Performance you can rely on.

Worldwide Winter Diesel Fuel Quality Survey 2014

Infineum.com

Infineum

Menu

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014

Infineum Regional Sales Offices

Europe/Middle East/Africa
PO Box 1
Milton Hill
Abingdon
Oxfordshire OX13 6BB
United Kingdom
Tel: + (44) 1235 54 9501
Fax: + (44) 1235 54 9523

Americas
1900 East Linden Avenue
PO Box 717
Linden NJ 07036
USA
Tel: + (1) 800 654 1233
Fax: + (1) 908 474 6117

Asia Pacific
31 International Business Park
Creative Resource #04-08
Singapore 609921
Tel: + (65) 6899 1661
Fax: + (65) 6895 6900

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 - Contents

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 - Introduction

The Infineum Worldwide Winter Diesel Fuel Quality Survey aims to provide the petroleum refining and distribution industry with an overview of the quality of automotive diesel in the marketplace, allowing tracking of international trends. To achieve this purpose, the Survey needs to cover as much of the globe as possible. For the winter 2014 Survey, some 350 samples were collected in 51 countries around the world. The majority of samples were collected during January and February, deep winter months in the northern hemisphere. In southern hemisphere countries, sampling was undertaken in mid-2013, when true winter grade samples could be obtained, enabling the Survey to be released earlier than usual.

Samples need to be representative of the diesel purchased by the average consumer. As a general principle, Infineum tries to get one sample that represents the production from each refinery or region in a given country. To minimise the possibility of taking multiple samples from a single refinery, knowledge of local exchange agreements and distribution systems is used to select where each sample is collected. For the larger diesel consuming countries, this procedure results in samples that represent a reasonable average of the overall quality. However, for smaller countries or specific producers, spot sampling over a short period of time will effectively only provide a snapshot of production quality, with data derived from only one or two samples.

Analysis

The analyses applied to each sample are those we consider to be of most interest to the diesel producers, marketers, distributors and consumers. They cover areas of national specification, exchange specification and performance parameters.

A degree of standardisation has been applied to enable diesel from all countries to be compared and the data analysed as a single set. Standardisation, however, means that not all national specifications are reported. Wherever possible, industry standard test methods have been applied and in-house test methods avoided. This has been done so that the data published here most accurately reflect the results which could or would be generated by organisations within the petroleum industry.

When considering our data, in particular when comparing the various test results with the national specifications, it should be noted that a number of the tests have quite wide reproducibility bands, and very little repeat testing has been conducted to determine compliance or otherwise with specifications.

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 - Introduction

Test methods

The majority of testing was carried out at quality accredited laboratories in the UK, China and Japan using the test methods below.

Density	IP365 / JIS K 2249
Kinematic Viscosity	ASTM D445 / JIS K 2283
Sulphur Content	ASTM D2622 / JIS K 2541-6
Cetane Number	IP498
Cetane Index	ASTM D4737 / ASTM D976 / JIS K 2280 -5
Pour Point	ASTM D5950 / JIS K 2269
Distillation	ASTM D86 / JIS K 2254
Cloud Point	ASTM D5772 / JIS K 2269
CFPP	IP309 / JIS K 2288
HFRR	ISO 12156-1 / JPI-5S-50-98
Wax Content	Differential Scanning Calorimetry
LTFT	ASTM D4539
FAME Content	EN 14078
Rancimat	EN 15751 (mod)

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – Fast facts

The data contained in the 2014 Infineum Winter Diesel Fuel Quality Survey (WDFQS) is a snapshot of the quality of diesel fuel collected from retail stations from around the world in the deep winter months. Infineum has been tracking the trends in diesel fuel quality in this biennial Survey since 1985*, giving Infineum a comprehensive picture of the global changes in fuel quality.

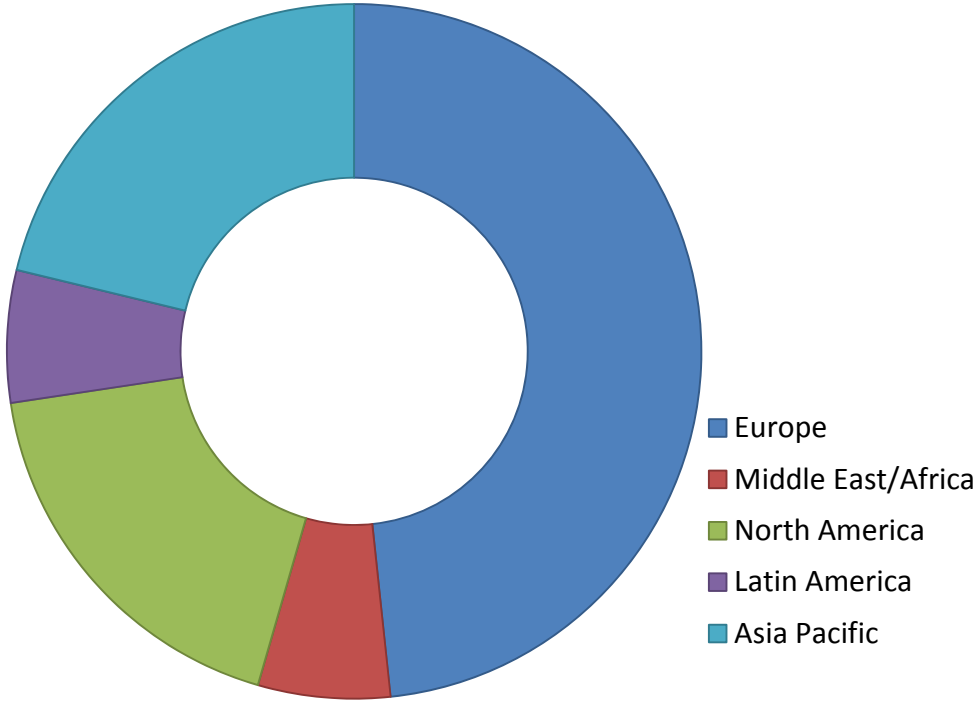
350 Samples collected

51 Countries

66 Parameters measured

10,116 Data points analysed

Regional sample collection

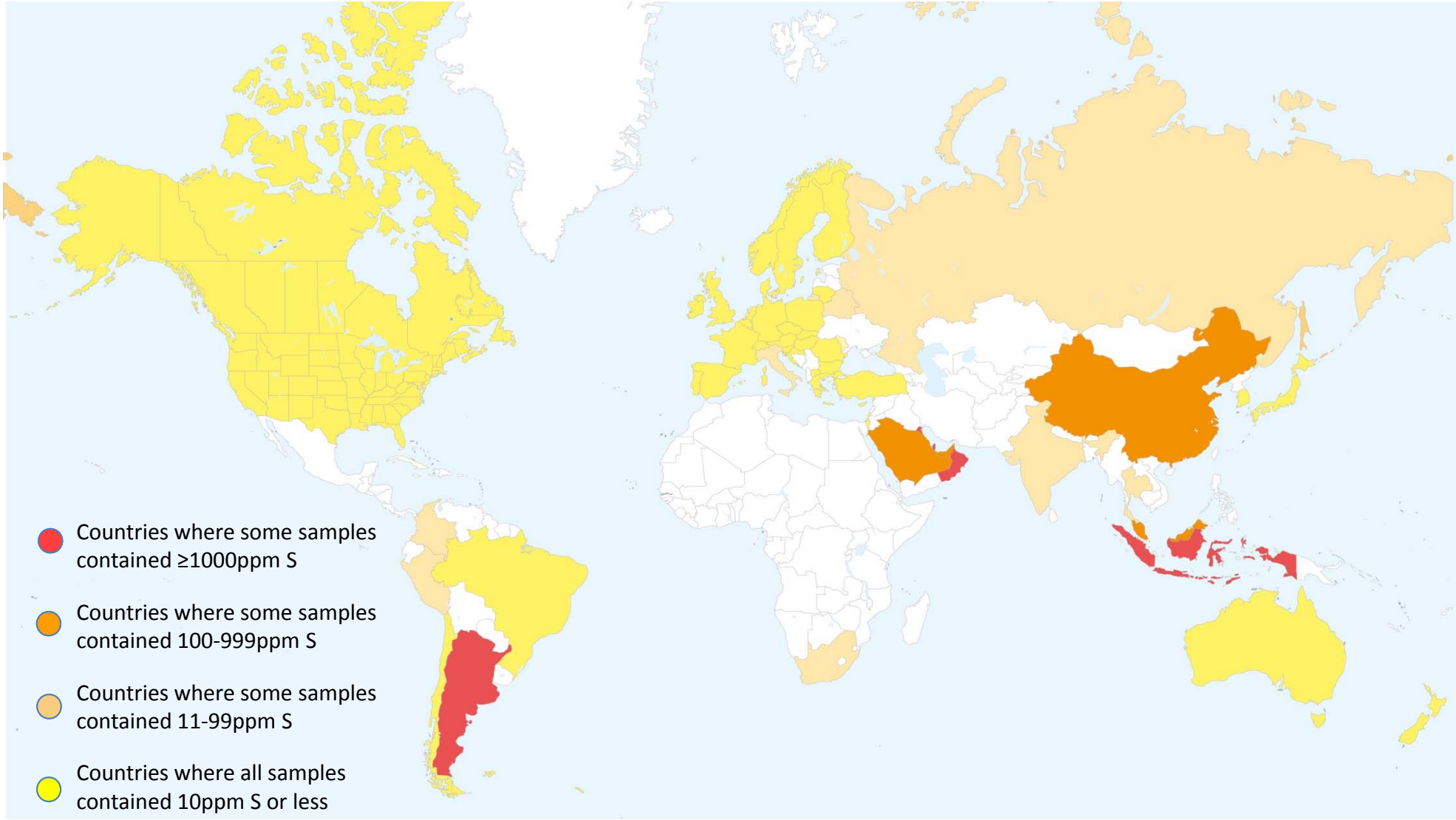


* Prior to 1999, work was undertaken by Paramins (the additives division of Exxon Chemical Company), which together with Shell Additives (a division of The Shell Petroleum Company Ltd and Shell Oil Company) formed the Infineum joint venture.

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – Key findings

Sulphur

Significant drop in sulphur in some Latin American countries, Saudi Arabia and South Africa. Some countries still have fuels containing well over 1,000 ppm S.

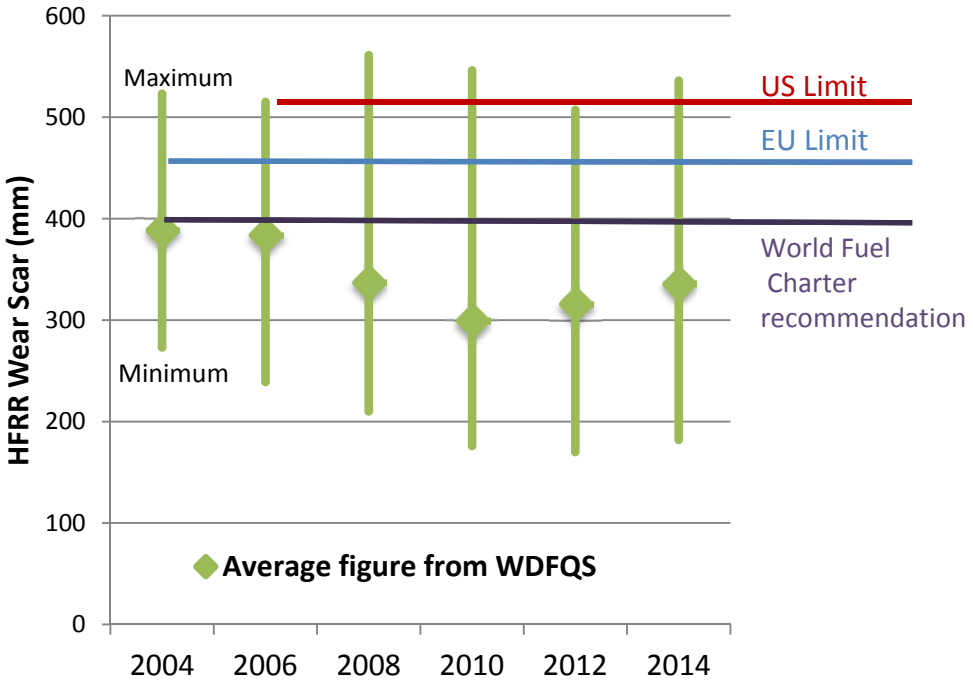


Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – Key findings

Lubricity

The downward trend in global average wear scar diameter observed in previous Surveys has levelled off.

World trends in diesel fuel lubricity

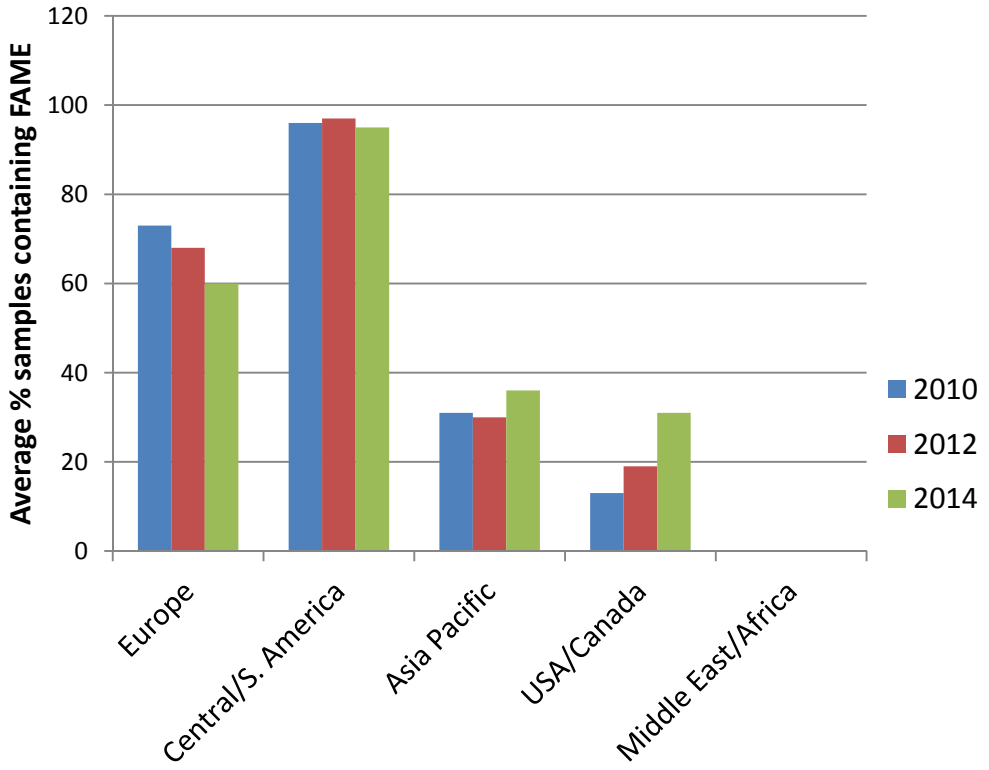


FAME

2014 marks our first ever sighting of fatty acid methyl ester (FAME) containing diesel fuel blends in Australia.

We are seeing the backing off of FAME use in Europe in winter, but an increase in FAME use in US/Canada and Asia Pacific.

Samples containing FAME



Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – Key findings

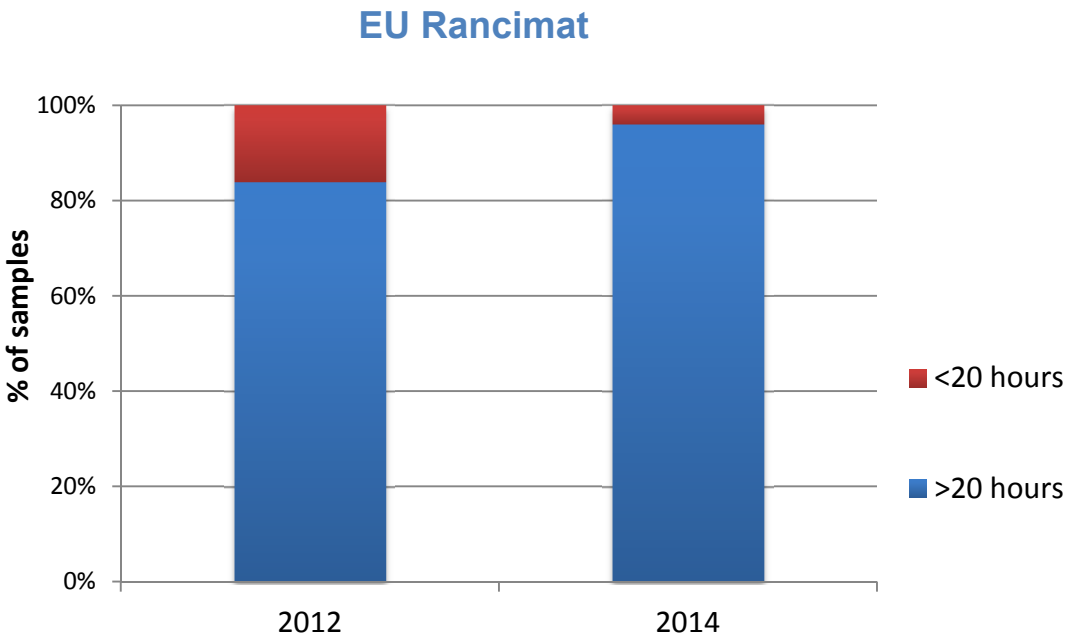
Oxidation

There has been an improvement in oxidation stability in Europe, with fewer samples than in 2012 failing to meet the specification requirement in the Rancimat test at the time of testing.

Test correlation

New for 2014 we have run both Rancimat EN 15751 and PetroOxy EN 16091 oxidation tests. The data confirm that a correlation exists between the two tests, as already demonstrated in studies carried out by the EU Industry.

Read on for the Infineum interpretation of the 2014 Winter Diesel Fuel Quality Survey.



Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

Right now, global fuels producers and marketers have three key issues to address: how best to satisfy widely varying global demand patterns for fuels; how to ensure the fuels they produce meet regional specifications so that they do not cause vehicle operability issues; and how to maximise return on investment.

As the demand for diesel surpasses that of other fuels, the global movement of diesel fuel is increasing. We expect to see an increase in the transfers of middle distillate and 10 ppm sulphur diesel fuels across the various regions, with Europe being the biggest net importer of diesel from the US, Middle East, Russia and Asia.

With this drive to maximize diesel production for export markets, refiners must work to ensure their fuel is fit for purpose. This means they must meet the specifications in their own local market, plus any pipeline specifications throughout the fuels transit and the 'at the pump' standards of their final destination market.

However, national standards vary the world over for almost every parameter including: sulphur content, FAME %, cold filter plugging point (CFPP), cetane, aromatics and lubricity. And, as the data from our Survey show, there is a huge variation in fuel quality from country to country and even from filling station to filling station within the same country.

In recent years, with the discovery and exploitation of new streams, (for example shale reserves) crudes are more difficult for refiners to treat, which, presents them with a long "how do I" list:

- Balance the barrel to meet the fuel product demands of wider markets.
- Meet tightening environmental regulations that put pressure on fuel composition.
- Incorporate more renewables into fuels without compromising fuel quality.
- Ensure fuels perform in the harsh conditions presented by today's vehicles.
- Provide trouble free operation in any environmental conditions.
- Protect fuel products during transportation and storage, in light of the increased volume.
- Do all the above while providing a reasonable return on investments.

The 2014 WDFQS gives a broad picture of how refiners are managing to address these challenges.

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

FAME use

On a global level in the 2014 WDFQS slightly more samples contained FAME than in 2012. This high level picture shows that, where FAME is used, levels are generally moving from B5 and 6 to B7 and above. However, the trends in FAME use vary on a regional basis.

FAME in North America

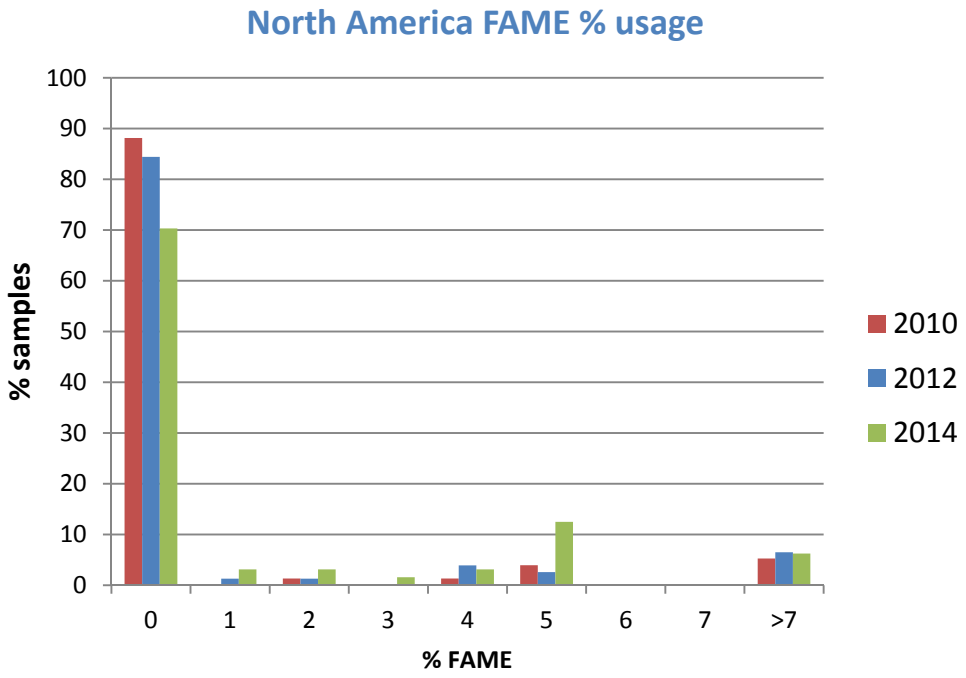
Over the past four years the percentage of samples in North America containing FAME has increased from 12% in 2010 to 30% in 2014. The average % FAME content over the same period has risen from 1% to 3% with a significant increase in the number of samples containing 5% FAME.

The National Renewable Fuels Standard Program (RFS2) is steadily increasing the total amount of biofuel that must be blended into transport fuels. However, the US Environmental Protection Agency (EPA) is proposing to maintain the biomass-based diesel standard for 2014 and 2015 at the 2013 level of 1.28 billion gallons. However, we can expect biodiesel use to increase as EPA has also indicated that biomass-based diesel can be used to help meet the volume requirements for advanced biofuel of 2.20 billion gallons.

Several states have introduced incentives/mandates to regulate the amount of biodiesel used in fuel: Minnesota being the first to introduce a B10 requirement in certain months. While the Minnesota samples we collected this winter contained 4-5% FAME, we did detect 9-11% FAME in samples from Iowa and Illinois, but believe that these high levels are being driven by local tax incentives. However, no FAME was detected in the samples from other states with biodiesel incentives/mandates such as Kansas, Louisiana or Michigan, while Oregon, Pennsylvania and Washington, were not sampled. Biodiesel was also detected in some of the fuel samples from Texas, California, Colorado, Massachusetts and New Jersey, which do not currently have incentives/mandates.

Our expectation is that at a federal level the mandates will continue to evolve, but at the state level the standards will, with the exception of California, continue to be less stringent.

Canadian Renewable Fuels Regulations require an average 2% renewable content in diesel fuel. However, biodiesel is not blended during the deep winter months so, as expected, none of the 13 samples collected contained FAME.



The percentage of samples in North America containing FAME has increased

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

FAME in Europe

The overall picture of increased FAME use in the US is quite a contrast to the one that is emerging in Europe. Here the percentage of samples containing FAME is steadily falling from 72% of samples in 2010, 68% in 2012 to just 60% of samples today. And, at the same time the average FAME content has fallen from just over 4% to 3.4%.

It must be said that the decrease in FAME use in Europe is not uniform, with countries including Greece, Italy the Czech Republic and Ireland adding significantly more FAME than in previous years. Although some of this 'observed' increase could be down to sampling variations.

