2

**Solution:** High Barrier Performance Nylon 5010-ZG Series Products



### Fuel Permeation Rate :



**Experimental fuel :** Fuel : methylbenzene/isooctane =50/50; CE10 : methylbenzene/isooctane/ethanol =45/45/10;

**figure in the up shown :** HDPE is not able to meet the emission standards of EPA, but the 5010-ZG materials satisfy all requirements;

### Economy of the Materials :

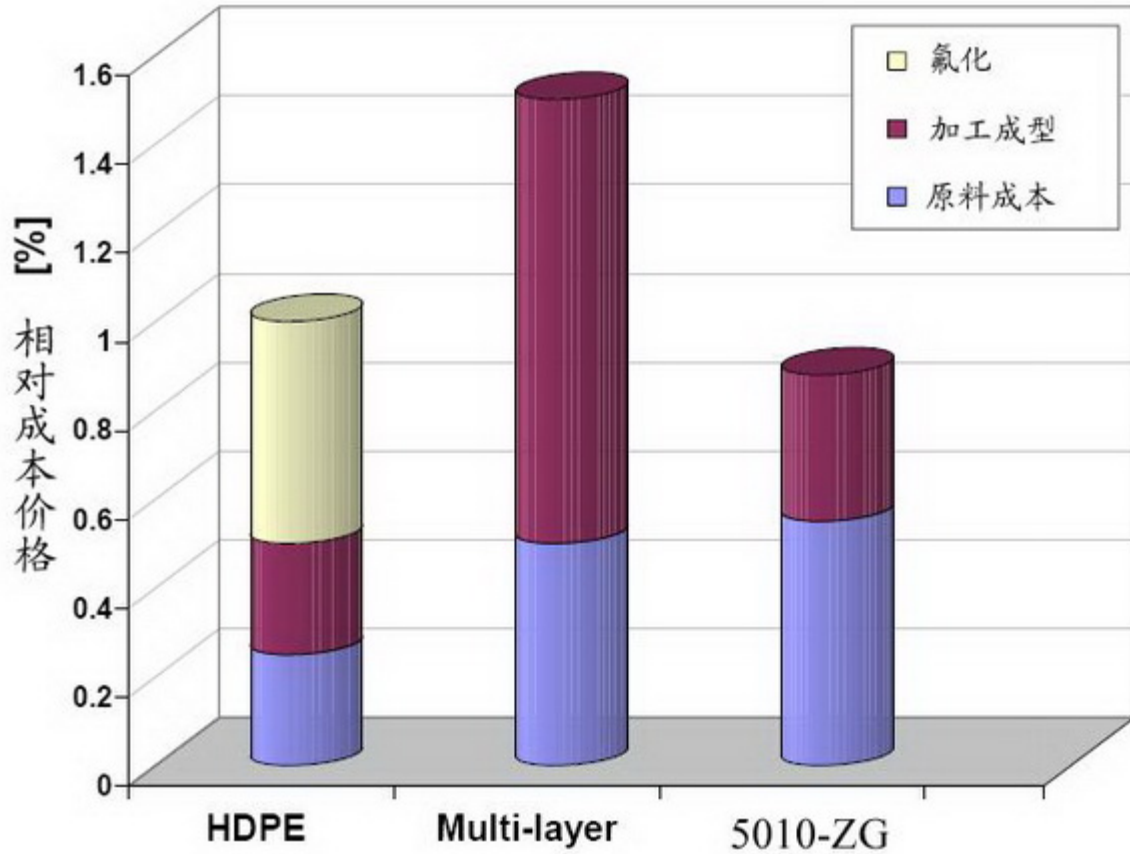


figure in the up shown: The cost of HDPE raw materials and production are low, but the cost roars after fluorination. Cost for molding process of multi-layer co-extruded fuel tank materials is high due to the expensive equipment and low productivity. Although raw materials of 5010-ZG is relatively high, the comprehensive cost of it is lower than the other two materials thanks to the simple single-layer extrusion equipment and high productivity.

#### 5010-ZG

Property	Standard	Condition	Unit	Value
<b>Physical properties</b>				
Density	ASTM D792	23°C	g/cm <sup>3</sup>	1.1
Moisture absorption	ASTM D570	23°C;50%RH	%	0.4
Filling rate		800°C/2h	%	3
<b>Mechanical properties</b>				
Tensile strength	ASTM D638	50mm/min	Mpa	50
Elongation at break	ASTM D638	50mm/min	%	65
Flexural strength	ASTM D790	3mm/min	Mpa	70

Flexural modulus	ASTM D790	3mm/min	Mpa	2000
Izod Impact strength	ASTM D256		J/m	200
<b>Thermal properties</b>				
Melting point	DSC	23°C	°C	233
Coefficient of thermal expansion	ASTM D696	-20~150°C	µm/m°C	-
HDT	ASTM D648	1.82Mpa	°C	65
Flammability	UL94	1.6mm		HB
<b>Electrical properties</b>				
Dielectric constant	IEC 60250	1MHz		
Comparative tracking index	IEC 60112		V	600
Volume resistivity	IEC 60093	23°C	ohm.com	>1013

Note: Data provided in this table only for reference; Products includes injection grade and blow molding grade;

#### 5010-ZG-ST

Property	Standard	Condition	Unit	Value
<b>Physical properties</b>				
Density	ASTM D792	23°C	g/cm3	1.06
Moisture absorption	ASTM D570	23°C;50%RH	%	0.4
Filling rate		800°C/2h	%	3
<b>Mechanical properties</b>				
Tensile strength	ASTM D638	50mm/min	Mpa	45
Elongation at break	ASTM D638	50mm/min	%	>80
Flexural strength	ASTM D790	3mm/min	Mpa	55
Flexural modulus	ASTM D790	3mm/min	Mpa	1600
Izod Impact strength	ASTM D256		J/m	200
<b>Thermal properties</b>				
Melting point	DSC	23°C	°C	233
Coefficient of thermal expansion	ASTM D696	-20~150°C	µm/m°C	-
HDT	ASTM D648	1.82Mpa	°C	65
Flammability	UL94	1.6mm		HB
<b>Electrical properties</b>				
Dielectric constant	IEC 60250	1MHz		
Comparative tracking index	IEC 60112		V	600

Volume resistivity	IEC 60093	23°C	ohm.com	>10 <sup>13</sup>
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Note: Data provided in this table only for reference; Products includes injection grade and blow molding grade

This product is suitable for the fuel tank of lawn mowers, snowmobiles, beach motors, small generators and other equipment. It is suitable for the high barrier performance demanding application such as pesticide bottles; oil pumps, fuel conduits etc.

