



**Xp3W**

**Winter Fuels,  
Problems and Solutions**

# *What are diesel fuels*

- **Diesel fuel is produced by blending different hydrocarbons (paraffinic, aromatic and olefins)**
- **The proportion of different components in the finished blend will be determined by the characteristics the producer wants to meet. Such as: cold properties, distillation, viscosity, cetane, and other requirements**

# Sample of different Blends

## LABORATORY ANALYSES OF FUELS USED IN Xp3W-XI TESTING

L A B O R A T O R Y	C O N T R O L					N U M B E R S			
	# 24070	# 24071	# 24072	# 24073	# 24126	# 24176	# 24200	# 24288	# 24289
<b>Lab Test Parameter</b>									
Cloud Point (F)	5	5	7	0	1	3	5	1	3
Pour Point (F)	-12	-8	-10	-20	-12	-18	-10	-8	-12
CFPP (F) (base)	5	5	7	0	1	3	5	1	3
Cetane Index	41.89	44.66	44.59	39.29	42.63	42.72	43.9	42.32	40.1
Cetane Number (base)	42.4	43.5	44.3	41.6	45.1	44.3	42.3	39.2	38.7
Flash Point (F)	188	190	178	196	182	194	183	188	184
Carbon Residue	0.035	0.032	0.046	0.025	0.045	0.036	0.042	0.052	0.035
% Sulfur	0.049	0.043	0.04	0.049	0.044	0.046	0.045	0.045	0.046
Distillation (F)									
IBP	370	385	384	374	393	367	383	382	368
10%	404	416	415	413	422	410	424	421	420
20%	439	448	444	441	450	440	458	451	458
30%	463	471	472	463	473	468	476	478	482
40%	484	492	494	485	491	489	501	499	501
50%	504	512	513	505	512	509	516	517	523
60%	525	533	533	525	530	528	534	537	543
70%	548	553	553	547	550	548	554	555	563
80%	575	576	578	573	574	572	575	578	586
90%	605	604	610	607	602	600	602	607	614
EP	668	665	670	682	665	663	664	670	677
SUS Viscosity	35.04	35.49	35.36	35.12	35.5	35.08	35.57	35.76	36.38
API Gravity @ 60F	32.9	33.2	33.7	31.1	32.6	33.1	33.1	32.3	30.8
% Water (KF)	0.007	0.006	0.009	0.008	0.007	0.007	0.007	0.006	0.008
% Sediment	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
300 Degree Stability									
Blotter Before	2	2	1	2	1	1	1	1	1
Blotter After	2	2	3	2	3	3	3	2	2
Microbial CFU/ML	<100	<100	<100	<100	<100	<100	<100	<100	<100
Density	0.8592	0.8576	0.855	0.8687	0.8608	0.8581	0.8581	0.8623	0.8703

# *Why Fuel Stops Flowing*

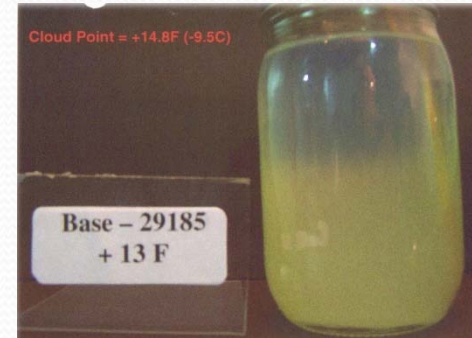
**When diesel fuel is cooled, the less soluble, higher molecular weight, normal paraffins start to emerge from the solution as wax crystals.**

**These relatively large platelet crystals have a strong affinity to reach one another and readily interlock to form large crystal agglomerates.**

**If fuel is cooled further, more wax will emerge from the solution until there is sufficient wax to form a structure, which will initially plug the filters and finally prevent the fuel from flowing.**