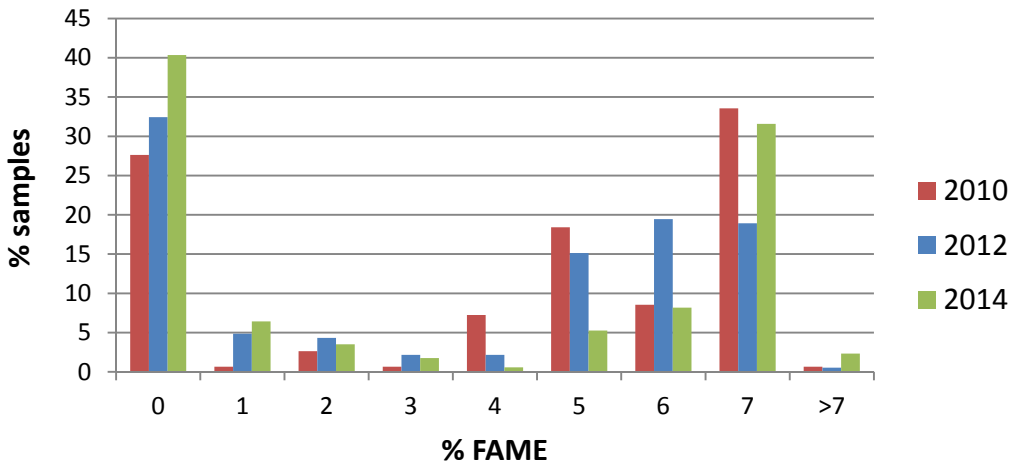
But, in Spain, Austria, Germany and the UK not only did fewer samples contain FAME, but also the average percentage of FAME was down. Spain and Germany show the biggest drop in FAME use. Most surprising is Spain, which had been at the forefront of FAME use, moving from 100% of samples containing FAME in 2012 to only 55% in 2014 and FAME content falling from an average of 6% to 1%.

We can see a number of potential reasons for this backing off in FAME use:

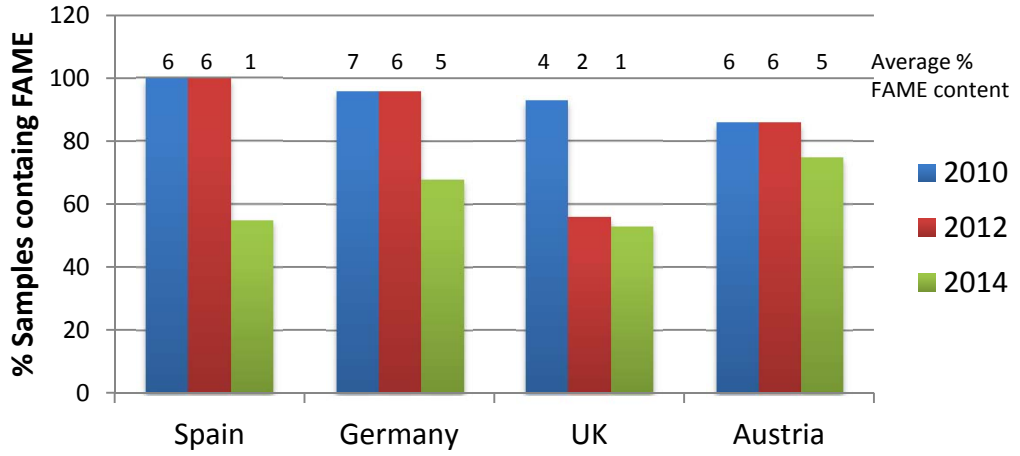
- An increase in the use of used cooking oil in countries where it counts double towards renewable targets.
- The high cost of FAME could be driving refiners to use a less expensive alternative to meet renewable targets.
- An increase in the use (and availability) of next generation biofuels.
- Adverse reaction to the filterability issues observed in Europe recently, which some have attributed to FAME use.
- Seasonal use variations – more FAME use in summer and less in winter – a trend that is likely to increase owing to filterability issues.

Looking ahead, the new European Commission will shape the next course of biofuel policies with a 2030 strategy that will be substantially different. While no major changes are expected to fuel quality, fluctuations in biodiesel quality and quantity are highly likely to continue.

Europe FAME % usage



The percentage of samples in Europe containing FAME is steadily falling



In some European countries the average percentage of FAME was down

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

FAME in Asia Pacific

Biodiesel was detected in samples in South Korea, Malaysia, Thailand and Indonesia. However, while the levels in the first three countries were at or above the local mandates, samples from Indonesia contained 1-2% FAME, well below the 10% biodiesel blending in all gasoil the Government had mandated from September 2013 onwards.

For the first time since we began looking for FAME in our samples we have found evidence of its use in Australia, with one sample registering 4% FAME. The volume of FAME blended into Australian diesel fuels is set at a state level, and currently only New South Wales has a mandatory blending level of 5%. But, in the future we expect biodiesel use to increase as the Australian Government increases its commitment to renewable fuels through the Clean Energy Future Plan.

FAME in Latin America

Levels of FAME ranged from 0% in Chile to 11% in Argentina. This wide variation is not surprising because FAME use is driven by various local mandates and Chile is the only country sampled in the region with no mandated blending levels. In the future we expect biodiesel use to increase as more countries raise their blending ratios to 10% and possibly beyond.

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

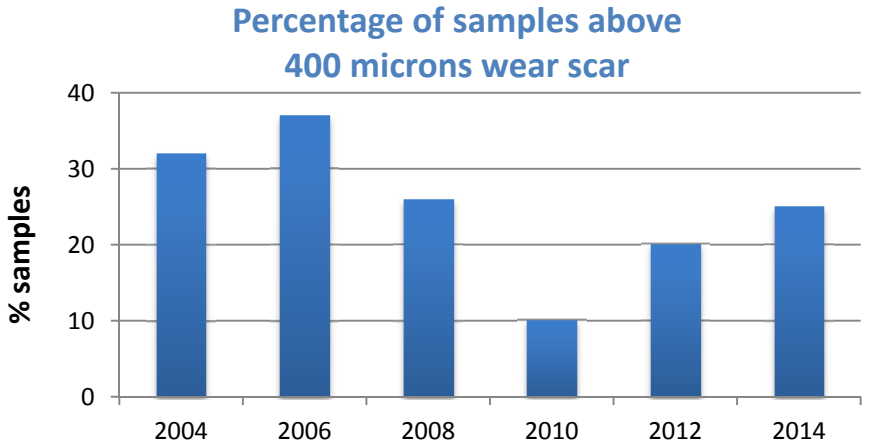
Lubricity

In 2012 we reported a worsening picture for global average diesel fuel lubricity, which we attributed to a combination of the backing off of FAME use, the tough economic climate and variations in sampling (e.g. inclusion of an increased number of Middle Eastern countries compared to 2010).

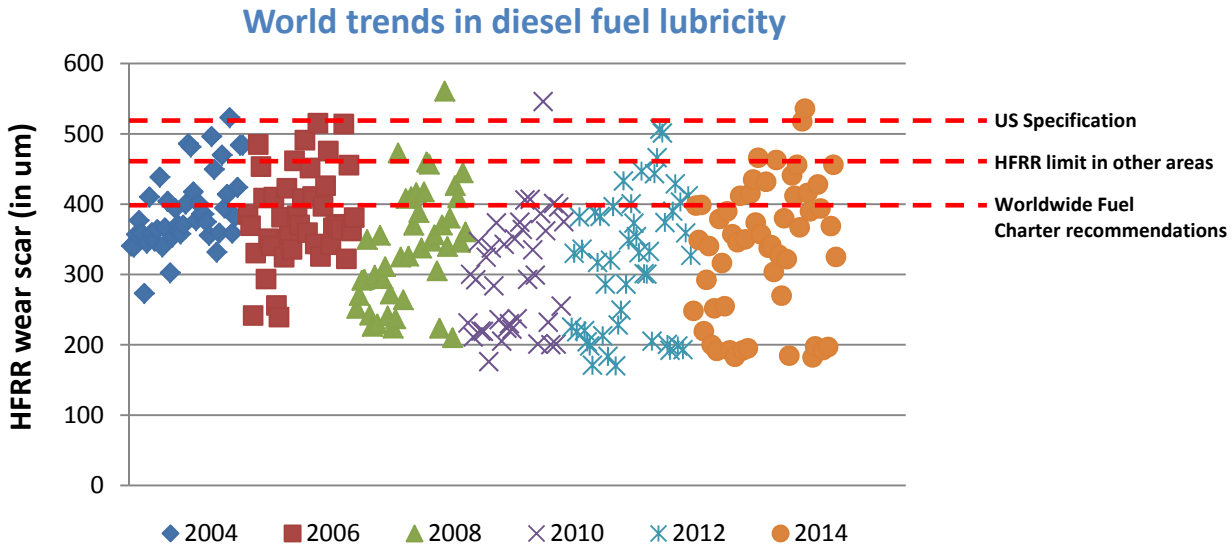
In 2014 we have seen a continuation of this global average trend, and from a situation in 2010 where most samples were below the Worldwide Fuel Charter recommendation of 400 microns (for category 4 and 5) we now find 25% of samples are above this target.

More European countries are above 400 microns than in 2012, an effect that may be owing to the reduction of FAME use in the region. In North America there seems to be some adjustment for the 2014 data, as there is clearly an increase in FAME use but this is not replicated in the high frequency reciprocating rig (HFRR) lubricity results. In Canada for example, 5 of the 13 samples had HFRR well above the 460 micron limit.

However, the majority of samples lie below the North American and European specification limits.



Worsening picture for global average diesel fuel lubricity continues in 2014



Most average lubricity results lie under the specification limits

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

Oxidation in Europe

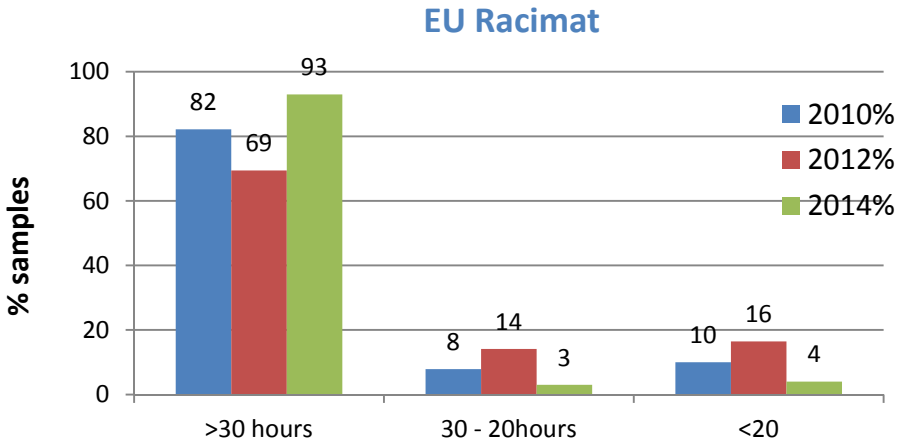
As FAME concentrations have increased, the European EN 590 diesel fuel quality standard has been adjusted to ensure fuel quality is maintained. The EN 15751 Rancimat test is an oxidation stability test that analyses the formation of volatile organic acids in diesel fuel. Organic acids result from a degradation reaction of FAME with oxygen upon heating. The time taken for these acids to reach the control chamber and cause a rapid increase in conductivity in the control sample is called the induction time. The EN 590 diesel fuel specification states a pass limit of a minimum of a 20 hour induction period for any diesel blend containing more than 2% FAME (on a volume basis).

In 2010 10% of European fuels failed to meet this minimum Rancimat requirement at the time of testing. This figure rose to 16% in 2012 - although there was some uncertainty about the root cause of the finding.

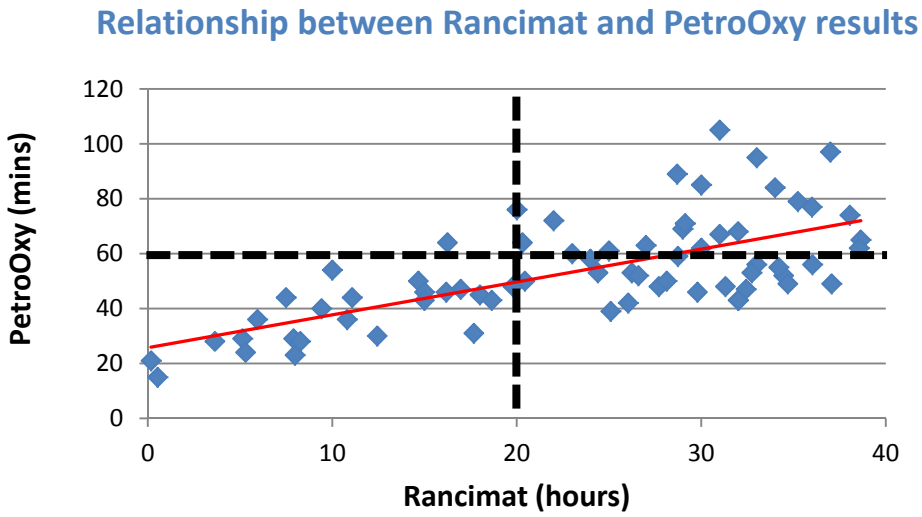
In the 2014 Survey the number of European samples failing to meet the minimum Rancimat limit fell to 4%. However, it should be noted that oxidation stability performance is influenced by the age of the fuel and storage conditions. Hence the results obtained for our samples may not represent fully the performance of the fuel at the moment of sampling.

New for this year is a look at the relationship between oxidation results obtained in the Rancimat test and the PetroOxy test – the latter of which is quicker to perform.

The data show a correlation between the two tests, and suggest that a test sample achieving a result of around 60 minutes in the PetroOxy test would reach the minimum of 20 hours required to pass the Rancimat test in the EN 590 specification.



The number of European samples failing to meet the minimum Rancimat limit has fallen



The PetroOxy test can be seen as an alternative means of predicting diesel fuel oxidative performance

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

Sulphur

In Europe and North America very low sulphur limits for diesel fuels have been in place for some years, and in the samples we collected sulphur levels ranged from <3 ppm to 30 ppm sulphur. Apart from Belarus and Italy, where one sample from each was above the countries' 10 ppm limit, fuels generally meet the minimum sulphur levels, which means in these areas there are no discernible trends to report.

The main area of interest in our Survey is the data from those countries that are still working towards the 'ultra low sulphur diesel' benchmark.

This year's sulphur-related headline is the significant drop in South Africa, Brazil, Argentina and Saudi Arabia compared to 2012 – with average sulphur levels in the samples collected falling from hundreds to just tens of ppm in 2014.

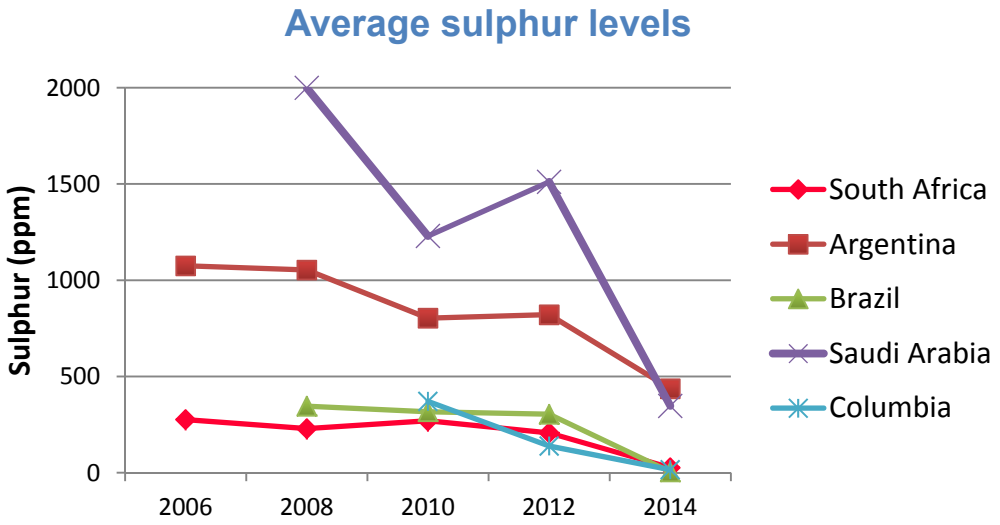
Care must be taken in assuming that in all cases this is representative of the countries' entire diesel pool, because city diesel tends to be lower in sulphur than rural diesel, and sampling may have a significant influence.

Despite this dramatic reduction in Latin America and South Africa, the chart below reveals that high sulphur containing fuels are still present in some regions of the world.

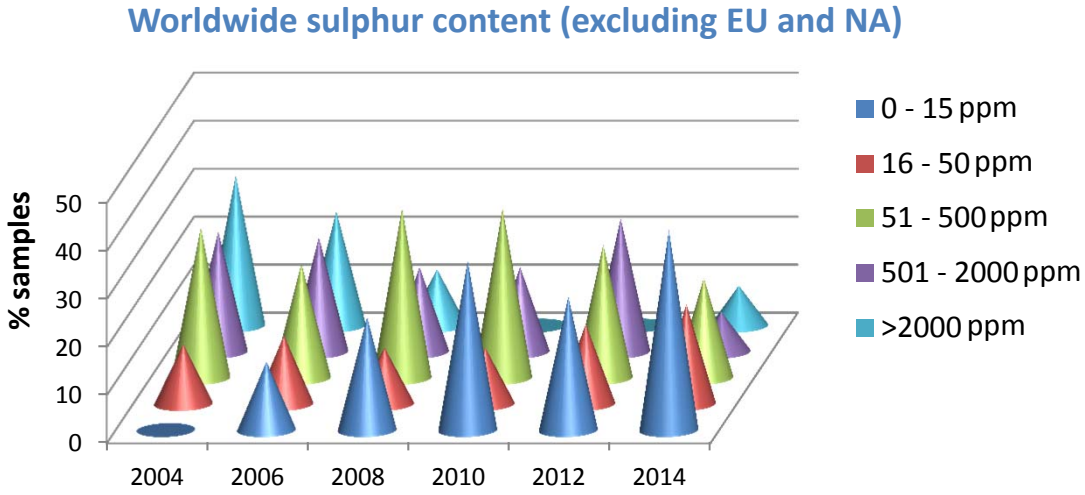
While the general trend is downwards, some of the samples collected still contained more than 1,000 ppm sulphur.

One area with high sulphur fuels is the Middle East where some fuels still contain several thousand ppm sulphur. But there are signs of improvement here, especially in Saudi Arabia, where average fuel sulphur levels fell from just over 1,500 ppm in 2012 to 347 ppm this year.

As emissions legislation drives the use of more advanced vehicle technology in all regions of the world, we expect diesel fuel sulphur levels will continue to fall. In our view, proven lubricity additives will be required to ensure that vehicle performance is not adversely affected.



Sulphur levels in some countries have fallen significantly



Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

Cold flow

The cloud point and CFPP results obtained for the northern hemisphere samples show the situation is stable, and give us nothing to report on the cold flow performance of diesel fuels in this area.

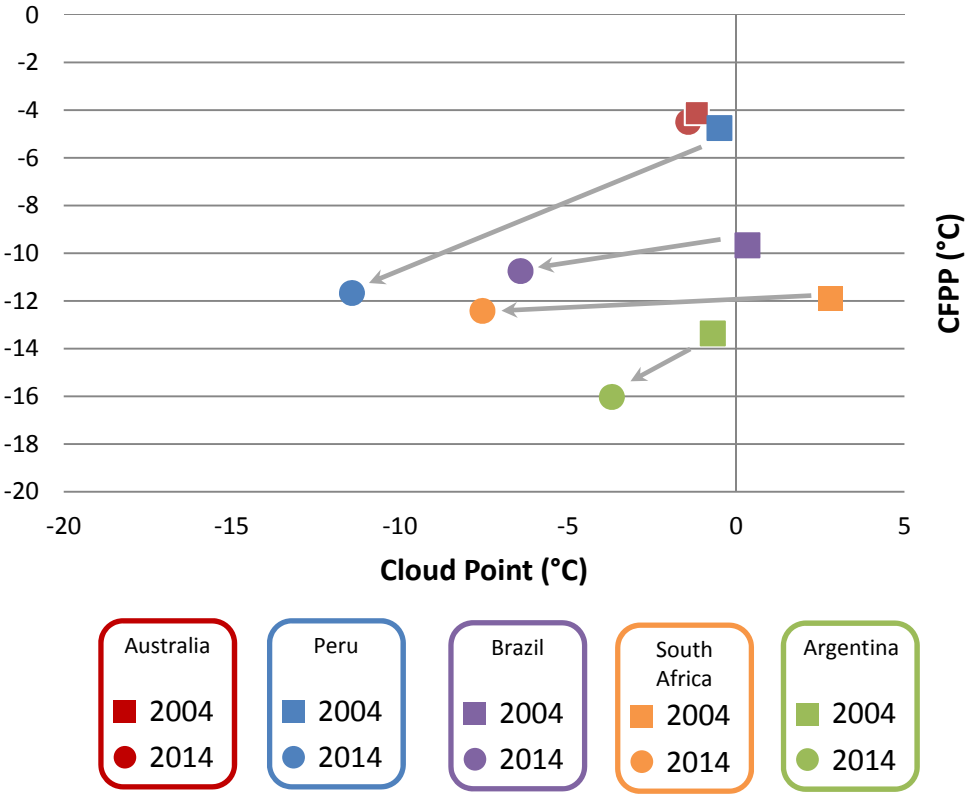
However, in the southern hemisphere samples we have seen a progressive reduction in cloud point. Comparing the 2014 data with that obtained in 2004, this phenomenon is clearly visible in South Africa, Brazil, Peru and to some extent Argentina.

Potential causes of this reduction in cloud point include:

- The need to reduce back-end distillation to facilitate sulphur reduction
- Increased use of imported diesel in some locations
- Specification changes

Regardless of the cause, this trend will provide natural cold flow benefits, particularly where cold flow additives are not employed. Where cold flow additives are used we have not detected any significant change in CFPP, despite sulphur reduction and lower cloud points. This indicates that refiners have managed to maintain consistent fuel quality.

Country average cloud point and CFPP changes since 2004



A progressive reduction in cloud point has been observed in some samples

Infineum Worldwide Winter Diesel Fuel Quality Survey 2014 – The trends

Looking to the future

We expect to see an increase in demand for diesel fuel, especially in developing economies which comes at a time when they are imposing more stringent emissions legislation – for example tightening sulphur limits and increasing the use of renewable fuels.

Across the globe, product flows are also likely to increase, not only in response to changing demand patterns, but also as new crude streams come online, especially in North America.

One of the key challenges for refiners to overcome is how to maximise diesel production to meet increased demand while remaining profitable.

These trends, combined with continued vehicle enhancements that OEMs are introducing to gain emissions reductions and fuel economy improvements, mean the use of proven, harms free additive technology is becoming increasingly important to help address the growing list of challenges the fuels industry is facing.

The samples from China have been collected and the analysis has been released separately as part of an *Insight* article.

