545OneDrive2_00001152

85921a76-7c08-4b03-a29e-2e08c56d2922

0.55082	0.96962	0.43458	-0.04384	-0.06530	50%
-0.04337	0.12602	0.80686	0.09977	-0.04166	70%
-0.12182	0.01227	-0.00684	1.24176	-0.35056	90%
0.07203	-0.01567	-0.00607	-0.18901	1.40297	100%

Volume of ethanol in the blend, %v: **15.0**

E15 Blend:	**26B**

Based on 12C

	Delta, °F
T10	6.70936
T50	-50.95203

PROPERTY	UNITS	METHOD	Base Fuel RESULTS	E15 RESULTS
Specific Grav	-	D4052	0.7529	0.7590
IBP	°F	D86	90.7	-
T10			111.9	118.6
T30			144.7	-
T50			202.8	151.8
T70			280.4	-
T90			364.3	364.3
FBP			380.7	380.7
DVPE	psi	D5191	8.06	9.10
Aromatics	vol. %	D1319	41.53	34.98
Olefins	vol. %	D1319	10.3	8.66
Benzene	vol. %	D3606	0.26	0.22
S	mg/kg	D5453	27	23.0
RON	-	D2699	98.9	106.4
MON	-	D2700	87.1	91.5
(R + M)/2	-	Calc.	93.0	99.0

E15 T10 and T50 Estimator

Inputs:		
BT10	58.7	
BT50	176.7	
BT90	366	
X		15.0
Deltas:		
DT10	32.5	
DT50	-50.4	
Outputs:		
FT10	91.2	
FT50	126.3	
FT90	366	

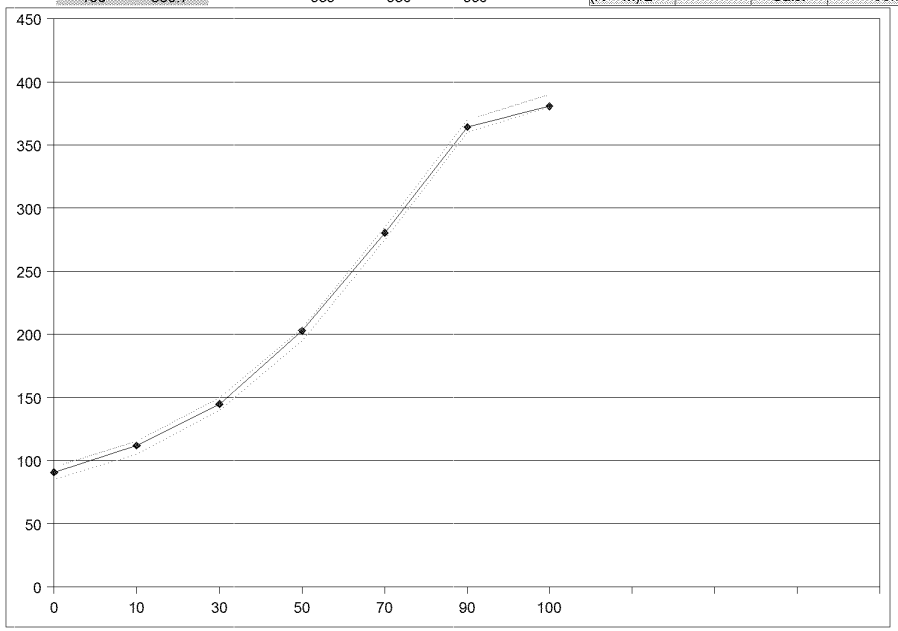
Blendstock	% blend
TK41	13.8%
TK2	0.0%
TK3	0.0%
TK4	0.0%
TK5	10.3%
TK6	7.5%
TK24	10.0%
TK7	0.0%
TK11	0.0%
TK8	0.0%
TK10	0.0%
TK12	0.0%
TK14	0.0%
TK15	0.0%
TK16	0.0%
TK17	0.0%
TK18	0.0%
TK19	0.0%
TK20	14.1%
TK21	0.0%
TK23	2.3%
TK25	10.1%
TK28	26.0%
TK36	0.0%
TK37	5.9%
Sum	100.0%
Check	100.0%

BASE FUEL

Run

%off	D86 Blend
0	90.7
10	111.9
30	144.7
50	202.8
70	280.4
90	364.3
100	380.7

Target	-5 - Limit	5 + Limit
90	85	95
110	105	115
145	140	150
200	195	205
280	275	285
365	360	370
385	380	390



E15 Blend Composition	
Blendstock	% blend
TK41	11.6%
TK2	0.0%
TK3	0.0%
TK4	0.0%
TK5	8.7%
TK6	6.3%
TK24	8.4%
TK7	0.0%
TK11	**15.8%**
TK8	0.0%
TK10	0.0%
TK12	0.0%
TK14	0.0%
TK15	0.0%
TK16	0.0%
TK17	0.0%
TK18	0.0%
TK19	0.0%
TK20	11.9%
TK21	0.0%
TK23	1.9%
TK25	8.5%
TK28	21.9%
TK36	0.0%
TK37	5.0%
Sum	100.0%

Blend RVP estimates based on SAE Paper 2007-01-4006

$$K_{ethanol} = 46.321*(V_{ethanol})^{-0.9422}$$

$$K_{gasoline} = -7*10^{-7}*(V_{ethanol})^3 + 0.0002*(V_{ethanol})^2 + 0.0024*V_{ethanol} + 1$$

$$RVP_{blend} = K_{gasoline}*(V_{gasoline}/100)*RVP_{gasoline} + K_{ethanol}*(V_{ethanol}/100)*2.4$$

Where:

$K_{ethanol}$ - apparent activity coefficient of ethanol

$K_{gasoline}$ - apparent activity coefficient of gasoline

$V_{ethanol}$ - volume percent of ethanol in blend

$V_{gasoline}$ - volume percent of gasoline in blend

$RVP_{ethanol}$ - RVP of ethanol, psi (2.4 psi at 100 °F)

$RVP_{gasoline}$ - RVP of gasoline, psi

RVP_{blend} - RVP of blend, psi

For blends other than E10, the volume percent of ethanol in gasoline must be changed in cell Z18