*When diesel fuel is cooled,  
it becomes less soluble:*

- 9.5°C                    →  
Cloud Point



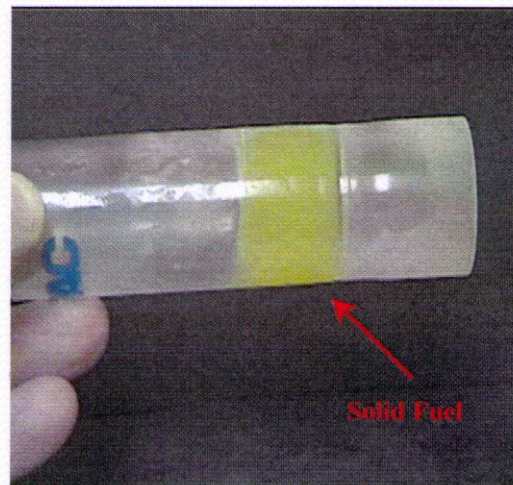
- 17.2°C                    →  
CFPP (clog filter point)



- 22.2°C                    →  
PP (pour point)



**This will create operating difficulties by impeding flow through lines and filters. Engines may stall after a few minutes or even fail to start due to fuel starvation.**



**Fuel Pour Point Reached (Solid Fuel)**

Oil companies are using different solutions to “winterize” diesel fuels.

Using the previous chart of the tested fuels, we can appreciate different solutions to the same problem.

**LABORATORY ANALYSES OF FUELS USED IN Xp3W-Xt TESTING**

LABORATORY	CONTROL NUMBERS								
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Lab Test Parameter									
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Pour Point (F)	-12	-8	-10	-20	-12	-18	-10	-8	-12
CFPP (F) (base)	5	5	7	0	1	3	5	1	3
Cetane Index	41.89	44.66	44.59	39.29	42.63	42.72	43.9	42.32	40.1
Cetane Number (base)	42.4	43.5	44.3	41.6	45.1	44.3	42.3	39.2	38.7
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Carbon Residue	0.035	0.032	0.046	0.025	0.045	0.036	0.042	0.052	0.035
% Sulfur	0.049	0.043	0.04	0.049	0.044	0.046	0.045	0.045	0.046

# ***Xp3 W Cold Flow Improver Additive***

**Xp Lab, Inc.'s Cold Flow Improver Additive is engineered with the latest advances in polymer technology.**

**Our proprietary production process was created to energize the polymer at the molecular level.**



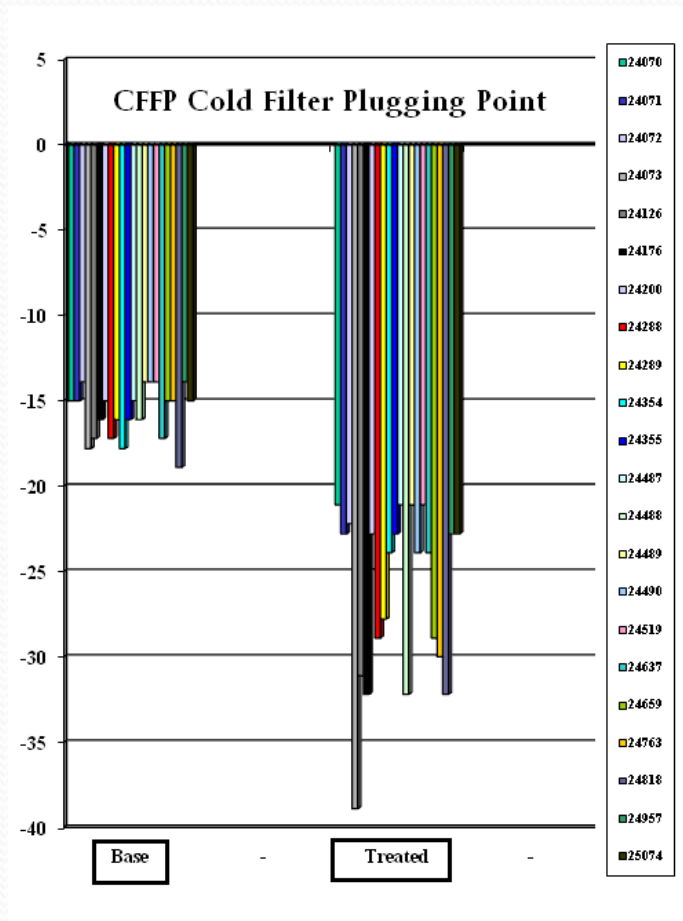
**The chemical structure of the Xp3W Additive, permits maximum polymer distribution in the treated distillate fuel for a better combination of polymer with the paraffin content.**