Worldwide summary

Mean data

Country	Austria	Belarus	Benelux	Croatia	Czech Rep	Denmark	Finland	France
No. of Samples	8	2	11	1	3	2	9	16
Samples containing FAME	6	0	7	0	3	1	0	16
Cloud Point, °C	-12	-9	-8	-8	-8	-11	-31	-8
CFPP, °C	-27	-31	-26	-25	-25	-25	-42	-21
LTFT, °C	–	–	–	–	–	–	–	–
Pour Point, °C	-32	-30	-31	-39	-27	-38	-40	-27
HFRR, µm	248	398	349	399	219	293	341	200
Wax Content @ 10°C Below Cloud, wt%	1.5	1.6	1.7	1.6	1.7	1.7	1.0	1.7
Rancimat, hrs	>30	>40	>40	>40	>40	>35	>40	>40
Sulphur, ppm	6	18	7	6	6	8	<3	7
Density @15°C, kg/m^3	838	825	834	829	838	837	802	833
Viscosity @ 30°C, cSt	–	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	2.90	2.42	2.57	2.46	2.63	2.86	2.12	2.39
Cetane Index $_{2\ Variable}$	53	54	52	52	51	53	61	52
Cetane Index $_{4\ Variable}$	52	54	52	52	51	52	63	51
Cetane Number	55	51	55	53	53	52	63	53
Distillation, °C IBP	169	169	161	164	178	163	171	162
T_{10}	210	201	198	193	208	206	200	194
T_{20}	229	216	217	208	223	225	214	210
T_{50}	275	257	266	258	268	274	251	262
T_{90}	337	326	332	332	334	334	297	333
T_{95}	353	343	349	347	348	348	309	347
FBP	361	352	356	354	356	355	322	352
% FAME	5	0	2	0	6	3	0	7

Mean data

Country	Germany	Greece	Hungary	Ireland	Italy	Lithuania	Norway	Poland
No. of Samples	25	2	1	3	15	4	4	10
Samples containing FAME	17	2	0	2	13	0	4	3
Cloud Point, °C	-9	-2	-10	-8	-4	-24	-24	-14
CFPP, °C	-29	-14	-28	-18	-15	-37	-39	-30
LTFT, °C	–	–	–	–	–	–	–	–
Pour Point, °C	-31	-24	-30	-24	-22	-44	-42	-35
HFRR, µm	250	192	379	316	255	390	192	357
Wax Content @ 10°C Below Cloud, wt%	1.4	1.9	1.2	2.2	1.7	0.7	1.0	0.9
Rancimat, hrs	>30	>25	>40	>40	>30	>30	>35	>35
Sulphur, ppm	6	5	6	6	7	<3	6	5
Density @15°C, kg/m^3	836	831	839	835	836	835	832	832
Viscosity @ 30°C, cSt	–	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	2.68	2.63	2.81	2.65	2.63	2.48	2.14	2.63
Cetane Index $_{2\ Variable}$	52	55	51	52	52	51	48	53
Cetane Index $_{4\ Variable}$	52	54	51	52	51	51	48	53
Cetane Number	55	53	53	53	52	54	52	54
Distillation, °C IBP	170	162	169	173	166	161	171	164
T_{10}	204	199	207	208	201	206	195	200
T_{20}	222	217	225	225	217	223	206	217
T_{50}	268	273	270	267	268	261	244	267
T_{90}	333	342	340	326	340	313	318	335
T_{95}	348	357	358	344	355	329	331	351
FBP	355	364	364	352	364	341	338	359
% FAME	5	7	0	4	5	0	7	2

Mean data

Country	Portugal	Romania	Russia	Slovak Republic	Spain	Sweden	Switzerland	Turkey
No. of Samples	3	5	5	1	11	8	7	2
Samples containing FAME	3	2	0	1	6	8	0	0
Cloud Point, °C	-5	-13	-19	-8	-5	-29	-13	-5
CFPP, °C	-12	-26	-35	-30	-17	-31	-24	-22
LTFT, °C	–	–	–	–	–	–	–	–
Pour Point, °C	-16	-31	-36	-30	-22	-30	-30	-30
HFRR, µm	183	346	412	192	350	195	415	435
Wax Content @ 10°C Below Cloud, wt%	1.6	1.8	1.3	1.4	1.6	2.7	1.5	1.5
Rancimat, hrs	>35	>25	>40	>40	>35	>30	>40	>40
Sulphur, ppm	6	4	11	6	7	<3	7	5
Density @15°C, kg/m^3	841	840	821	842	838	816	832	829
Viscosity @ 20°C, cSt	–	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	3.21	2.49	2.09	2.88	2.68	2.15	2.45	2.61
Cetane Index $_{2\ Variable}$	53	49	51	52	52	53	51	54
Cetane Index $_{4\ Variable}$	53	49	51	51	51	55	51	53
Cetane Number	54	52	52	54	54	55	53	57
Distillation, °C IBP	184	155	166	167	160	182	169	162
T_{10}	221	202	195	210	198	207	203	200
T_{20}	239	218	207	229	218	216	219	218
T_{50}	282	261	242	278	269	244	257	264
T_{90}	341	321	309	340	339	299	320	337
T_{95}	355	336	326	356	357	315	337	354
FBP	362	346	338	361	366	326	348	363
% FAME	7	2	0	7	1	6	0	0

Mean data

Country	United Kingdom	Ukraine	Australia	China	India	Indonesia	Japan - G2	Japan - G3
No. of Samples	15	1	4	19	3	3	23	1
Samples containing FAME	8	0	1	–	0	3	–	–
Cloud Point, °C	-9	-8	-1	–	0	5	-7	-13
CFPP, °C	-20	-30	-4	-10	-4	1	-13	-16
LTFT, °C	–	–	–	–	–	–	–	–
Pour Point, °C	-26	-33	-5	-22	-11	-8	-20	-22.5
HFRR, µm	374	466	357	385	432	338	342	304
Wax Content @ 10°C Below Cloud, wt%	1.8	1.7	5.1	–	2.2	2.7	1.2	2.0
Rancimat, hrs	>40	>40	>40	–	>30	>40	–	–
Sulphur, ppm	7	23	8	172	30	2237	7	6
Density @15°C, kg/m^3	838	830	839	833	832	850	832	818
Viscosity @ 30°C, cSt	–	–	–	–	–	–	3.59	2.54
Viscosity @ 40°C, cSt	2.58	2.63	2.71	4.16	2.57	3.67	–	–
Cetane Index $_{2\ Variable}$	51	54	52	52	53	52	55	55
Cetane Index $_{4\ Variable}$	50	54	52	56	52	51	56	54
Cetane Number	54	50	52	52	54	52	52	50
Distillation, °C IBP	163	170	182	–	137	176	–	–
T_{10}	198	204	220	–	188	221	213	184
T_{20}	219	222	237	–	215	247	234	202
T_{50}	267	266	272	262	267	294	276	253
T_{90}	329	334	326	327	337	356	330	318
T_{95}	346	349	341	342	355	373	343	332
FBP	355	352	349	–	366	379	355	345
% FAME	1	0	1	–	0	2	–	–

Mean data

Country	Japan - Sp G3	Malaysia	New Zealand	Singapore	South Korea	Thailand	Argentina	Brazil
No. of Samples	2	3	2	4	6	7	9	5
Samples containing FAME	–	3	0	0	6	7	9	5
Cloud Point, °C	-20	9	-4	1	-9	7	-4	-6
CFPP, °C	-34	6	-11	-1	-29	3	-16	-11
LTFT, °C	–	–	–	–	–	–	–	–
Pour Point, °C	-40	4	-17	-5	-33	-2	-17	-17
HFRR, µm	463	270	380	322	328	185	182	198
Wax Content @ 10°C Below Cloud, wt%	1.4	3.5	2.3	2.4	1.6	2.2	1.9	1.6
Rancimat, hrs	–	>40	>40	>40	>40	>40	>30	>25
Sulphur, ppm	7	395	7	5	5	27	437	5
Density @15°C, kg/m^3	813	848	834	840	823	835	845	847
Viscosity @ 30°C, cSt	2.19	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	–	3.35	3.16	3.56	2.61	3.32	2.97	2.80
Cetane Index $_{2\ Variable}$	51	51	55	55	56	56	51	49
Cetane Index $_{4\ Variable}$	51	49	56	56	55	57	50	48
Cetane Number	48	55	53	53	51	59	51	50
Distillation, °C IBP	–	165	174	182	149	172	162	165
T_{10}	174	207	224	229	181	220	208	208
T_{20}	186	230	242	248	201	243	230	227
T_{50}	233	280	279	289	264	288	281	272
T_{90}	313	350	336	352	339	350	343	338
T_{95}	329	369	350	367	356	367	361	356
FBP	342	377	357	373	365	376	366	363
% FAME	–	5	0	0	2	7	8	5

Mean data

Country	Canada	Chile	Colombia	Peru	USA - East	USA - Midwest	USA - West	Bahrain
No. of Samples	13	1	4	3	9	32	10	1
Samples containing FAME	0	0	4	3	4	12	3	0
Cloud Point, °C	-36	0	-8	-11	-13	-17	-12	2
CFPP, °C	-37	-3	-12	-12	-20	-23	-13	-1
LTFT, °C	-32	–	–	–	-12	-17	-10	–
Pour Point, °C	-43	-6	-12	-17	-27	-32	-19	-3
HFRR, µm	468	394	193	197	325	378	456	441
Wax Content @ 10°C Below Cloud, wt%	1.2	2.1	3.2	2.2	1.5	1.5	1.8	3.1
Rancimat, hrs	>30	>40	21	>35	>30	>30	>35	>40
Sulphur, ppm	6	10	16	18	7	6	6	468
Density @15°C, kg/m^3	837	847	838	825	848	844	836	840
Viscosity @ 30°C, cSt	–	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	2.10	3.31	2.89	2.40	2.55	2.62	2.70	3.98
Cetane Index $_{2\ Variable}$	45	51	54	53	47	48	51	57
Cetane Index $_{4\ Variable}$	45	51	53	53	46	48	51	59
Cetane Number	44	49	53	53	44	45	50	56
Distillation, °C IBP	160	146	172	165	163	170	170	139
T_{10}	193	218	210	196	201	209	209	241
T_{20}	206	242	231	210	220	225	225	265
T_{50}	242	282	281	256	264	263	265	301
T_{90}	300	347	334	326	326	322	327	352
T_{95}	316	365	347	340	342	338	344	364
FBP	328	370	353	347	352	348	355	369
% FAME	0	0	10	5	2	3	0	0

Mean data

Country	Israel	Kuwait	Oman	Qatar	Saudi Arabia	United Arab Emirates	South Africa
No. of Samples	2	2	2	2	4	3	6
Samples containing FAME	0	0	0	0	0	0	0
Cloud Point, °C	-2	2	-2	0	-6	1	-8
CFPP, °C	-10	0	-5	-3	-9	-4	-12
LTFT, °C	–	–	–	–	–	–	–
Pour Point, °C	-23	-3	-9	-6	-12	-4	-18
HFRR, µm	412	456	367	518	536	416	390
Wax Content @ 10°C Below Cloud, wt%	2.4	3.4	1.5	2.2	2.5	2.8	2.5
Rancimat, hrs	>40	>40	>40	>40	>40	>40	>35
Sulphur, ppm	<5	1350	3122	1090	347	435	26
Density @15°C, kg/m^3	830	842	846	838	845	831	833
Viscosity @ 30°C, cSt	–	–	–	–	–	–	–
Viscosity @ 40°C, cSt	3.28	4.56	3.92	3.34	2.86	3.73	2.67
Cetane Index $_{2\ Variable}$	57	57	53	54	50	59	52
Cetane Index $_{4\ Variable}$	58	61	54	57	50	62	52
Cetane Number	55	56	51	56	50	58	54
Distillation, °C IBP	186	199	179	194	177	173	182
T_{10}	217	255	239	240	216	244	216
T_{20}	236	274	255	253	232	262	229
T_{50}	284	308	289	280	274	293	261
T_{90}	344	356	357	345	338	350	330
T_{95}	357	370	376	365	355	366	352
FBP	363	376	381	375	364	374	359
% FAME	0	0	0	0	0	0	0

Worldwide Survey - Europe

28 Austria
31 Belarus
33 Benelux (Belgium, Netherlands, Luxembourg)
36 Croatia
38 Czech Republic
40 Denmark
42 Finland
45 France
49 Germany
54 Greece
56 Hungary
58 Ireland
60 Italy
64 Lithuania
66 Norway
69 Poland
71 Portugal
73 Romania
75 Russia
77 Slovak Republic
79 Spain
82 Sweden
85 Switzerland
87 Turkey
89 United Kingdom
93 Ukraine

Austria

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400149	DIES 1400154	DIES 1400155	DIES 1400156	DIES 1400157	DIES 1400158	DIES 1400159
Cloud Point, °C		-8	-12	-26	-8	-26	-8	-17	-8	-9	-8
CFPP, °C	-20 (max)	-19	-27	-41	-20	-41	-19	-32	-27	-20	-26
Pour Point, °C		-24	-32	-60	-24	-39	-24	-60	-27	-24	-24
HFRR, µm	460 (max)	431	248	176	179	431	194	206	189	191	176
Wax Content @ 10°C Below Cloud, wt%		1.8	1.5	0.8	1.7	0.9	1.8	0.8	1.8	1.6	1.7
Rancimat, hrs	*	>40	>30	5	>40	>40	>40	5	>40	>40	>40
Sulphur, ppm	10 (max)	8	6	<3	8	5	7	<3	7	8	8
Density @15°C, kg/m^3	820 - 845	843	838	830	843	834	841	841	841	839	839
Viscosity @ 40°C, cSt	2.0 - 4.5	3.49	2.90	2.68	2.88	2.80	2.82	3.49	2.76	2.70	2.68
Cetane Index $_{2 \text{ Variable}}$		55	53	51	52	53	52	55	52	52	51
Cetane Index $_{4 \text{ Variable}}$	46 (min)	59	52	50	50	53	51	55	51	51	51
Cetane Number	51 (min)	63	55	52	53	56	54	59	52	53	52
Distillation, °C IBP		215	169	156	164	156	164	158	164	164	169
T_{10}		243	210	200	202	200	203	221	202	202	204
T_{20}		248	229	222	224	222	223	245	222	222	222
T_{50}		292	275	269	276	269	275	292	273	271	270
T_{90}		343	337	320	342	335	340	343	339	338	336
T_{95}	360 (max)	359	353	339	359	359	357	353	356	354	350
FBP		367	361	347	367	367	364	357	363	362	358
% FAME	7 (max)	7	5	0	7	0	7	6	7	7	7

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Austria

Europe

National standards and physical inspection data

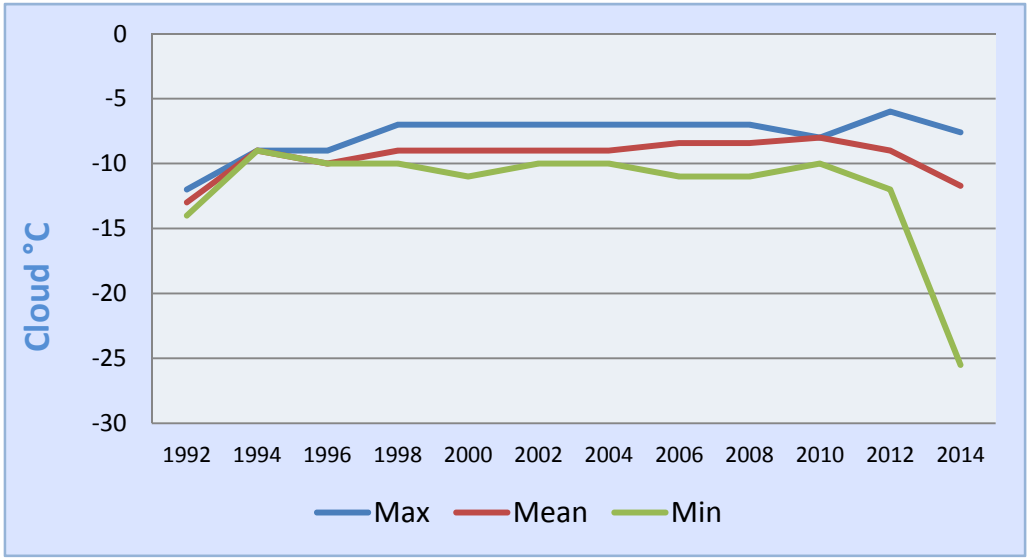
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400160
Cloud Point, °C		-8	-12	-26	-11
CFPP, °C	-20 (max)	-19	-27	-41	-31
Pour Point, °C		-24	-32	-60	-30
HFRR, µm	460 (max)	431	248	176	423
Wax Content @ 10°C Below Cloud, wt%		1.8	1.5	0.8	1.6
Rancimat, hrs	*	>40	>30	5	>40
Sulphur, ppm	10 (max)	8	6	<3	<3
Density @15°C, kg/m^3	820 - 845	843	838	830	830
Viscosity @ 40°C, cSt	2.0 - 4.5	3.49	2.90	2.68	3.04
Cetane Index $_{2\ Variable}$		55	53	51	55
Cetane Index $_{4\ Variable}$	46 (min)	59	52	50	59
Cetane Number	51 (min)	63	55	52	63
Distillation, °C IBP		215	169	156	215
T_{10}		243	210	200	243
T_{20}		248	229	222	248
T_{50}		292	275	269	271
T_{90}		343	337	320	320
T_{95}	360 (max)	359	353	339	339
FBP		367	361	347	347
% FAME	7 (max)	7	5	0	0

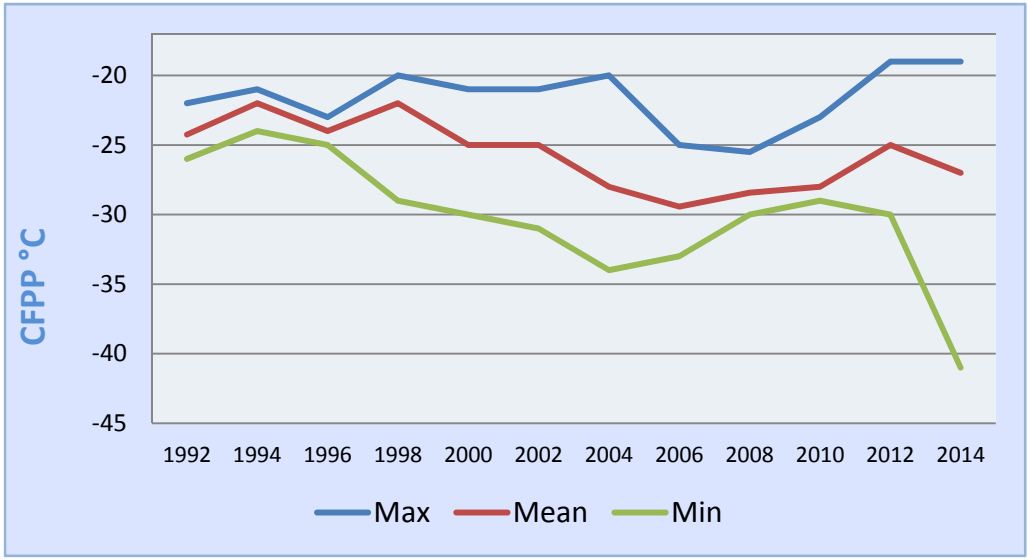
*20 hours min for diesel containing FAME above 2 % V/V

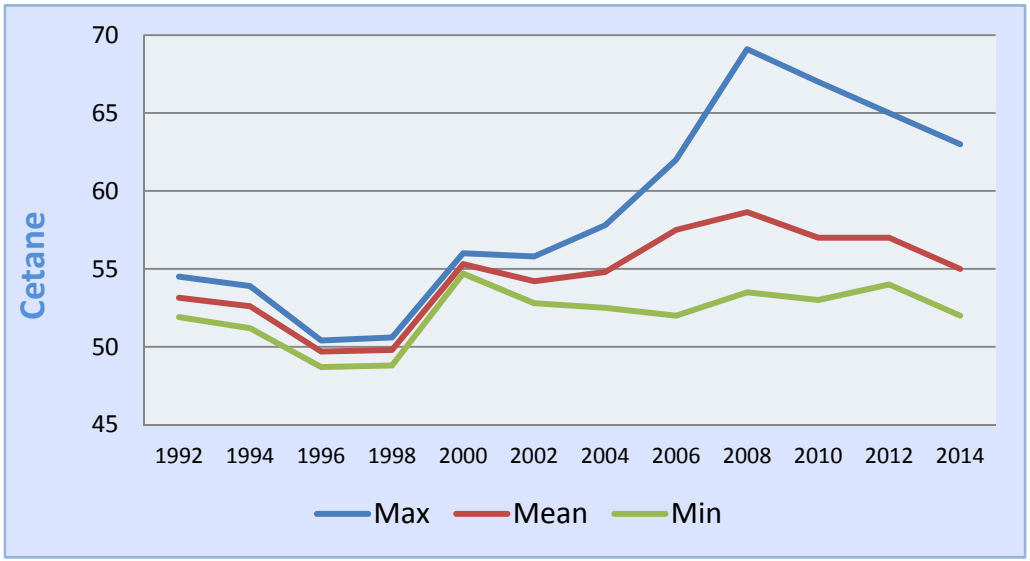
Infineum

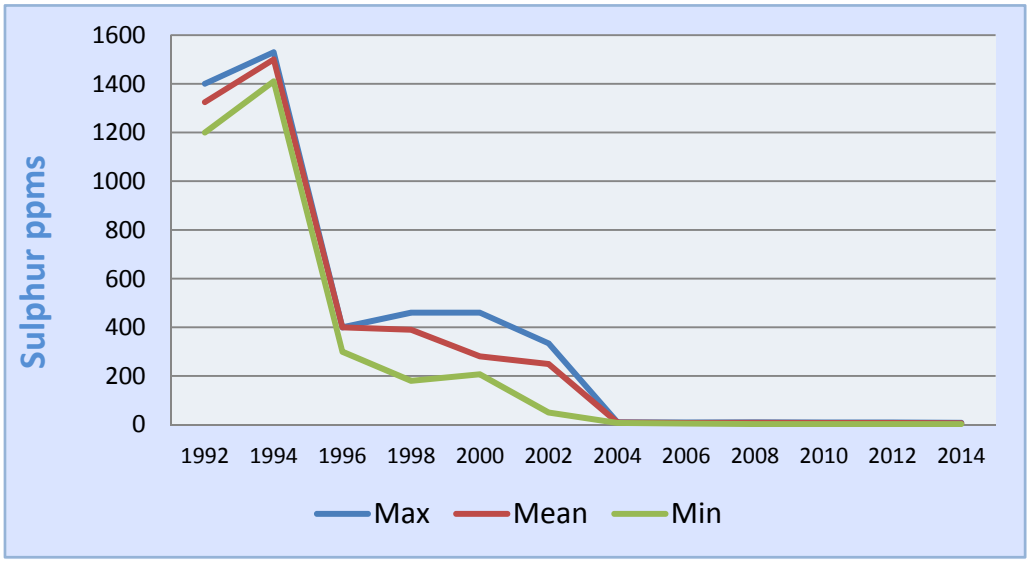
Austria

Europe









Belarus

Europe

National standards and physical inspection data

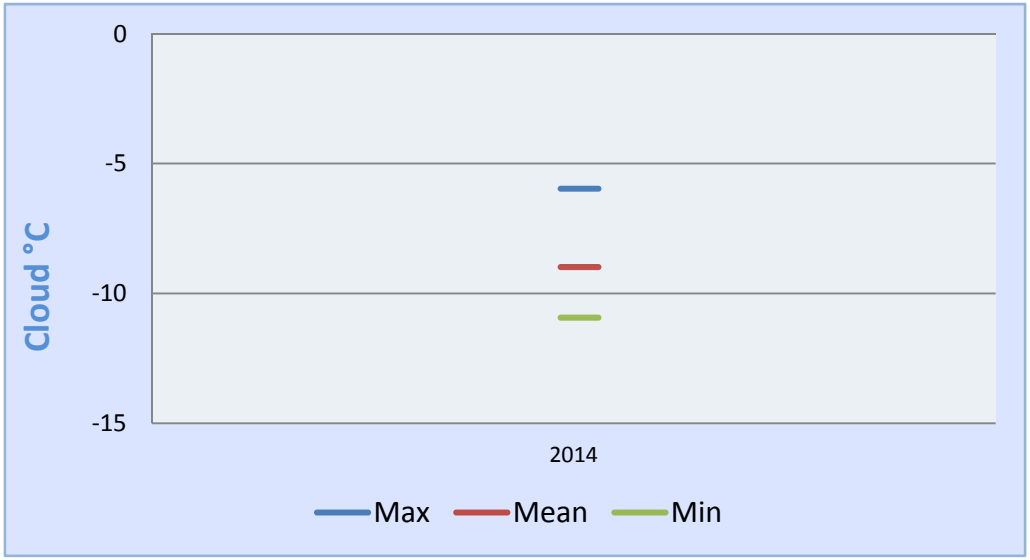
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400161	DIES 1400162
Cloud Point, °C		-6	-9	-11	-11	-6
CFPP, °C	-20 (max)	-28	-31	-34	-34	-28
Pour Point, °C		-27	-30	-33	-33	-27
HFRR, µm	460 (max)	407	398	389	407	389
Wax Content @ 10°C Below Cloud, wt%		1.7	1.6	1.4	1.4	1.7
Rancimat, hrs	*	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	30	18	6	30	6
Density @15°C, kg/m^3	820 - 845	825	825	824	825	824
Viscosity @ 40°C, cSt	2.0 - 4.5	2.56	2.42	2.28	2.28	2.56
Cetane Index 2 Variable		55	54	53	53	55
Cetane Index 4 Variable	46 (min)	55	54	53	53	55
Cetane Number	51 (min)	52	51	49	49	52
Distillation, °C IBP		178	169	160	160	178
T_{10}		207	201	194	194	207
T_{20}		221	216	212	212	221
T_{50}		260	257	254	254	260
T_{90}		328	326	324	324	328
T_{95}	360 (max)	345	343	341	341	345
FBP		354	352	349	349	354
% FAME	7 (max)	0	0	0	0	0

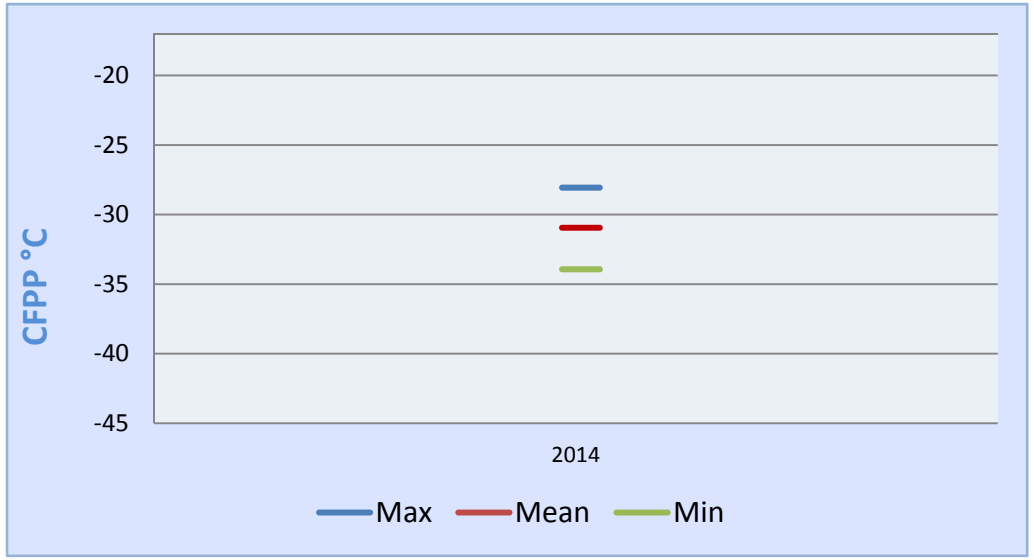
*20 hours min for diesel containing FAME above 2 % V/V

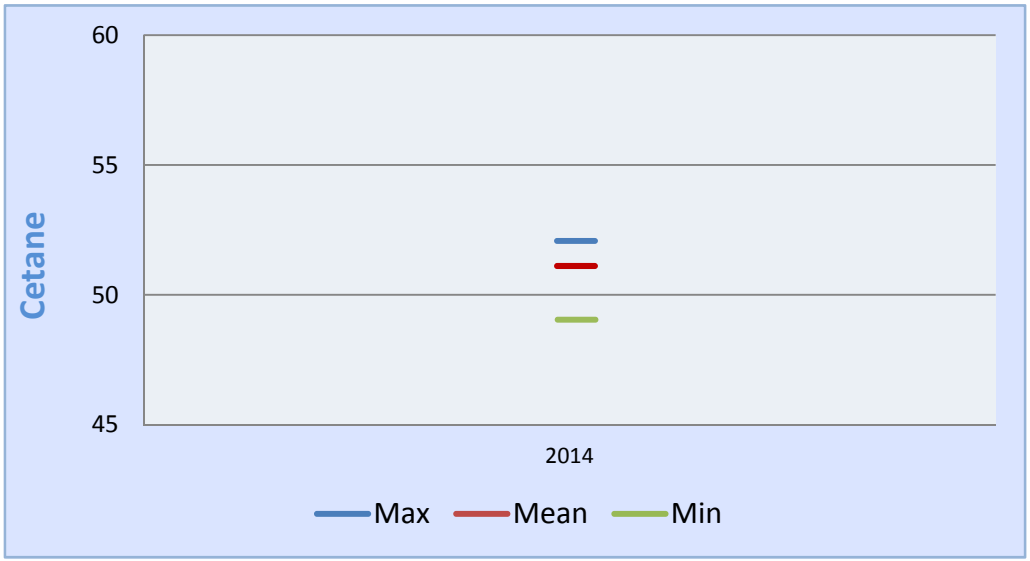
Infineum

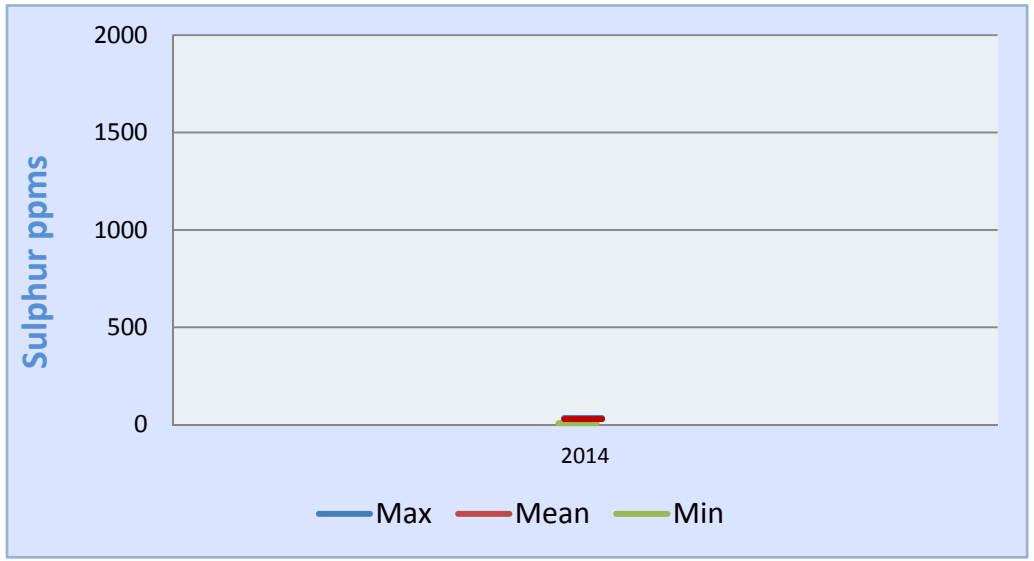
Belarus

Europe









Benelux

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400172	DIES 1400173	DIES 1400174	DIES 1400176	DIES 1400178	DIES 1400179	DIES 1400181
Cloud Point, °C		-6	-8	-10	-10	-7	-10	-8	-6	-8	-10
CFPP, °C	-20 (max)	-19	-26	-32	-21	-22	-28	-27	-26	-29	-32
Pour Point, °C		-24	-31	-36	-24	-36	-27	-33	-30	-33	-33
HFRR, µm	460 (max)	413	349	189	361	389	345	411	393	411	413
Wax Content @ 10°C Below Cloud, wt%		2.2	1.7	1.2	2.2	1.2	2.0	1.9	1.8	1.9	1.6
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	7	8	7	7	7	7	8
Density @15°C, kg/m^3	820 - 845	839	834	830	836	839	837	835	830	835	832
Viscosity @ 40°C, cSt	2.0 - 4.5	2.83	2.57	2.38	2.82	2.59	2.83	2.40	2.53	2.48	2.54
Cetane Index 2 Variable		54	52	49	53	49	53	52	54	52	53
Cetane Index 4 Variable	46 (min)	53	52	49	53	49	53	50	53	51	52
Cetane Number	51 (min)	58	55	53	56	54	53	56	58	55	54
Distillation, °C IBP		168	161	153	168	157	168	153	160	156	161
T_{10}		213	198	182	213	199	213	182	195	187	196
T_{20}		234	217	204	233	215	234	204	214	208	216
T_{50}		273	266	258	273	260	273	268	266	267	266
T_{90}		338	332	330	330	338	330	333	333	331	330
T_{95}	360 (max)	356	349	346	346	356	346	349	349	346	348
FBP		362	356	353	353	362	354	356	357	354	355
% FAME	7 (max)	6	2	0	3	0	3	0	0	1	0

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Benelux (continued)

National standards and physical inspection data

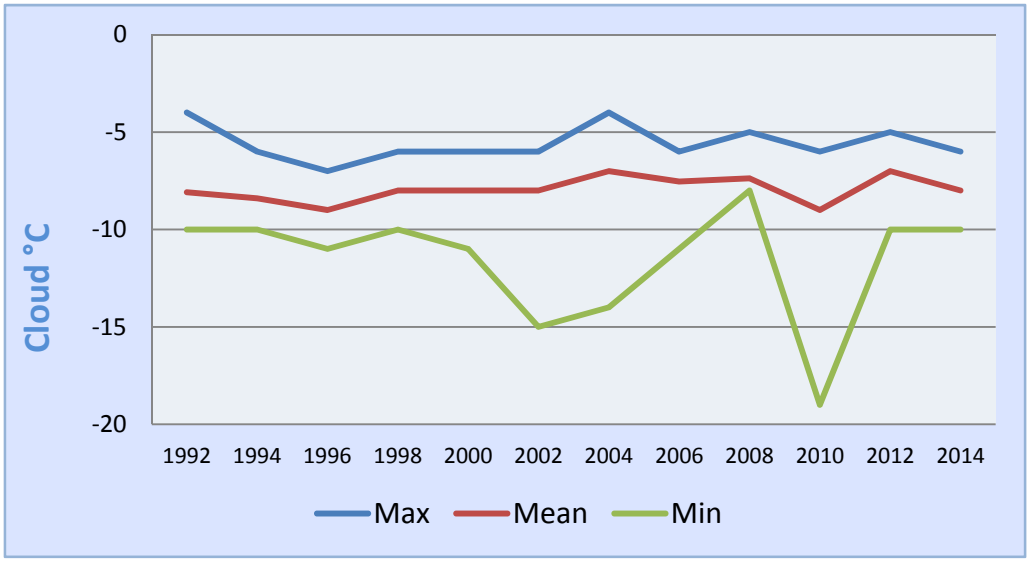
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400182	DIES 1400184	DIES 1400185	DIES 1400187
Cloud Point, °C		-6	-8	-10	-7	-9	-7	-7
CFPP, °C	-20 (max)	-19	-26	-32	-28	-28	-32	-19
Pour Point, °C		-24	-31	-36	-30	-30	-33	-27
HFRR, µm	460 (max)	413	349	189	342	344	189	243
Wax Content @ 10°C Below Cloud, wt%		2.2	1.7	1.2	1.8	1.5	1.2	2.0
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	8	7	8	5
Density @15°C, kg/m^3	820 - 845	839	834	830	834	836	833	832
Viscosity @ 40°C, cSt	2.0 - 4.5	2.83	2.57	2.38	2.66	2.62	2.43	2.38
Cetane Index $_{2 \text{ Variable}}$		54	52	49	53	52	51	53
Cetane Index $_{4 \text{ Variable}}$	46 (min)	53	52	49	53	51	51	52
Cetane Number	51 (min)	58	55	53	55	54	55	58
Distillation, °C IBP		168	161	153	163	161	164	159
T_{10}		213	198	182	203	202	196	187
T_{20}		234	217	204	223	221	212	205
T_{50}		273	266	258	269	266	258	266
T_{90}		338	332	330	333	331	333	333
T_{95}	360 (max)	356	349	346	350	348	349	347
FBP		362	356	353	357	357	356	353
% FAME	7 (max)	6	2	0	1	1	6	3

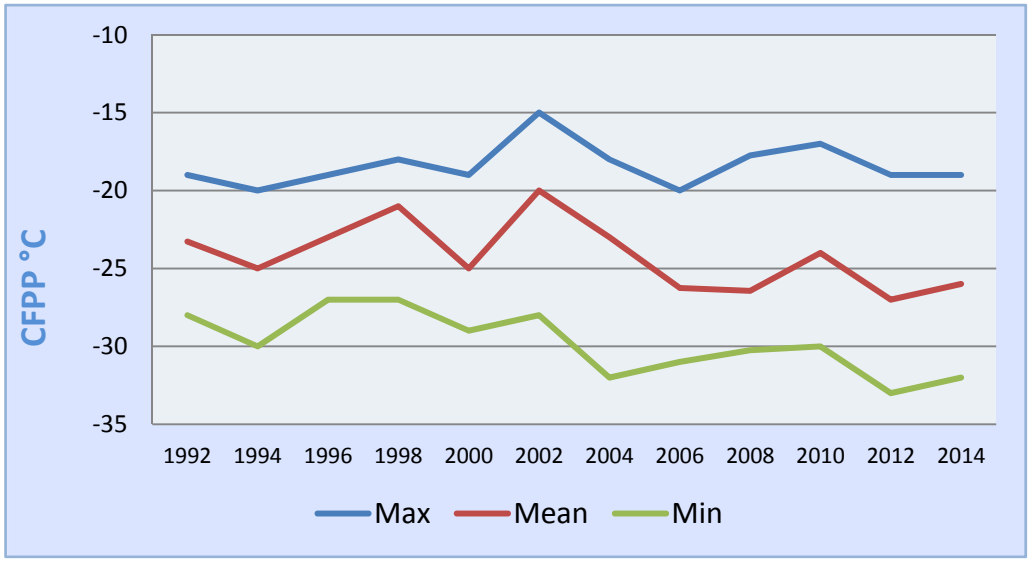
*20 hours min for diesel containing FAME above 2 % V/V

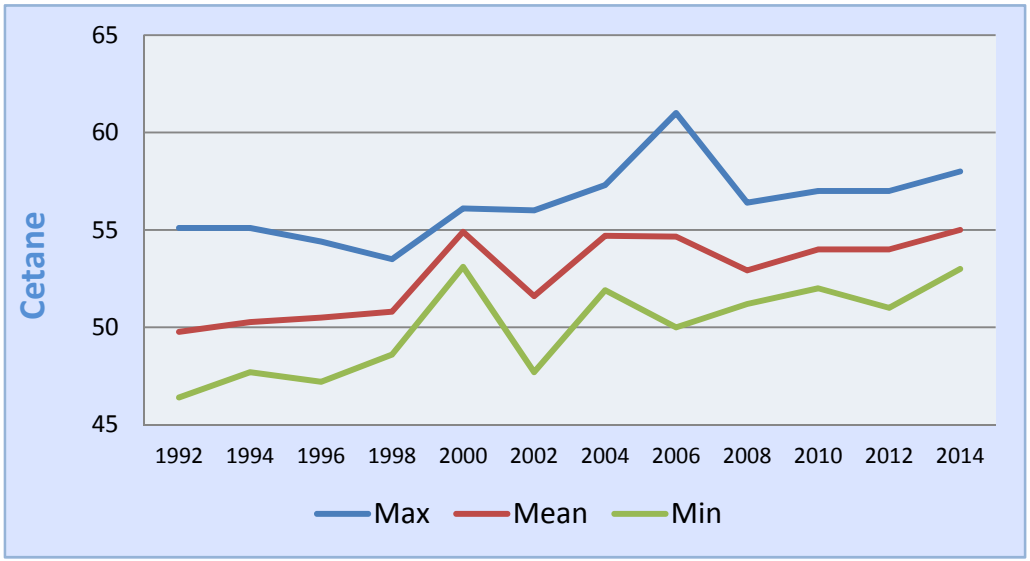
Infineum

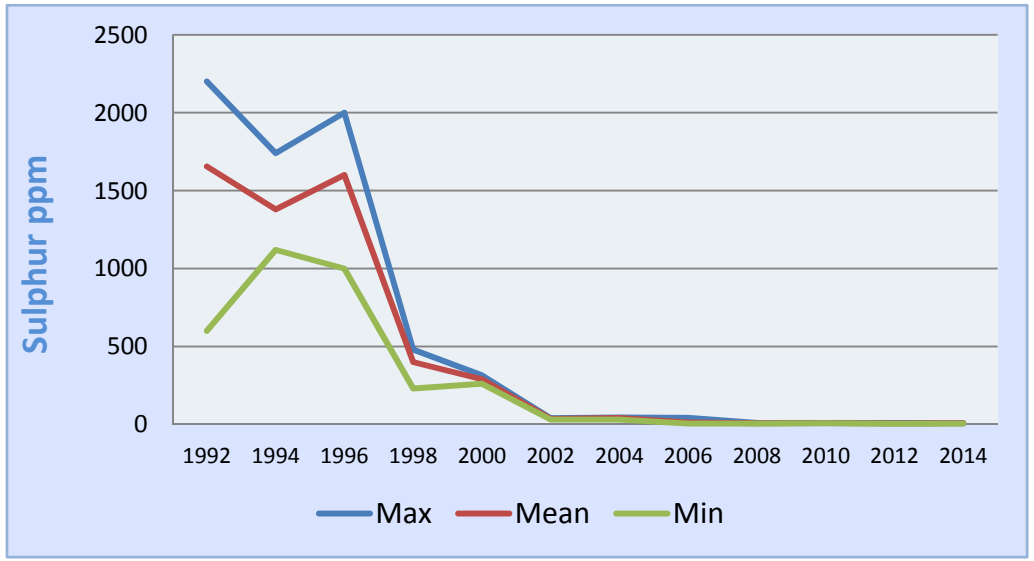
Benelux

Europe









Croatia

Europe

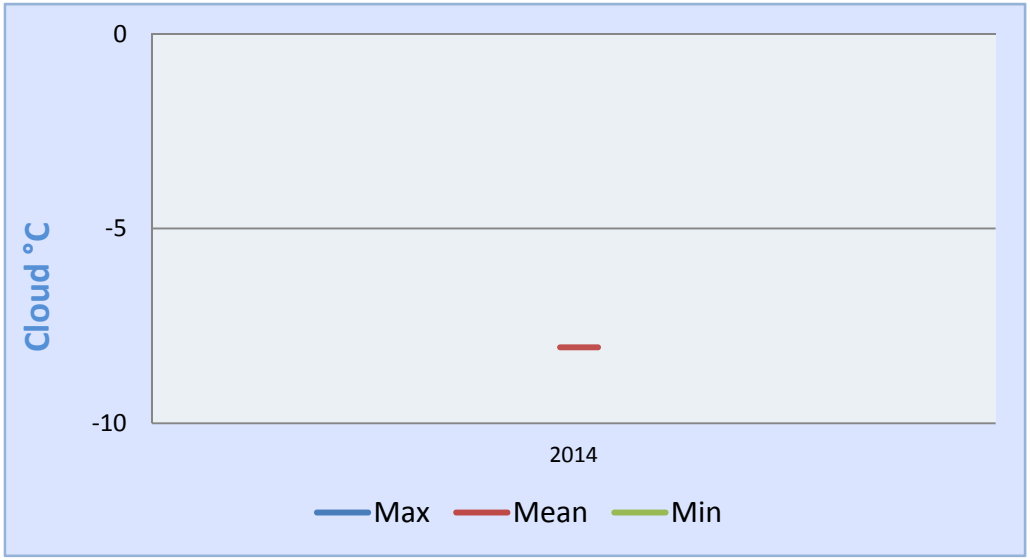
National standards and physical inspection data

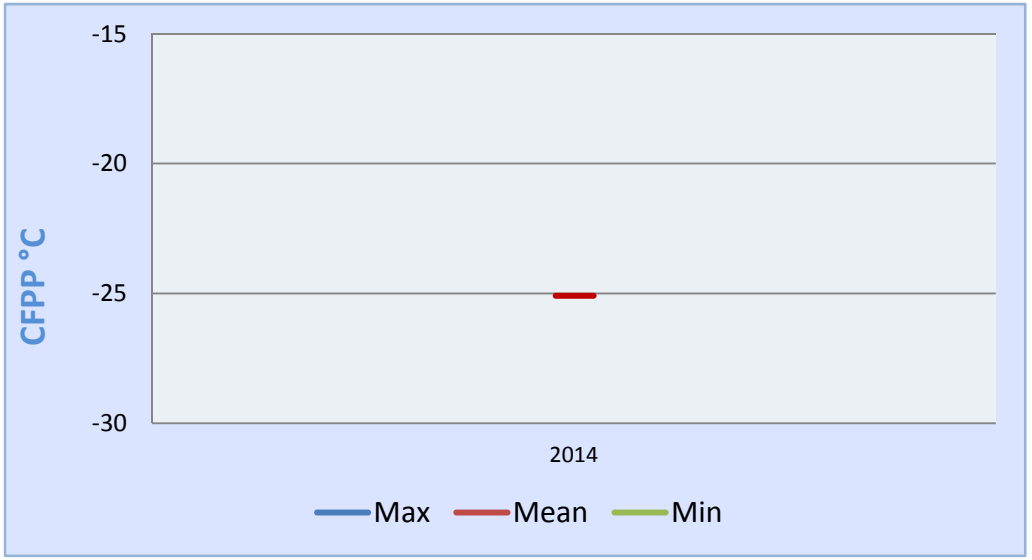
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400214
Cloud Point, °C			-8		-8
CFPP, °C	-20 (max)		-25		-25
Pour Point, °C			-39		-39
HFRR, µm	460 (max)		399		399
Wax Content @ 10°C Below Cloud, wt%			1.6		1.6
Rancimat, hrs	*		>40		>40
Sulphur, ppm	10 (max)		6		6
Density @15°C, kg/m^3	820 - 845		829		829
Viscosity @ 40°C, cSt	2.0 - 4.5		2.46		2.46
Cetane Index $_{2\ Variable}$			52		52
Cetane Index $_{4\ Variable}$	46 (min)		52		52
Cetane Number	51 (min)		53		53
Distillation, °C IBP			164		164
T_{10}			193		193
T_{20}			208		208
T_{50}			258		258
T_{90}			332		332
T_{95}	360 (max)		347		347
FBP			354		354
% FAME	7 (max)		0		0

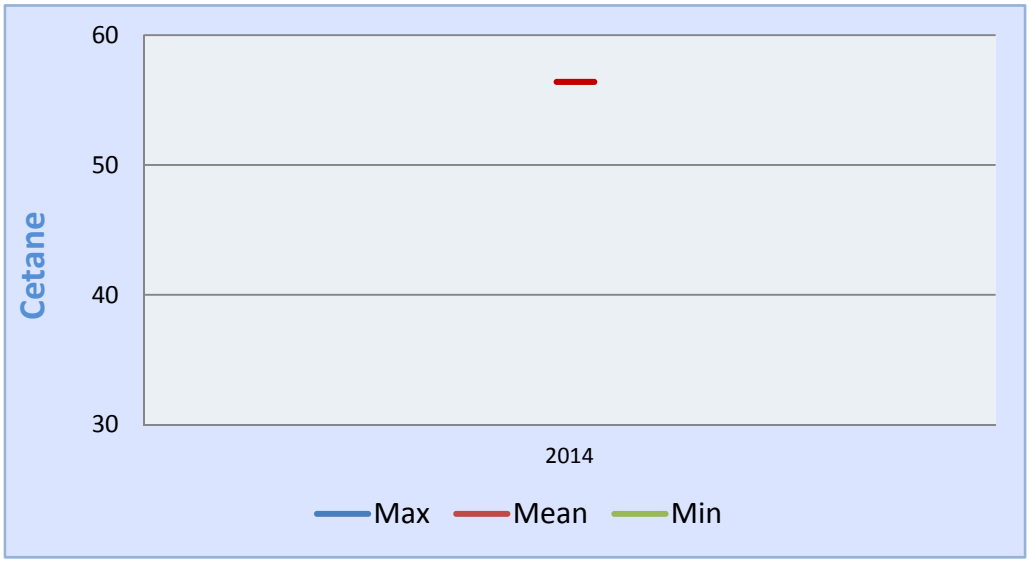
*20 hours min for diesel containing FAME above 2 % V/V