**Accordingly, less active polymer is required to modify the solidified paraffin crystals and reduce the fuel's natural flow point and operability temperature.**

# *Why Xp3W is Better*

- Xp3W incorporates a combination of the newest polymeric chemistry with Xp Lab, Inc.'s proprietary blending capabilities.
- Xp3W is unique in its composition and chemical content, and is not available from any other additive company anywhere in the world.

# 22 Typical Distillate USA Winter Fuels Treated with Xp3W (Winter) 1:3333



# Other tests

This test shows the “pour point” improvements on YPF winter diesel used at the South Pole.

## INFORME DE ENSAYO.

Tipo de informe: **UNICO** N° de trabajo: **OT 82-60255** N° INTI-Quimica: **Q 36709**  
Fecha de informe: **01/10/07** Página: **1 de 2**  
Aclaraciones: **No aplicable**  
Cliente:  
Domicilio: **Magariños Cervantes 4660 (C1407MLB) – Capital Federal.**

**OBJETIVO:** Determinación de punto de escurrimiento y punto de enturbiamiento.

**MATERIAL ENTREGADO y FECHA DE RECEPCIÓN:** Cuatro muestras identificadas como "A) Muestra 0 (Cero): Muestra de gasoil YPF sin aditivos", "B) Muestra 2 (Dos): Muestra de gasoil YPF con aditivos tipo 2", "C) Muestra 4 (Cuatro): Muestra de gasoil YPF con aditivos tipo 4" y "D) Muestra 6 (Seis): Muestra de gasoil YPF con aditivos tipo 6". Fecha de recepción 11/09/07.

### TRABAJOS REALIZADOS:

#### Metodología Empleada:

- Punto de Escurrimiento ASTM D 97-06
- Punto de Enturbiamiento ASTM D 2500-05

#### Resultados Obtenidos:

- Punto de Escurrimiento

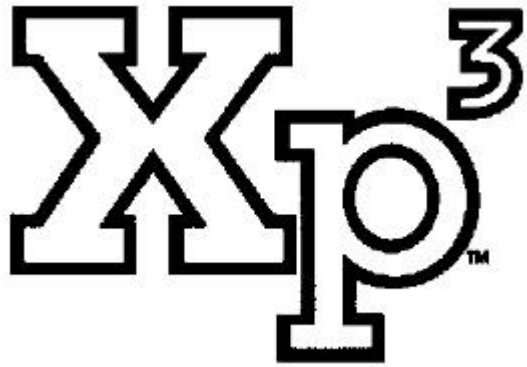
Muestra	Punto de Escurrimiento (°C)	Fecha de Análisis
A) Muestra 0 (Cero): Muestra de gasoil YPF sin aditivos	-15.0	25/09/07
B) Muestra 2 (Dos): Muestra de gasoil YPF con aditivos tipo 2	-45.0	28/09/07
C) Muestra 4 (Cuatro): Muestra de gasoil YPF con aditivos tipo 4	-45.0	28/09/07
D) Muestra 6 (Seis): Muestra de gasoil YPF con aditivos tipo 6	-51.0	01/10/07

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- ***Xp3W* was designed to reduce the fuel Pour Point (PP), and Cloud Point (CFPP)**
- ***Xp3W*'s exclusive formula reduces the fuel Pour Point from  $-10^{\circ}\text{C}$  up to  $-50^{\circ}\text{C}$**
- ***Xp3W* has all the additional advantages that *Xp3* diesel has**



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