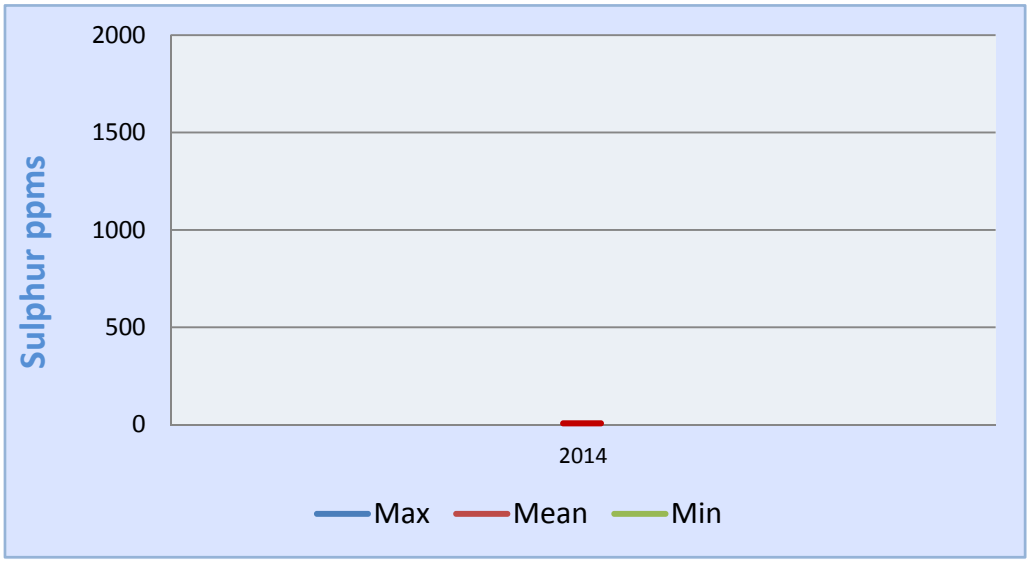
Croatia

Europe









Czech Republic

Europe

National standards and physical inspection data

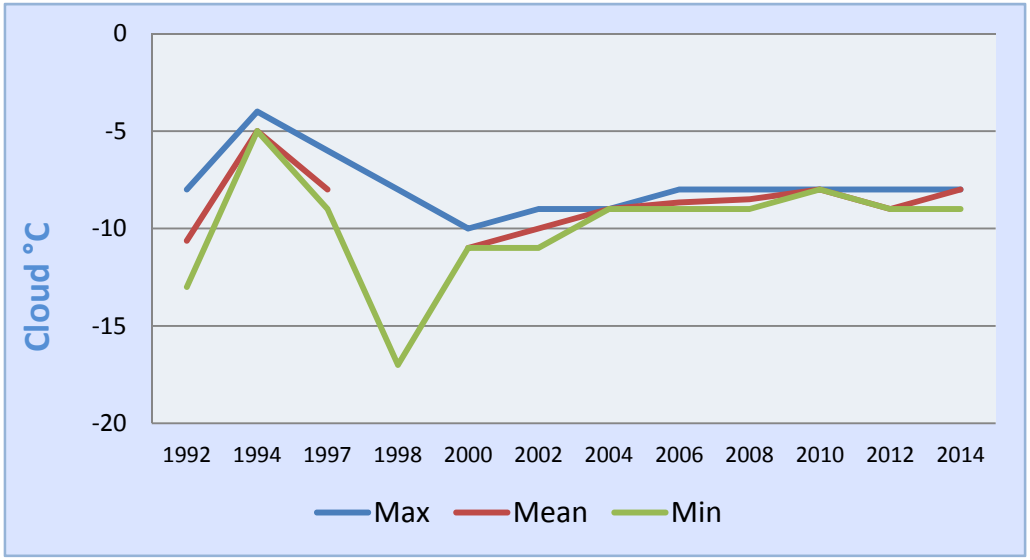
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400215	DIES 1400216	DIES 1400217
Cloud Point, °C	-8 (max)	-8	-8	-9	-9	-8	-8
CFPP, °C	-20 (max)	-20	-25	-29	-29	-28	-20
Pour Point, °C		-24	-27	-30	-30	-27	-24
HFRR, µm	460 (max)	232	219	209	232	217	209
Wax Content @ 10°C Below Cloud, wt%		1.9	1.7	1.6	1.9	1.7	1.6
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	7	6	6	7	6	6
Density @15°C, kg/m^3	820 - 845	839	838	837	839	839	837
Viscosity @ 40°C, cSt	2.0 - 4.5	2.72	2.63	2.53	2.53	2.63	2.72
Cetane Index $_{2\ Variable}$		52	51	50	50	51	52
Cetane Index $_{4\ Variable}$	46 (min)	52	51	50	50	51	52
Cetane Number	51 (min)	55	53	52	53	52	55
Distillation, °C IBP		180	178	177	177	177	180
T_{10}		210	208	206	206	208	210
T_{20}		225	223	221	221	223	225
T_{50}		271	268	265	265	268	271
T_{90}		336	334	332	332	335	336
T_{95}	360 (max)	350	348	346	346	349	350
FBP		357	356	353	353	357	357
% FAME	7 (max)	7	6	6	6	6	7

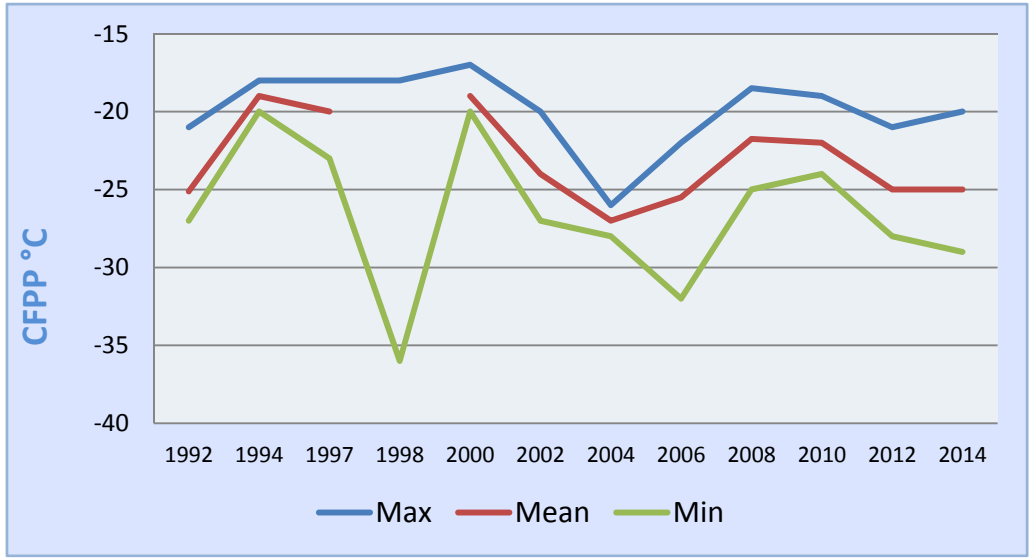
*20 hours min for diesel containing FAME above 2 % V/V

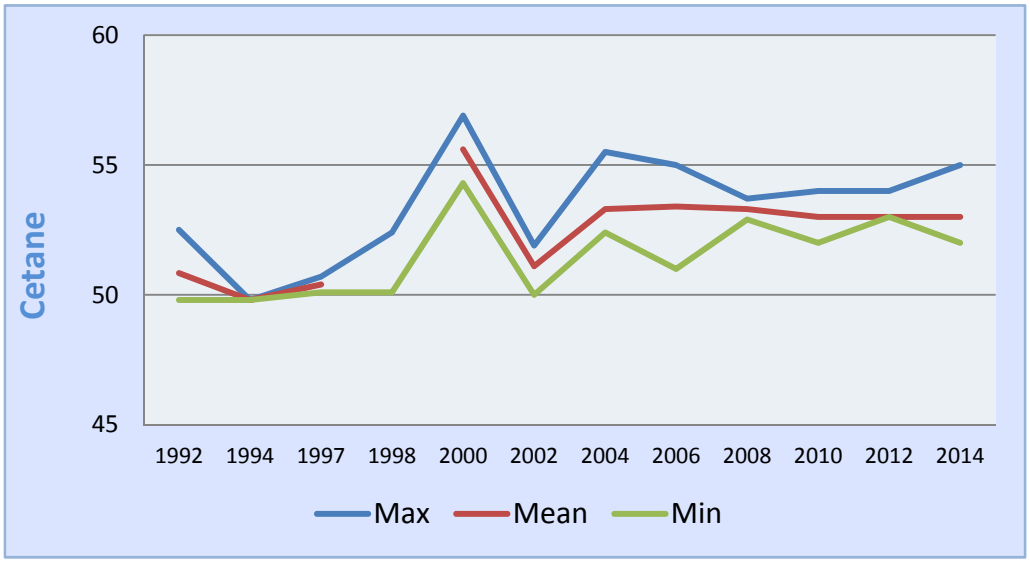
Infineum

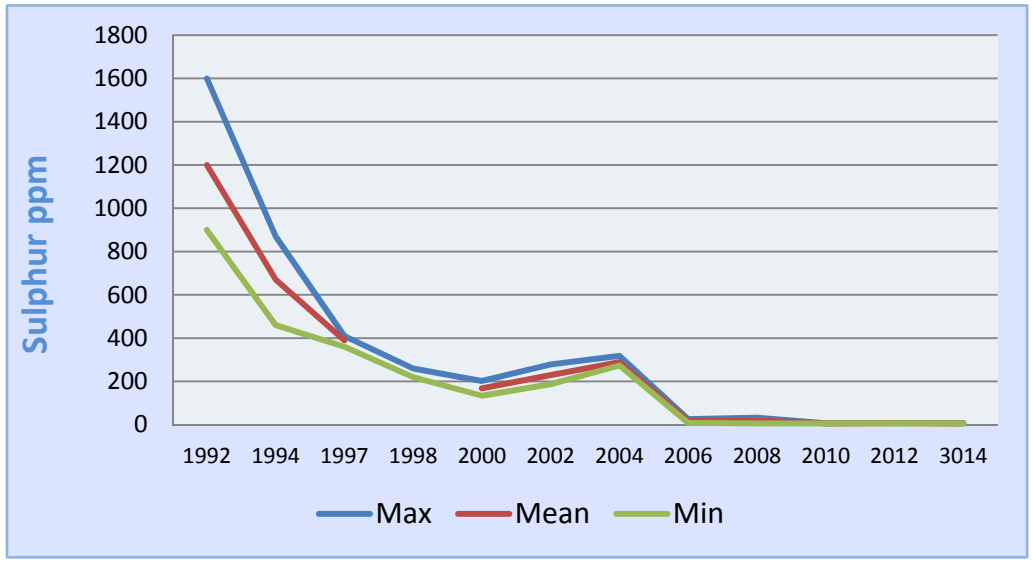
Czech Republic

Europe









Denmark

Europe

National standards and physical inspection data

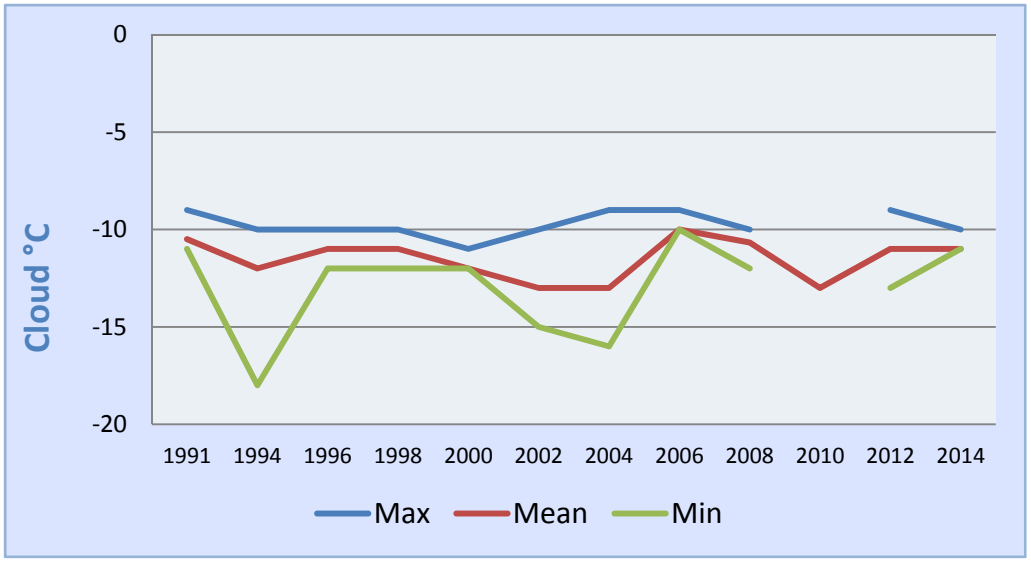
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400218	DIES 1400219
Cloud Point, °C		-10	-11	-11	-11	-10
CFPP, °C	-24 (max)	-24	-25	-26	-24	-26
Pour Point, °C		-27	-38	-48	-27	-48
HFRR, µm	460 (max)	367	293	218	218	367
Wax Content @ 10°C Below Cloud, wt%		1.8	1.7	1.5	1.5	1.8
Rancimat, hrs	*	>40	>35	31	>40	31
Sulphur, ppm	10 (max)	8	8	8	8	8
Density @15°C, kg/m^3	820 - 845	843	837	832	843	832
Viscosity @ 40°C, cSt	2.0 - 4.5	3.26	2.86	2.46	3.26	2.46
Cetane Index 2 Variable		53	53	52	53	52
Cetane Index 4 Variable	46 (min)	53	52	51	53	51
Cetane Number	51 (min)	57	52	48	57	48
Distillation, °C IBP		165	163	161	165	161
T_{10}		220	206	191	220	191
T_{20}		243	225	207	243	207
T_{50}		287	274	261	287	261
T_{90}		338	334	329	338	329
T_{95}	360 (max)	352	348	344	352	344
FBP		361	355	350	361	350
% FAME	7 (max)	7	3	0	7	0

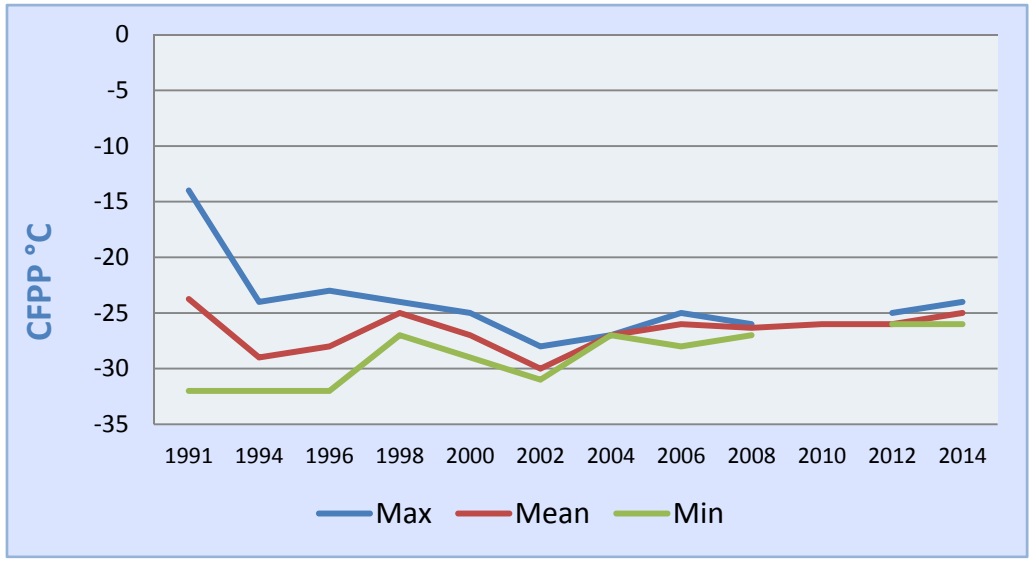
*20 hours min for diesel containing FAME above 2 % V/V

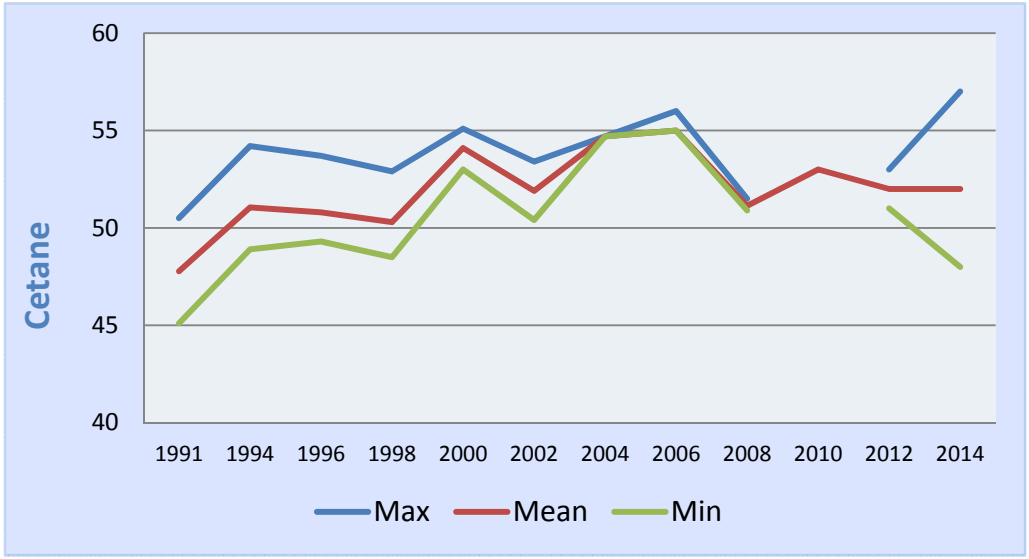
Infineum

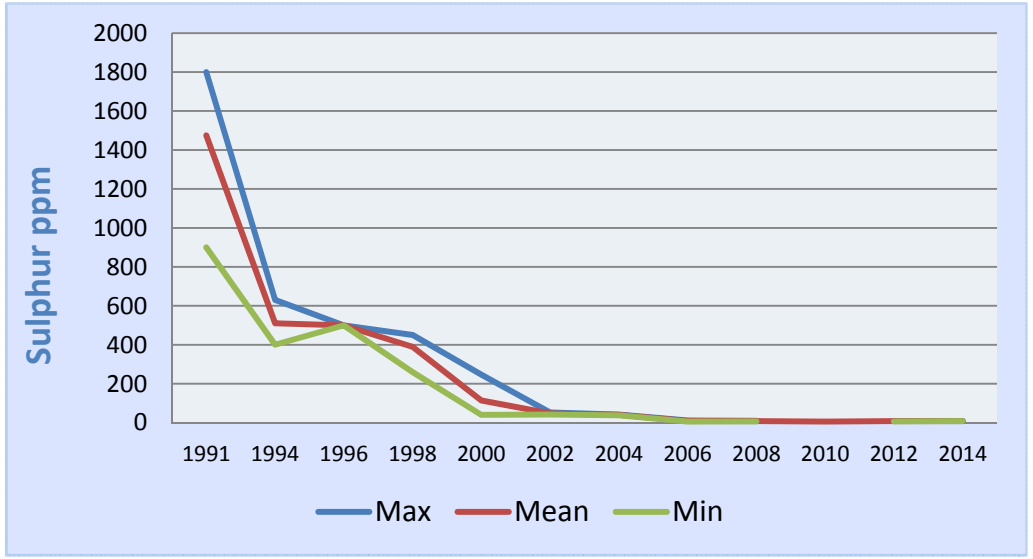
Denmark

Europe









Finland

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400221	DIES 1400222	DIES 1400224	DIES 1400225	DIES 1400228	DIES 1400229	DIES 1400230
Cloud Point, °C	-29 (max)	-22	-31	-34	-32	-34	-22	-34	-26	-33	-33
CFPP, °C	-34 (max)	-28	-42	-46	-43	-46	-28	-44	-42	-45	-46
Pour Point, °C		-36	-40	-45	-42	-39	-36	-39	-45	-42	-42
HFRR, µm	460 (max)	446	341	288	352	288	446	291	387	298	326
Wax Content @ 10°C Below Cloud, wt%		1.5	1.0	0.5	1.0	1.1	1.5	1.0	0.5	1.1	0.9
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	3	<3	<3	<3	<3	3	<3	<3	3	<3
Density @15°C, kg/m^3	800 - 840	812	802	800	801	800	804	800	812	802	800
Viscosity @ 40°C, cSt	1.5 - 4.0	2.38	2.12	1.85	1.96	2.20	2.38	2.18	1.85	2.00	2.18
Cetane Index $_{2 \text{ Variable}}$		63	61	50	59	63	62	63	50	59	63
Cetane Index $_{4 \text{ Variable}}$	46 (min)	67	63	51	60	67	65	66	51	61	66
Cetane Number	51 (min)	66	63	53	62	66	64	64	53	63	64
Distillation, °C IBP		175	171	161	169	172	175	172	161	170	173
T_{10}	180 (min)	206	200	184	193	205	204	206	184	195	205
T_{20}		221	214	194	205	220	219	220	194	207	220
T_{50}		260	251	228	241	258	260	257	228	245	257
T_{90}		317	297	290	299	290	317	290	312	298	290
T_{95}	360 (max)	330	309	299	315	299	330	299	330	315	299
FBP		342	322	311	327	312	338	311	342	327	312
% FAME	7 (max)	0	0	0	0	0	0	0	0	0	0

Specification shown is Reformulated Diesel, other specifications can also exist within Finland and may be represented within the data shown here

*20 hours min for diesel containing FAME above 2 % V/V

Finland (continued)

National standards and physical inspection data

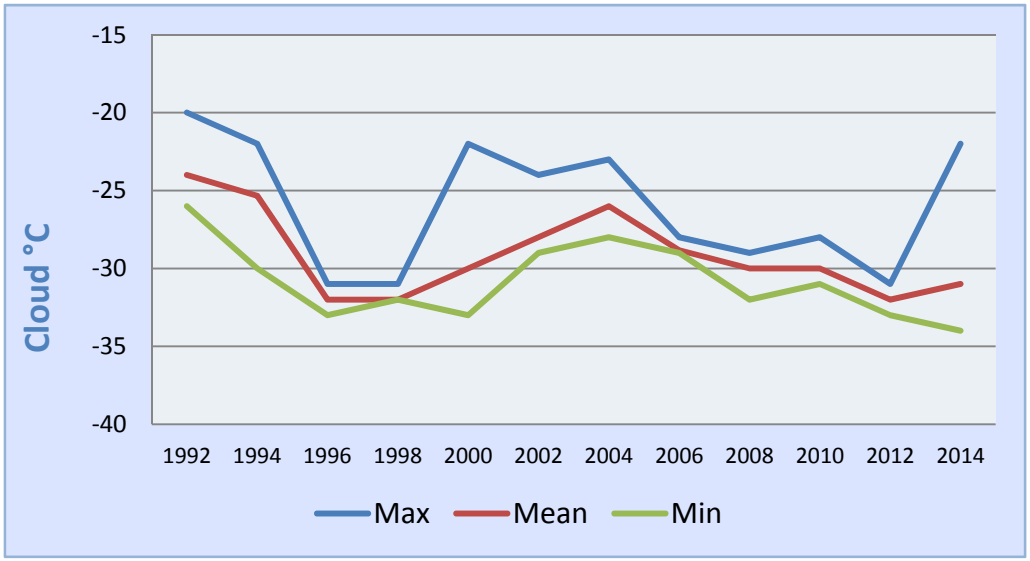
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400232	DIES 1400233
Cloud Point, °C	-29 (max)	-22	-31	-34	-33	-34
CFPP, °C	-34 (max)	-28	-42	-46	-43	-44
Pour Point, °C		-36	-40	-45	-39	-39
HFRR, µm	460 (max)	446	341	288	306	371
Wax Content @ 10°C Below Cloud, wt%		1.5	1.0	0.5	1.0	0.9
Rancimat, hrs	*	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	3	<3	<3	<3	<3
Density @15°C, kg/m^3	800 - 840	812	802	800	800	801
Viscosity @ 40°C, cSt	1.5 - 4.0	2.38	2.12	1.85	2.19	2.18
Cetane Index $_{2\ Variable}$		63	61	50	63	63
Cetane Index $_{4\ Variable}$	46 (min)	67	63	51	66	66
Cetane Number	51 (min)	66	63	53	65	64
Distillation, °C IBP		175	171	161	172	173
T_{10}	180 (min)	206	200	184	206	205
T_{20}		221	214	194	221	220
T_{50}		260	251	228	257	257
T_{90}		317	297	290	290	290
T_{95}	360 (max)	330	309	299	299	299
FBP		342	322	311	313	313
% FAME	7 (max)	0	0	0	0	0

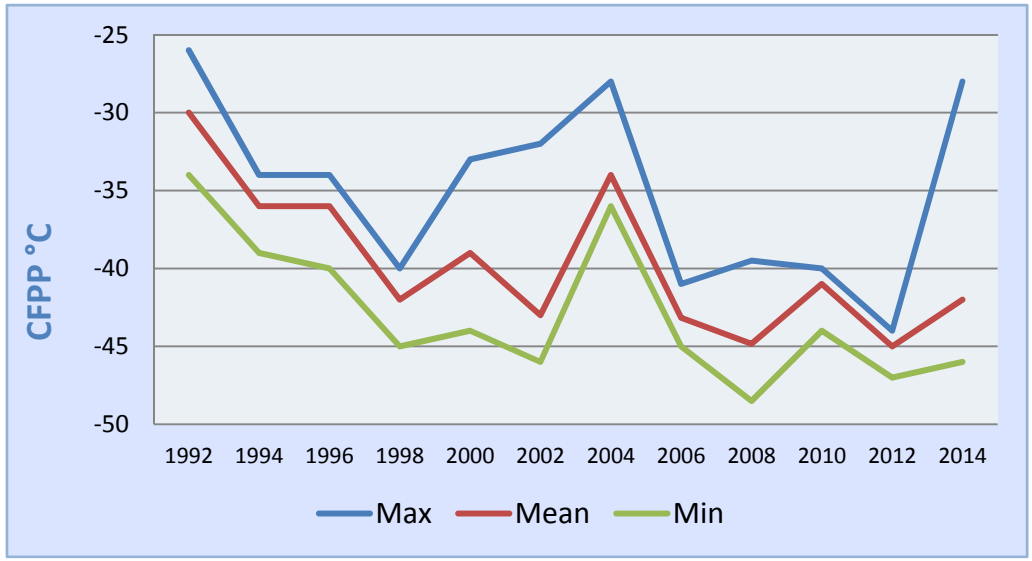
Specification shown is Reformulated Diesel, other specifications can also exist within Finland and may be represented within the data shown here

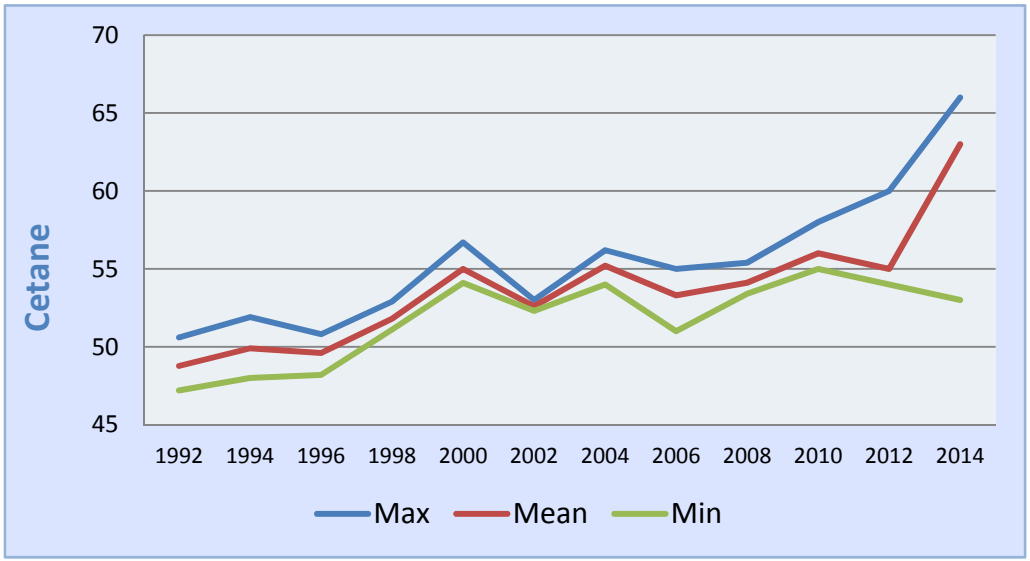
*20 hours min for diesel containing FAME above 2 % V/V

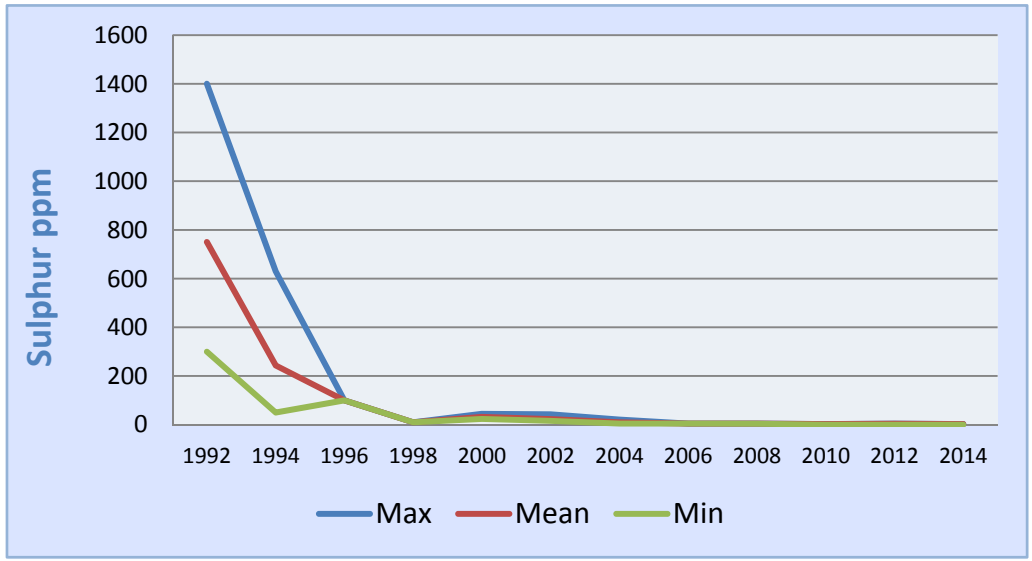
Finland

Europe









France

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400236	DIES 1400237	DIES 1400238	DIES 1400239	DIES 1400240	DIES 1400241	DIES 1400242
Cloud Point, °C	-5 (max)	-5	-8	-11	-7	-7	-8	-8	-11	-10	-9
CFPP, °C	-15 (max)*	-17	-21	-27	-18	-17	-19	-22	-27	-25	-23
Pour Point, °C		-24	-27	-36	-24	-24	-24	-30	-24	-24	-27
HFRR, µm	460 (max)	234	200	175	204	200	183	185	211	213	234
Wax Content @ 10°C Below Cloud, wt%		2.3	1.7	1.1	2.0	2.0	2.0	1.8	1.1	1.3	1.3
Rancimat, hrs	**	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	8	8	6	5	6	7	8
Density @15°C, kg/m^3	820 - 845	841	833	828	834	834	828	828	837	835	829
Viscosity @ 40°C, cSt	2.0 - 4.5	2.57	2.39	2.19	2.19	2.57	2.29	2.24	2.45	2.44	2.29
Cetane Index 2 Variable		54	52	49	53	54	53	52	50	51	52
Cetane Index 4 Variable	46 (min)	53	51	48	52	53	52	51	49	50	51
Cetane Number	51 (min)	58	53	50	54	57	52	55	53	55	52
Distillation, °C IBP		167	162	154	165	160	162	159	165	165	162
T_{10}		199	194	188	198	195	191	188	199	199	191
T_{20}		216	210	204	216	206	208	204	215	215	208
T_{50}		273	262	255	271	273	257	255	260	261	256
T_{90}		337	333	328	332	337	328	328	331	331	330
T_{95}	360 (max)	351	347	341	n/a	350	342	341	346	344	344
FBP		357	352	335	335	356	349	349	353	352	353
% FAME	7 (max)	8	7	4	7	7	7	7	8	7	7

*Specification for Gazole-Hiver, Grand-Froid is -20°C

**20 hours min for diesel containing FAME above 2 % V/V

Infineum

France (continued)

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400243	DIES 1400244	DIES 1400245	DIES 1400246	DIES 1400247	DIES 1400248	DIES 1400249
Cloud Point, °C	-5 (max)	-5	-8	-11	-8	-6	-5	-7	-7	-6	-8
CFPP, °C	-15 (max)*	-17	-21	-27	-24	-19	-17	-22	-21	-27	-19
Pour Point, °C		-24	-27	-36	-27	-36	-24	-33	-27	-30	-24
HFRR, µm	460 (max)	234	200	175	175	206	191	205	189	200	207
Wax Content @ 10°C Below Cloud, wt%		2.3	1.7	1.1	1.3	1.9	1.9	1.7	1.5	1.5	1.4
Rancimat, hrs	**	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	7	7	8	8	6	6	6
Density @15°C, kg/m^3	820 - 845	841	833	828	832	837	841	841	828	831	831
Viscosity @ 40°C, cSt	2.0 - 4.5	2.57	2.39	2.19	2.36	2.27	2.49	2.49	2.32	2.41	2.50
Cetane Index $_{2\ Variable}$		54	52	49	51	49	51	51	52	52	53
Cetane Index $_{4\ Variable}$	46 (min)	53	51	48	51	48	49	49	52	52	52
Cetane Number	51 (min)	58	53	50	52	51	50	52	52	55	52
Distillation, °C IBP		167	162	154	162	154	158	158	164	163	167
T_{10}		199	194	188	194	190	193	192	191	191	196
T_{20}		216	210	204	210	206	212	212	206	208	213
T_{50}		273	262	255	258	256	270	270	255	262	264
T_{90}		337	333	328	331	332	337	337	331	335	336
T_{95}	360 (max)	351	347	341	345	344	350	351	347	349	351
FBP		357	352	335	352	348	355	357	355	357	357
% FAME	7 (max)	8	7	4	7	7	7	7	4	7	7

*Specification for Gazole-Hiver, Grand-Froid is -20°C

**20 hours min for diesel containing FAME above 2 % V/V

Infineum

France (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400250	DIES 1400251
Cloud Point, °C	-5 (max)	-5	-8	-11	-8	-9
CFPP, °C	-15 (max)*	-17	-21	-27	-20	-19
Pour Point, °C		-24	-27	-36	-24	-24
HFRR, µm	460 (max)	234	200	175	202	194
Wax Content @ 10°C Below Cloud, wt%		2.3	1.7	1.1	1.5	2.3
Rancimat, hrs	**	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	6	8
Density @15°C, kg/m^3	820 - 845	841	833	828	831	838
Viscosity @ 40°C, cSt	2.0 - 4.5	2.57	2.39	2.19	2.49	2.43
Cetane Index 2 Variable		54	52	49	53	52
Cetane Index 4 Variable	46 (min)	53	51	48	52	51
Cetane Number	51 (min)	58	53	50	58	51
Distillation, °C IBP		167	162	154	165	158
T_{10}		199	194	188	195	194
T_{20}		216	210	204	211	215
T_{50}		273	262	255	262	270
T_{90}		337	333	328	334	333
T_{95}	360 (max)	351	347	341	347	347
FBP		357	352	335	356	355
% FAME	7 (max)	8	7	4	7	7

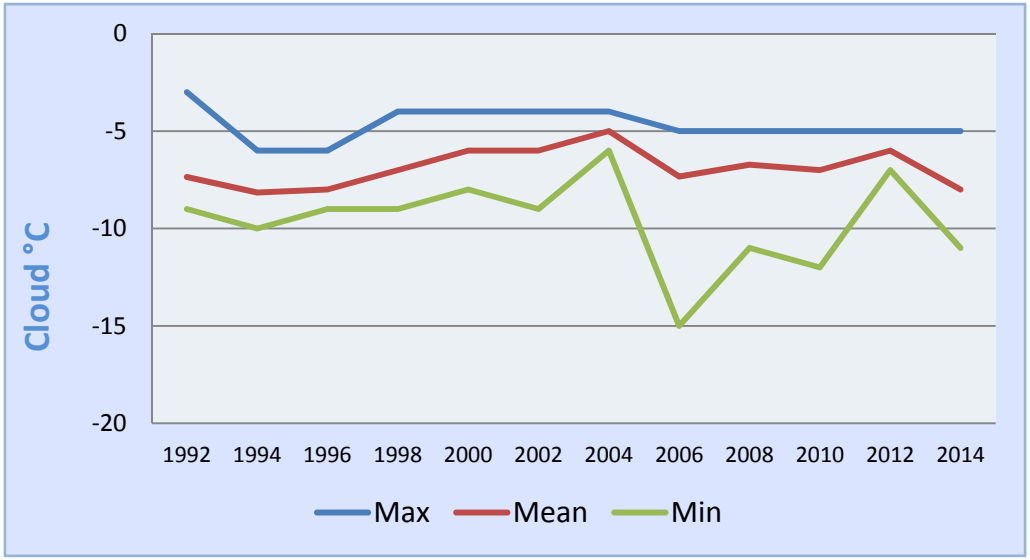
*Specification for Gazole-Hiver, Grand-Froid is -20°C

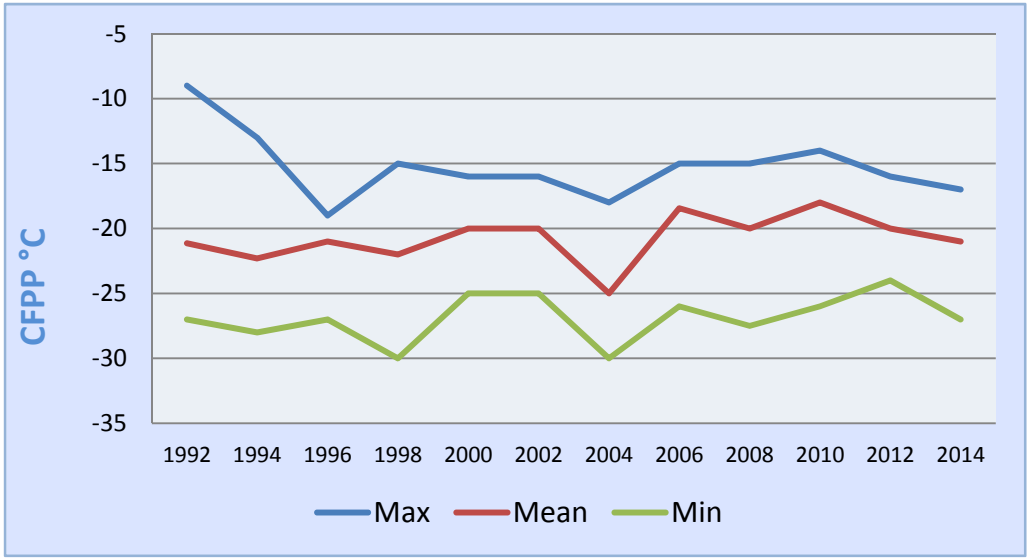
**20 hours min for diesel containing FAME above 2 % V/V

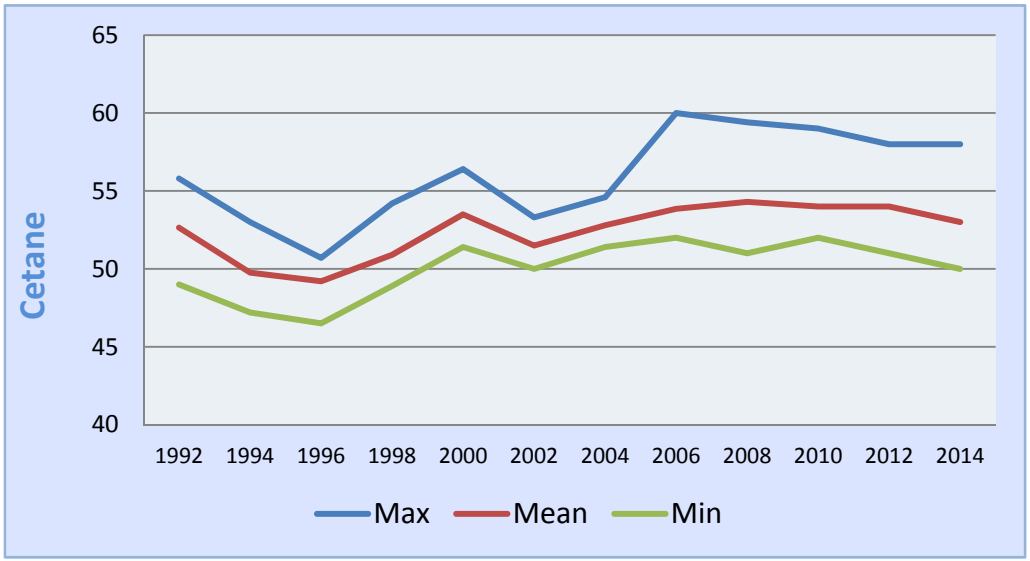
Infineum

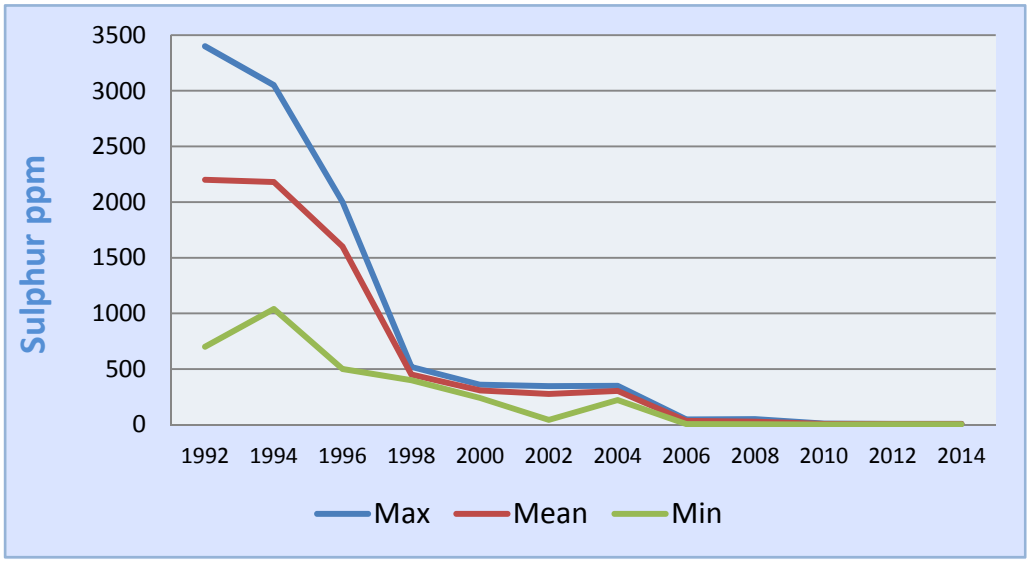
France

Europe









Germany

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400252	DIES 1400253	DIES 1400254	DIES 1400255	DIES 1400256	DIES 1400257	DIES 1400259
Cloud Point, °C		-6	-9	-17	-7	-10	-7	-9	-9	-9	-8
CFPP, °C	-22 (max)	-22	-29	-37	-32	-31	-32	-32	-30	-31	-26
Pour Point, °C		-24	-31	-60	-33	-30	-30	-30	-30	-33	-24
HFRR, µm	460 (max)	457	250	152	370	224	353	185	193	393	199
Wax Content @ 10°C Below Cloud, wt%		2.1	1.4	0.7	0.7	1.5	0.7	1.3	1.4	1.4	1.8
Rancimat, hrs	*	>40	>30	1	>40	38	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	6	<3	5	7	6	6	6	<3	8
Density @15°C, kg/m^3	820 - 845	844	836	827	832	842	833	844	844	830	841
Viscosity @ 40°C, cSt	2.0 - 4.5	3.35	2.68	2.06	2.59	2.90	2.63	2.84	2.88	2.95	2.77
Cetane Index $_{2 \text{ Variable}}$		55	52	49	53	52	53	50	51	54	52
Cetane Index $_{4 \text{ Variable}}$	46 (min)	57	52	49	52	51	53	50	50	57	50
Cetane Number	51 (min)	64	55	48	56	54	57	53	55	64	53
Distillation, °C IBP		216	170	157	165	176	170	172	176	216	169
T_{10}		239	204	189	199	213	208	208	209	239	202
T_{20}		245	222	202	218	232	226	226	228	245	221
T_{50}		285	268	247	265	276	266	274	274	267	273
T_{90}		344	333	316	331	333	327	336	334	316	340
T_{95}	360 (max)	356	348	334	352	346	349	350	347	334	356
FBP		362	355	344	362	353	360	357	355	344	362
% FAME	7 (max)	9	5	0	0	7	0	7	7	0	7

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Germany (continued)

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400260	DIES 1400261	DIES 1400262	DIES 1400264	DIES 1400266	DIES 1400267	DIES 1400305
Cloud Point, °C		-6	-9	-17	-8	-8	-6	-16	-8	-7	-8
CFPP, °C	-22 (max)	-22	-29	-37	-27	-30	-30	-37	-28	-24	-22
Pour Point, °C		-24	-31	-60	-24	-33	-30	-48	-30	-27	-24
HFRR, µm	460 (max)	457	250	152	201	415	343	457	192	175	177
Wax Content @ 10°C Below Cloud, wt%		2.1	1.4	0.7	1.7	1.5	1.2	1.1	1.7	1.6	2.0
Rancimat, hrs	*	>40	>30	1	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	6	<3	7	<3	6	6	6	9	7
Density @15°C, kg/m^3	820 - 845	844	836	827	835	829	830	837	836	838	837
Viscosity @ 40°C, cSt	2.0 - 4.5	3.35	2.68	2.06	2.67	2.31	2.69	2.98	2.69	2.39	2.69
Cetane Index $_{2\ Variable}$		55	52	49	53	52	54	54	53	49	53
Cetane Index $_{4\ Variable}$	46 (min)	57	52	49	53	51	54	53	52	49	52
Cetane Number	51 (min)	64	55	48	56	48	60	61	60	52	57
Distillation, °C IBP		216	170	157	171	164	167	164	171	170	168
T_{10}		239	204	189	208	195	200	208	203	197	204
T_{20}		245	222	202	226	211	219	227	221	212	224
T_{50}		285	268	247	270	255	268	276	271	259	273
T_{90}		344	333	316	333	323	339	344	335	331	335
T_{95}	360 (max)	356	348	334	347	343	356	355	348	344	349
FBP		362	355	344	353	351	361	361	354	354	353
% FAME	7 (max)	9	5	0	5	0	0	0	7	7	7

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Germany (continued)

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400306	DIES 1400311	DIES 1400312	DIES 1400313	DIES 1400314	DIES 1400315	DIES 1400316
Cloud Point, °C		-6	-9	-17	-17	-8	-8	-9	-12	-7	-12
CFPP, °C	-22 (max)	-22	-29	-37	-34	-28	-30	-26	-33	-23	-28
Pour Point, °C		-24	-31	-60	-60	-30	-33	-24	-30	-27	-27
HFRR, µm	460 (max)	457	250	152	426	176	187	152	221	176	188
Wax Content @ 10°C Below Cloud, wt%		2.1	1.4	0.7	0.9	1.6	1.1	1.0	0.8	2.1	1.8
Rancimat, hrs	*	>40	>30	1	>40	>40	>40	1	7	22	>40
Sulphur, ppm	10 (max)	9	6	<3	4	7	6	4	4	8	9
Density @15°C, kg/m^3	820 - 845	844	836	827	838	836	835	839	836	841	827
Viscosity @ 40°C, cSt	2.0 - 4.5	3.35	2.68	2.06	3.35	2.74	2.62	2.47	2.74	3.02	2.06
Cetane Index $_{2 \text{ Variable}}$		55	52	49	55	53	53	50	49	53	50
Cetane Index $_{4 \text{ Variable}}$	46 (min)	57	52	49	55	52	52	49	49	53	50
Cetane Number	51 (min)	64	55	48	61	53	54	51	53	53	53
Distillation, °C IBP		216	170	157	157	170	163	167	166	173	161
T_{10}		239	204	189	213	206	195	195	194	220	189
T_{20}		245	222	202	237	225	214	212	210	239	202
T_{50}		285	268	247	285	271	270	263	256	281	247
T_{90}		344	333	316	343	333	340	335	325	335	327
T_{95}	360 (max)	356	348	334	354	347	355	351	347	346	340
FBP		362	355	344	357	353	361	362	357	353	344
% FAME	7 (max)	9	5	0	0	6	7	7	2	9	7

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Germany (continued)

National standards and physical inspection data

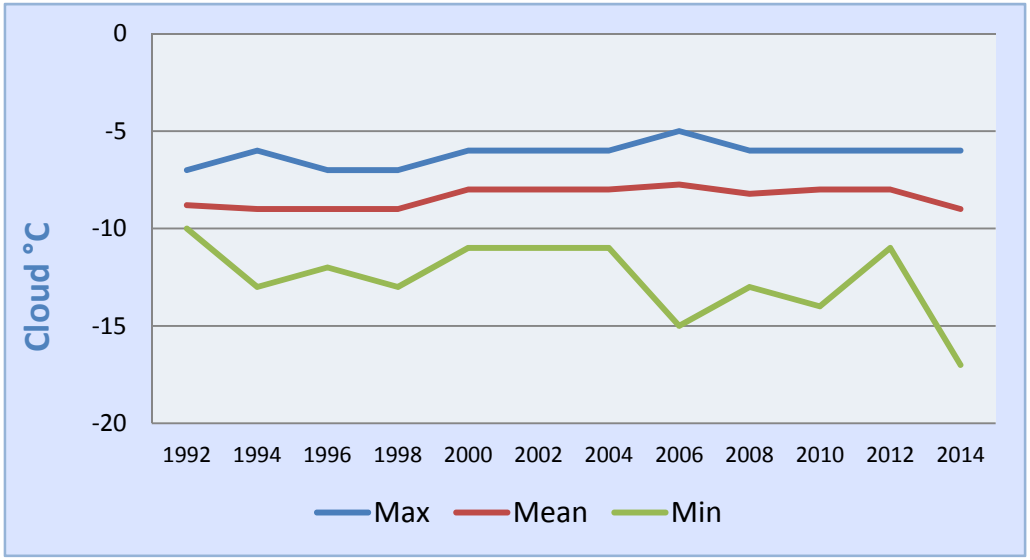
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400317	DIES 1400319	DIES 1400321
Cloud Point, °C		-6	-9	-17	-10	-8	-8
CFPP, °C	-22 (max)	-22	-29	-37	-27	-29	-26
Pour Point, °C		-24	-31	-60	-27	-24	-24
HFRR, µm	460 (max)	457	250	152	230	170	192
Wax Content @ 10°C Below Cloud, wt%		2.1	1.4	0.7	1.9	1.4	1.9
Rancimat, hrs	*	>40	>30	1	>40	>40	>40
Sulphur, ppm	10 (max)	9	6	<3	8	7	9
Density @15°C, kg/m^3	820 - 845	844	836	827	831	839	838
Viscosity @ 40°C, cSt	2.0 - 4.5	3.35	2.68	2.06	2.22	2.55	2.51
Cetane Index $_{2\ Variable}$		55	52	49	51	51	51
Cetane Index $_{4\ Variable}$	46 (min)	57	52	49	50	50	50
Cetane Number	51 (min)	64	55	48	53	55	52
Distillation, °C IBP		216	170	157	161	169	170
T_{10}		239	204	189	190	199	201
T_{20}		245	222	202	205	218	217
T_{50}		285	268	247	255	267	263
T_{90}		344	333	316	330	333	333
T_{95}	360 (max)	356	348	334	343	348	346
FBP		362	355	344	352	355	352
% FAME	7 (max)	9	5	0	7	7	7

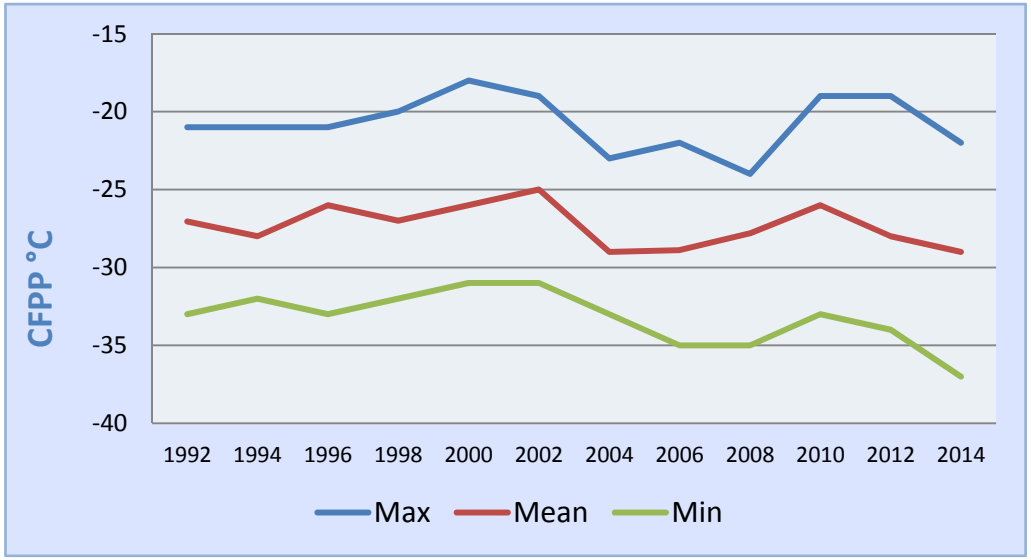
*20 hours min for diesel containing FAME above 2 % V/V

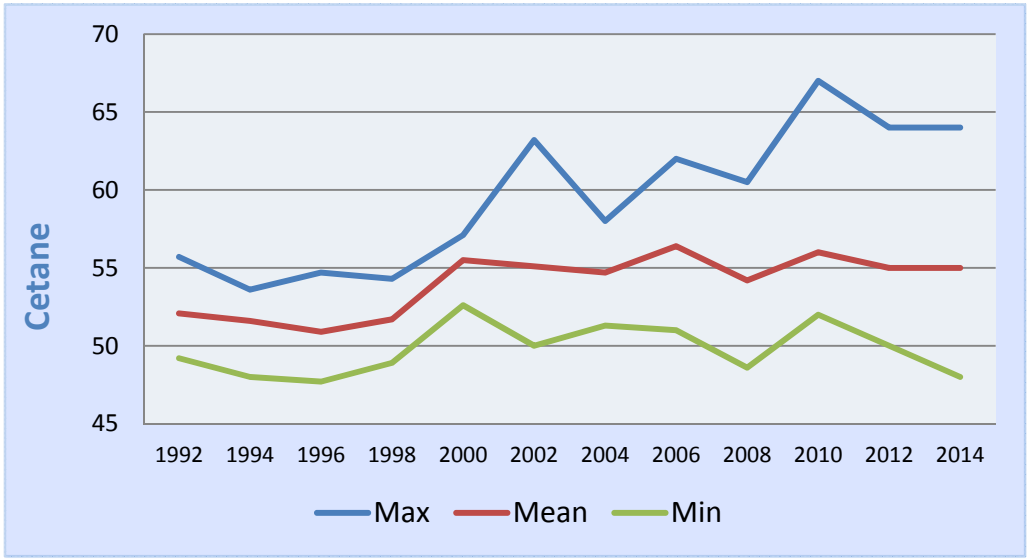
Infineum

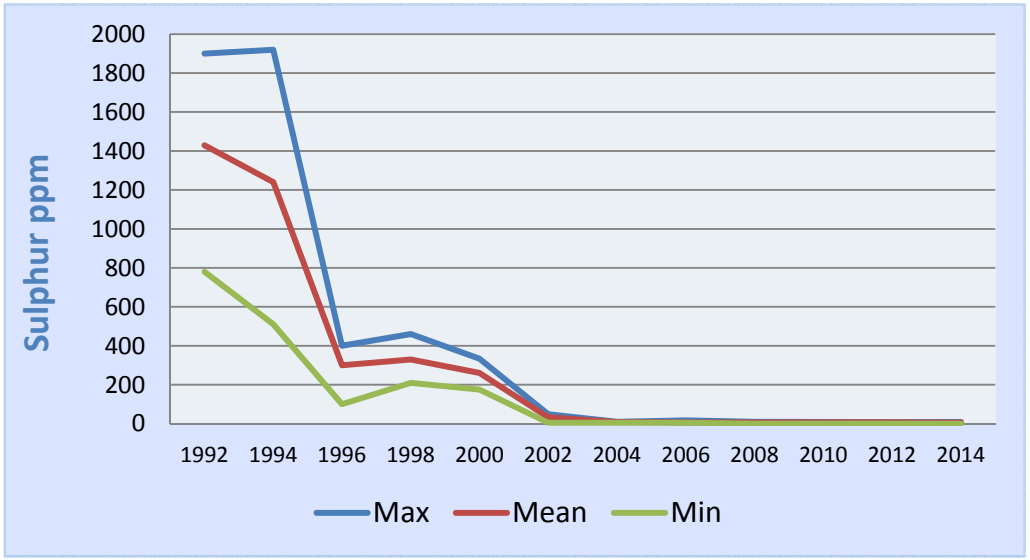
Germany

Europe









Greece

Europe

National standards and physical inspection data

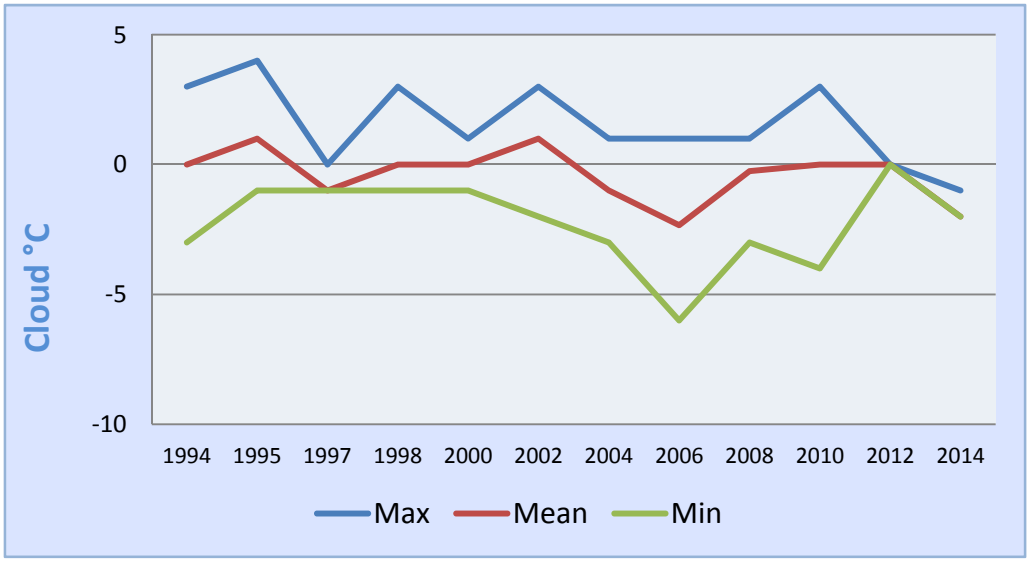
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400323	DIES 1400325
Cloud Point, °C		-1	-2	-2	-1	-2
CFPP, °C	-5 (max)	-13	-14	-14	-13	-14
Pour Point, °C		-21	-24	-27	-21	-27
HFRR, µm	460 (max)	206	192	177	177	206
Wax Content @ 10°C Below Cloud, wt%		2.1	1.9	1.7	2.1	1.7
Rancimat, hrs	*	>40	>25	15	15	>40
Sulphur, ppm	10 (max)	6	5	5	5	6
Density @15°C, kg/m^3	820 - 845	832	831	831	832	831
Viscosity @ 40°C, cSt	2.0 - 4.5	2.71	2.63	2.54	2.71	2.54
Cetane Index 2 Variable		55	55	54	55	54
Cetane Index 4 Variable	46 (min)	55	54	54	55	54
Cetane Number	51 (min)	54	53	52	52	54
Distillation, °C IBP		164	162	160	160	164
T_{10}		200	199	198	200	198
T_{20}		220	217	215	220	215
T_{50}		276	273	269	276	269
T_{90}		342	342	341	342	341
T_{95}	360 (max)	358	357	357	358	357
FBP		364	364	364	364	364
% FAME	7 (max)	8	7	7	8	7

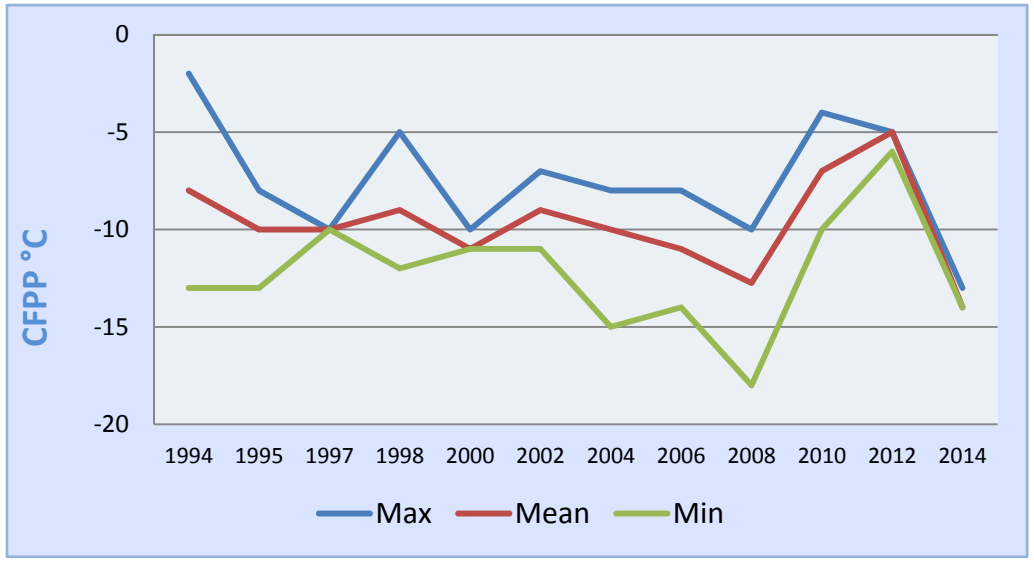
*20 hours min for diesel containing FAME above 2 % V/V

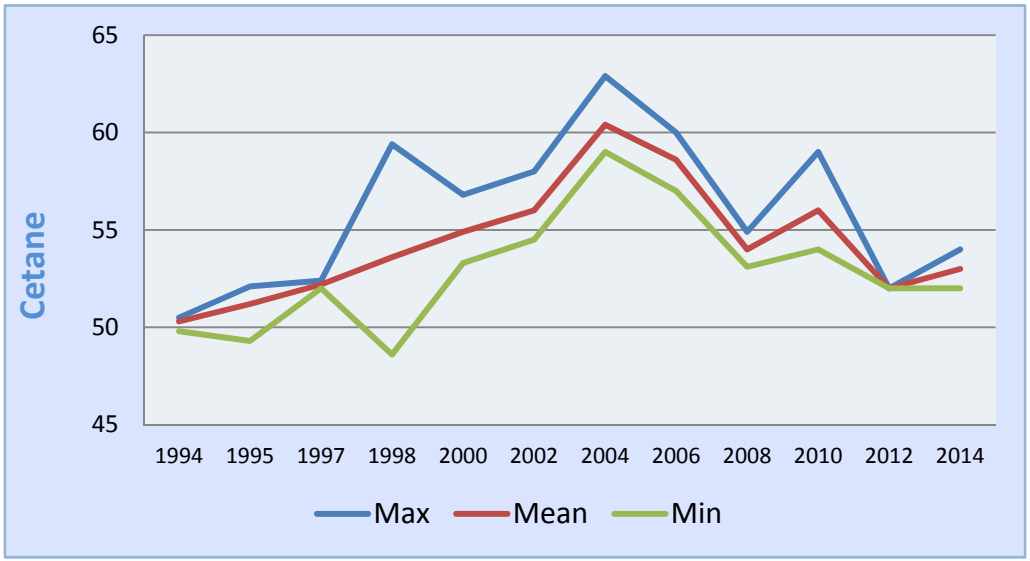
Infineum

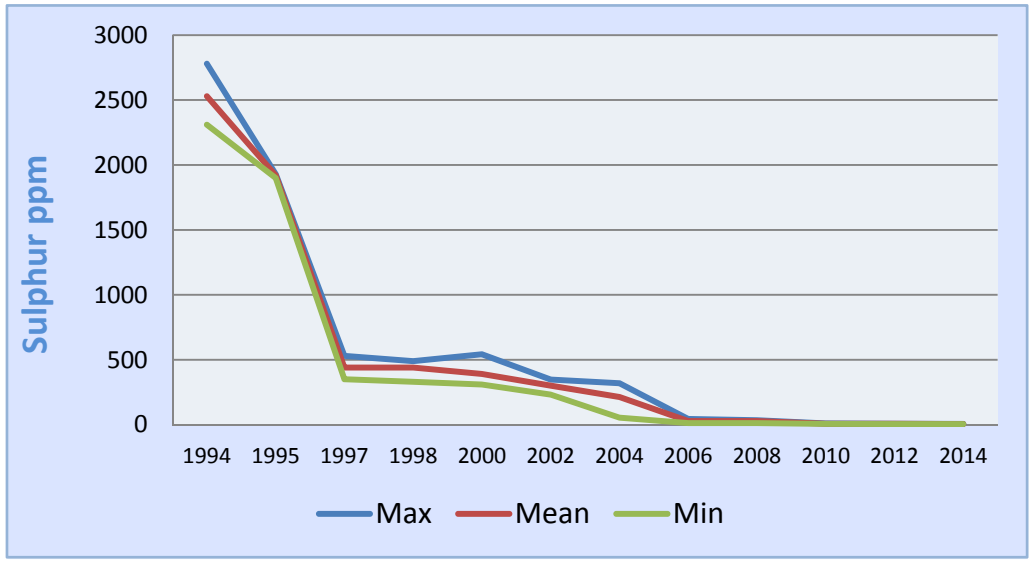
Greece

Europe









Hungary

Europe

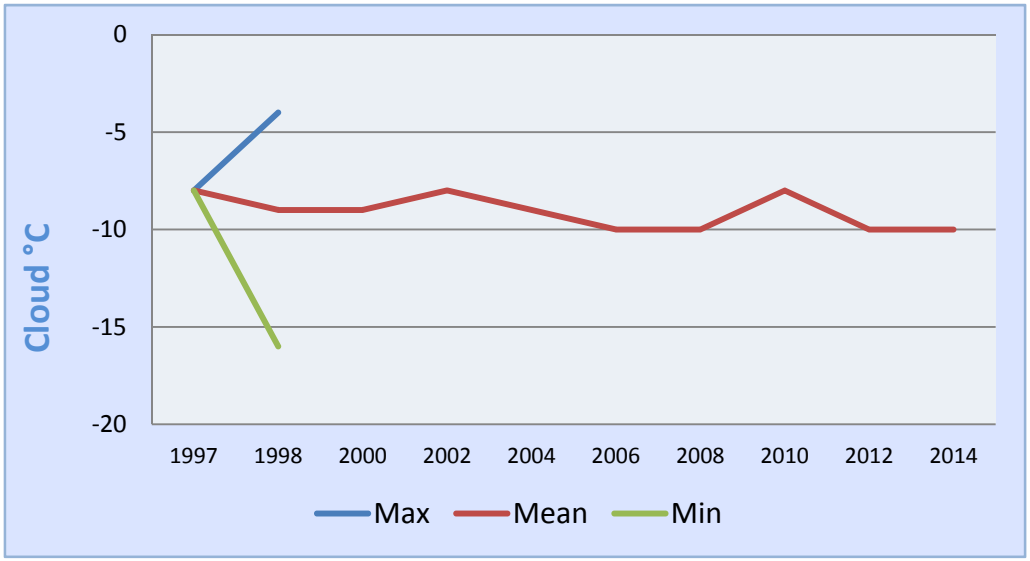
National standards and physical inspection data

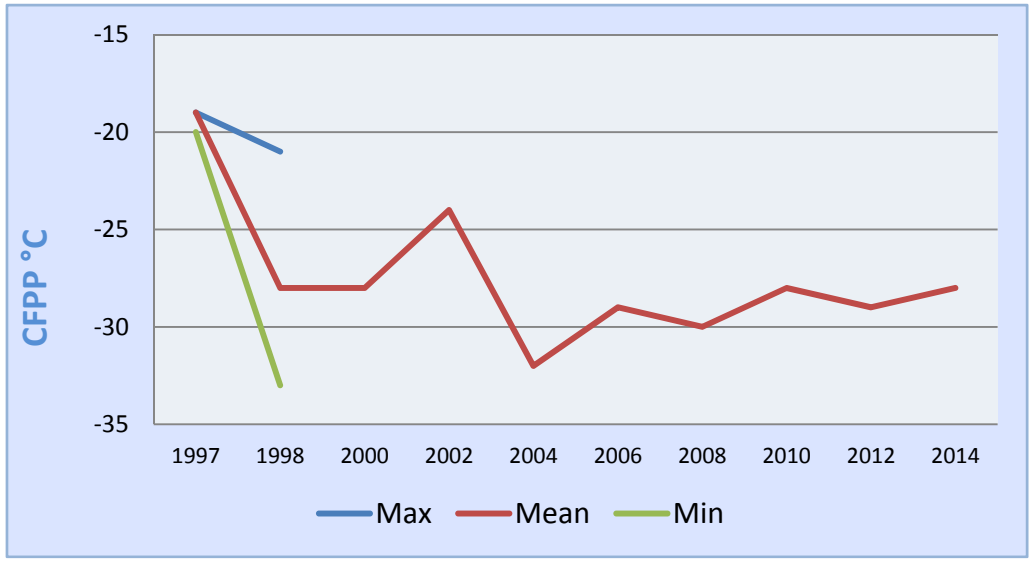
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400327
Cloud Point, °C			-10		-10
CFPP, °C	-20 (max)		-28		-28
Pour Point, °C			-30		-30
HFRR, µm	460 (max)		379		379
Wax Content @ 10°C Below Cloud, wt%			1.2		1.2
Rancimat, hrs	*		>40		>40
Sulphur, ppm	10 (max)		6		6
Density @15°C, kg/m^3	820 - 845		839		839
Viscosity @ 40°C, cSt	2.0 - 4.5		2.81		2.81
Cetane Index $_{2\ Variable}$			51		51
Cetane Index $_{4\ Variable}$	46 (min)		51		51
Cetane Number	51 (min)		53		53
Distillation, °C IBP			169		169
T_{10}			207		207
T_{20}			225		225
T_{50}			270		270
T_{90}			340		340
T_{95}	360 (max)		358		358
FBP			364		364
% FAME	7 (max)		0		0

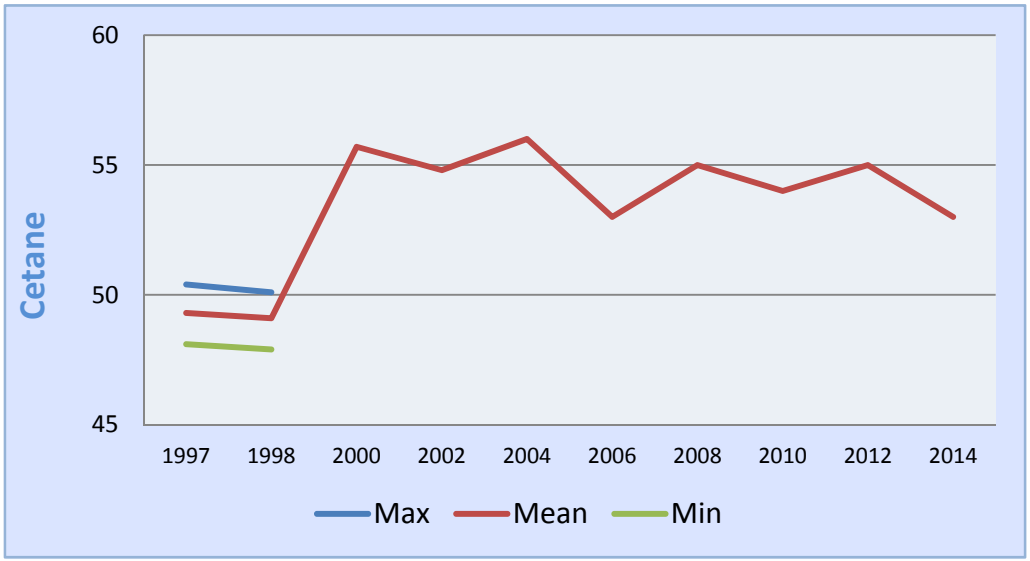
*20 hours min for diesel containing FAME above 2 % V/V

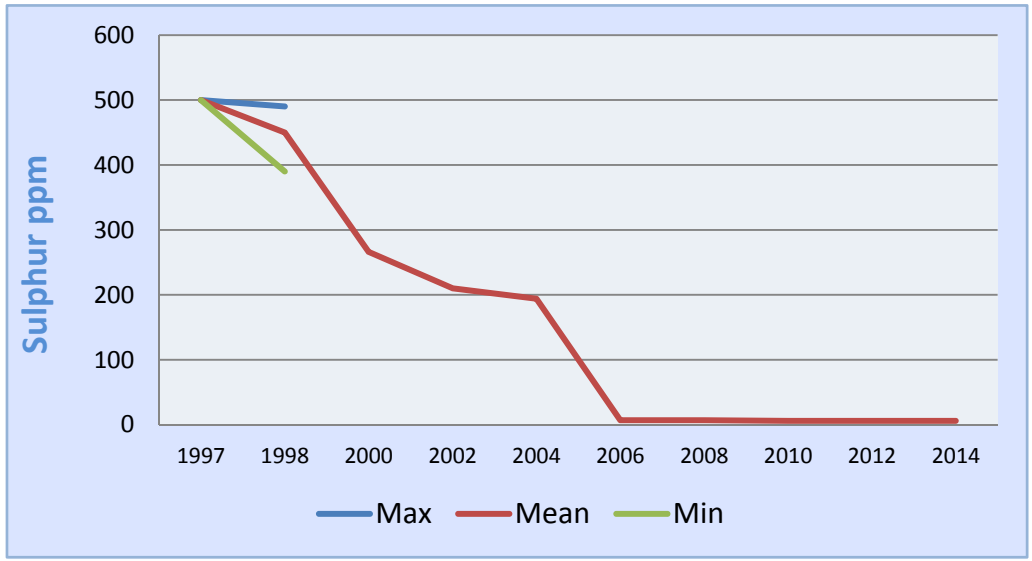
Hungary

Europe









Ireland

Europe

National standards and physical inspection data

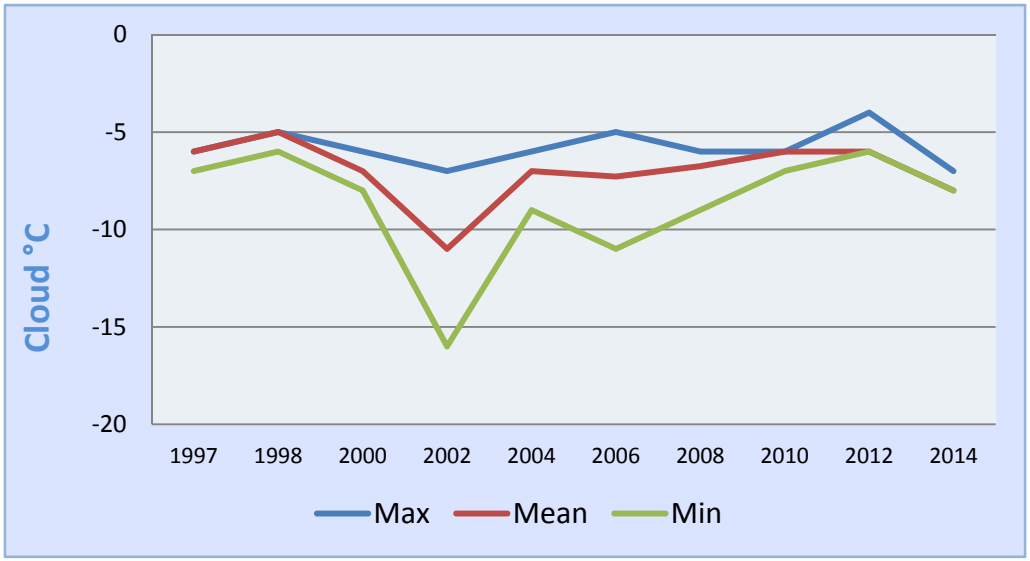
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400329	DIES 1400330	DIES 1400331
Cloud Point, °C		-7	-8	-8	-8	-8	-7
CFPP, °C	-15 (max)	-18	-18	-19	-18	-18	-19
Pour Point, °C		-21	-24	-30	-21	-21	-30
HFRR, µm	460 (max)	521	306	188	208	188	521
Wax Content @ 10°C Below Cloud, wt%		2.3	2.2	2.1	2.1	2.3	2.1
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	6	4	5	8	4
Density @15°C, kg/m^3	820 - 845	840	835	829	835	840	829
Viscosity @ 40°C, cSt	2.0 - 4.5	2.83	2.65	2.46	2.67	2.83	2.46
Cetane Index $_{2\ Variable}$		53	52	52	53	52	53
Cetane Index $_{4\ Variable}$	46 (min)	53	52	52	53	52	52
Cetane Number	51 (min)	53	53	53	53	53	53
Distillation, °C IBP		180	173	165	174	180	165
T_{10}		219	208	195	209	219	195
T_{20}		236	225	211	227	236	211
T_{50}		274	267	258	270	274	258
T_{90}		331	326	316	331	330	316
T_{95}	360 (max)	345	344	344	345	344	344
FBP		353	352	351	352	353	351
% FAME	7 (max)	6	4	0	6	6	0

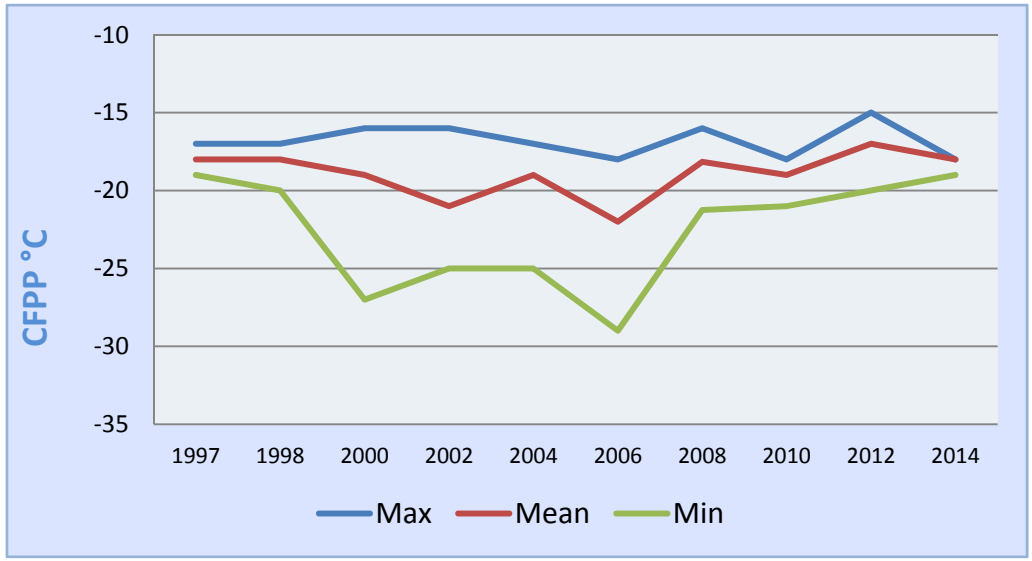
*20 hours min for diesel containing FAME above 2 % V/V

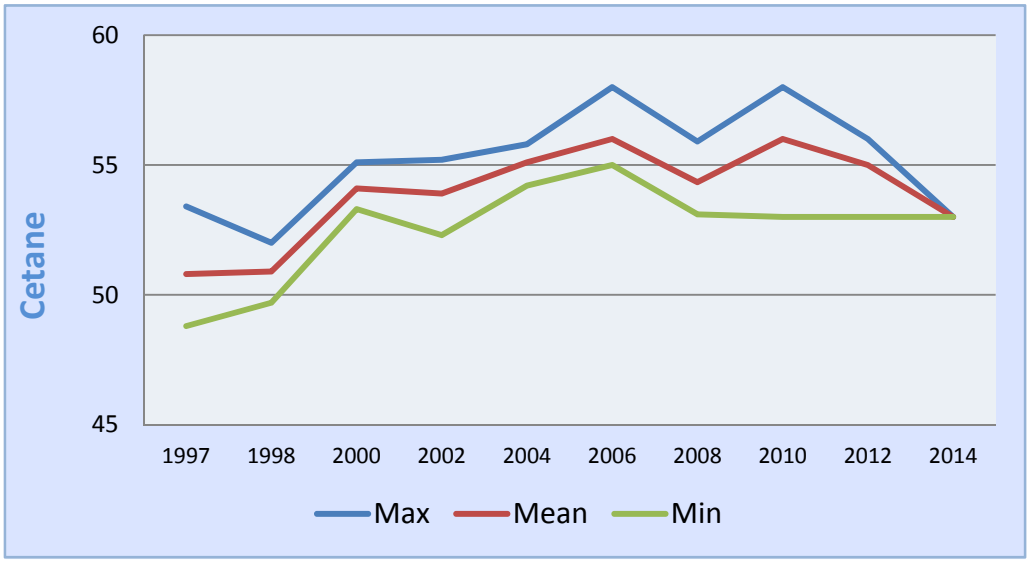
Infineum

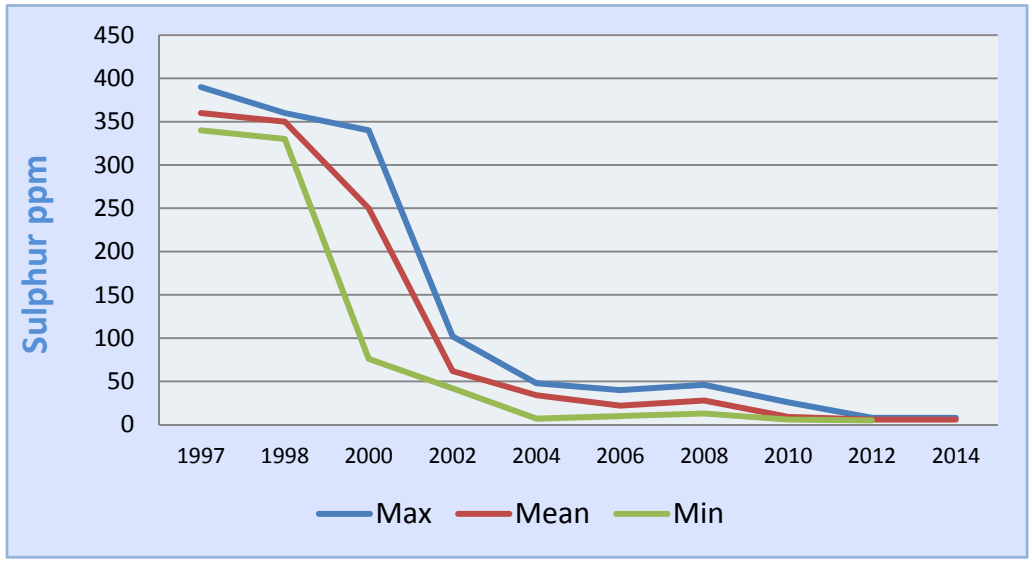
Ireland

Europe









Italy

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400332	DIES 1400333	DIES 1400334	DIES 1400335	DIES 1400336	DIES 1400337	DIES 1400338
Cloud Point, °C		-2	-4	-10	-4	-5	-3	-2	-3	-2	-4
CFPP, °C	-10 (max)*	-10	-15	-22	-17	-17	-12	-12	-12	-15	-17
Pour Point, °C		-15	-22	-33	-24	-15	-21	-21	-15	-33	-24
HFRR, µm	460 (max)	449	255	176	376	202	196	176	201	268	211
Wax Content @ 10°C Below Cloud, wt%		2.6	1.7	1.0	1.9	1.6	2.6	1.4	2.0	1.9	1.6
Rancimat, hrs	**	>40	>30	29	>40	>40	>40	37	>40	>40	33
Sulphur, ppm	10 (max)	12	7	5	8	7	12	6	6	7	8
Density @15°C, kg/m^3	820 - 845	843	836	829	833	843	833	835	839	835	835
Viscosity @ 40°C, cSt	2.0 - 4.5	3.13	2.63	2.27	2.57	3.13	3.01	2.71	2.80	2.51	2.52
Cetane Index $_{2\ Variable}$		56	52	50	52	52	56	53	54	52	53
Cetane Index $_{4\ Variable}$	46 (min)	57	51	48	52	52	57	52	52	51	51
Cetane Number	51 (min)	55	52	50	53	50	54	50	50	52	52
Distillation, °C IBP		188	166	153	163	188	166	169	172	161	153
T_{10}		222	201	184	199	222	218	204	202	193	195
T_{20}		239	217	198	218	239	239	220	222	210	213
T_{50}		284	268	256	265	280	284	269	280	265	267
T_{90}		344	340	337	340	340	341	342	344	340	339
T_{95}	360 (max)	363	355	346	357	356	355	356	358	355	355
FBP		369	364	361	365	365	361	364	365	363	363
% FAME	7 (max)	8	5	0	1	5	7	7	6	5	6

*-16 /-18 CFPP is used for Northern areas called 'ALPINE'

**20 hours min for diesel containing FAME above 2 % V/V

Infineum

Italy (continued)

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400339	DIES 1400340	DIES 1400341	DIES 1400342	DIES 1400343	DIES 1400345	DIES 1400347
Cloud Point, °C		-2	-4	-10	-10	-8	-2	-4	-4	-5	-6
CFPP, °C	-10 (max)*	-10	-15	-22	-15	-22	-13	-15	-17	-20	-10
Pour Point, °C		-15	-22	-33	-21	-24	-21	-21	-24	-30	-15
HFRR, µm	460 (max)	449	255	176	183	449	441	206	218	179	211
Wax Content @ 10°C Below Cloud, wt%		2.6	1.7	1.0	1.3	1.0	1.6	1.8	1.9	1.8	1.4
Rancimat, hrs	**	>40	>30	29	40	>40	>40	39	>40	29	>40
Sulphur, ppm	10 (max)	12	7	5	6	5	6	5	5	7	6
Density @15°C, kg/m^3	820 - 845	843	836	829	829	838	836	833	833	839	843
Viscosity @ 40°C, cSt	2.0 - 4.5	3.13	2.63	2.27	2.37	2.68	2.62	2.31	2.27	2.61	2.59
Cetane Index $_{2\ Variable}$		56	52	50	52	50	51	51	50	51	50
Cetane Index $_{4\ Variable}$	46 (min)	57	51	48	52	50	51	50	49	50	48
Cetane Number	51 (min)	55	52	50	52	54	51	55	54	52	52
Distillation, °C IBP		188	166	153	167	175	171	159	154	165	166
T_{10}		222	201	184	195	207	204	186	184	200	197
T_{20}		239	217	198	209	220	219	200	198	219	213
T_{50}		284	268	256	258	262	262	258	256	270	268
T_{90}		344	340	337	337	338	343	339	339	341	338
T_{95}	360 (max)	363	355	346	346	360	363	355	355	358	352
FBP		369	364	361	364	369	369	363	363	362	362
% FAME	7 (max)	8	5	0	8	0	0	7	7	6	7

*-16 /-18 CFPP is used for Northern areas called 'ALPINE'

**20 hours min for diesel containing FAME above 2 % V/V

Infineum

Italy (continued)

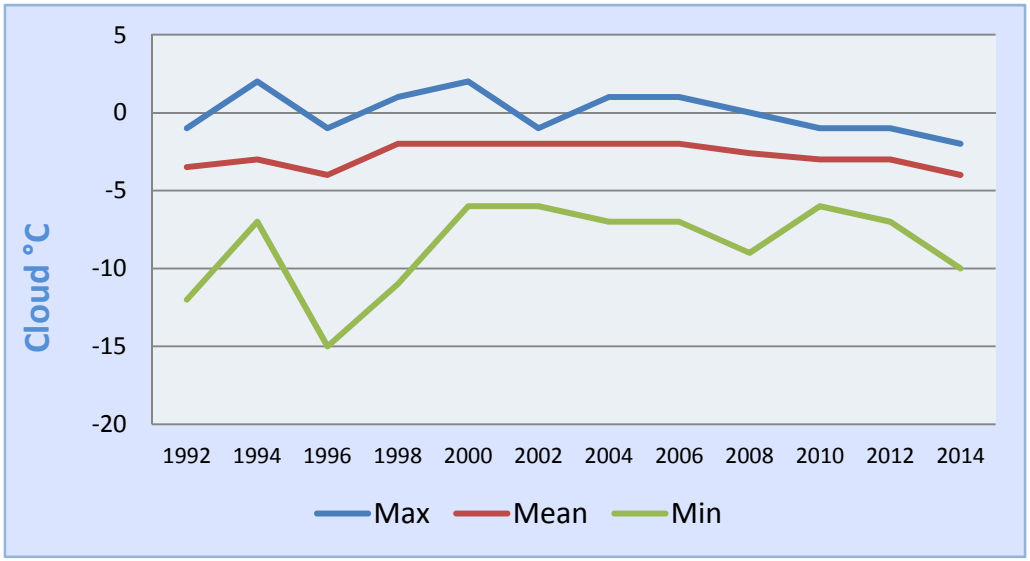
National standards and physical inspection data

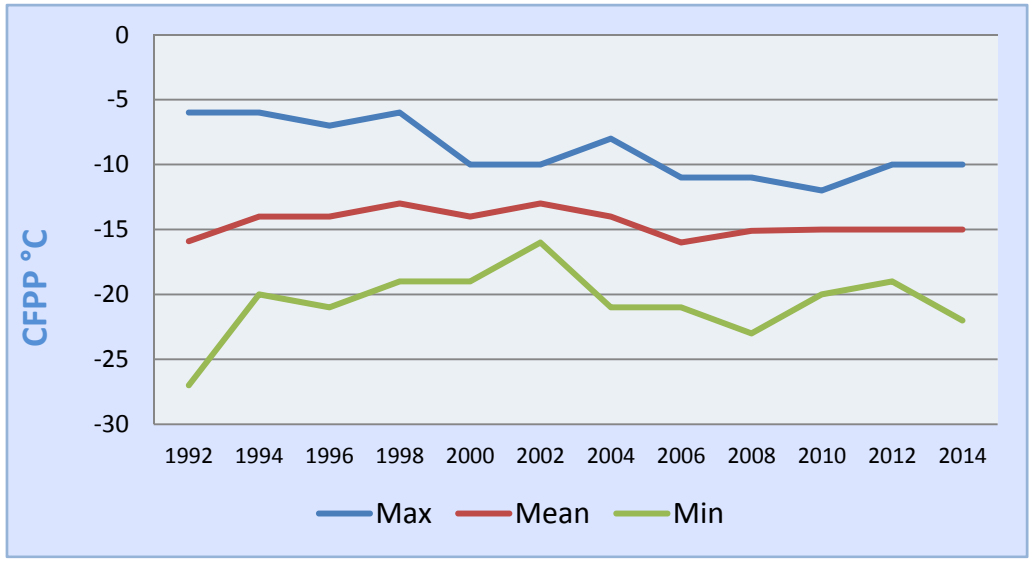
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400348
Cloud Point, °C		-2	-4	-10	-5
CFPP, °C	-10 (max)*	-10	-15	-22	-18
Pour Point, °C		-15	-22	-33	-21
HFRR, µm	460 (max)	449	255	176	303
Wax Content @ 10°C Below Cloud, wt%		2.6	1.7	1.0	1.7
Rancimat, hrs	**	>40	>30	29	>40
Sulphur, ppm	10 (max)	12	7	5	6
Density @15°C, kg/m^3	820 - 845	843	836	829	836
Viscosity @ 40°C, cSt	2.0 - 4.5	3.13	2.63	2.27	2.69
Cetane Index 2 Variable		56	52	50	53
Cetane Index 4 Variable	46 (min)	57	51	48	52
Cetane Number	51 (min)	55	52	50	55
Distillation, °C IBP		188	166	153	167
T_{10}		222	201	184	204
T_{20}		239	217	198	223
T_{50}		284	268	256	270
T_{90}		344	340	337	337
T_{95}	360 (max)	363	355	346	351
FBP		369	364	361	364
% FAME	7 (max)	8	5	0	7

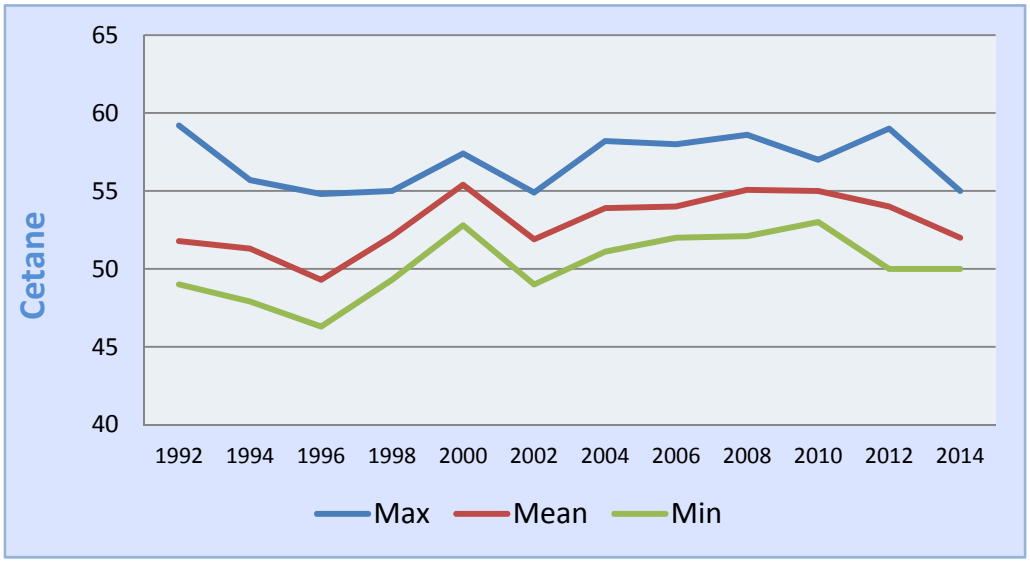
*-16 /-18 CFPP is used for Northern areas called 'ALPINE'
**20 hours min for diesel containing FAME above 2 % V/V

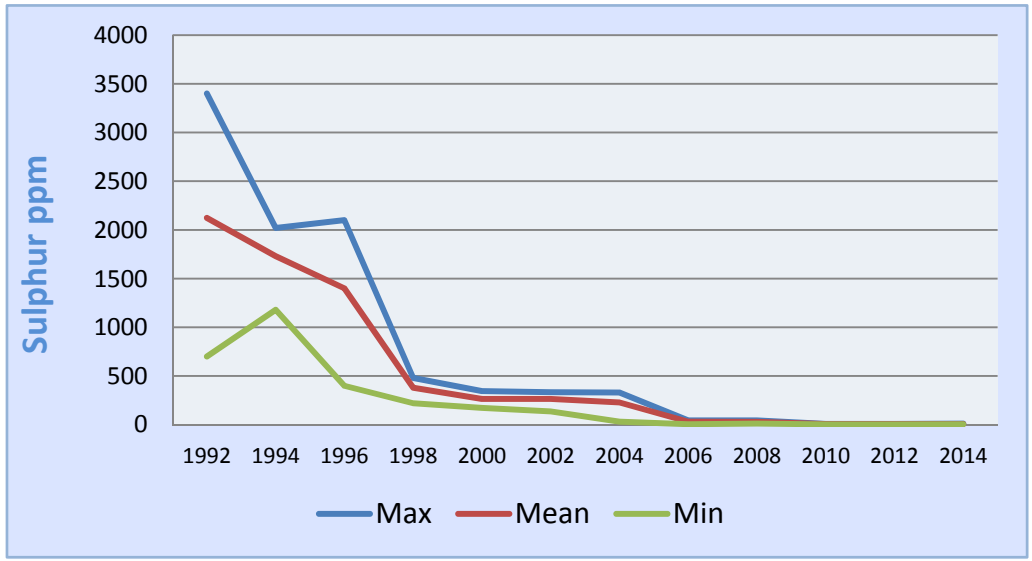
Italy

Europe









Lithuania

Europe

National standards and physical inspection data

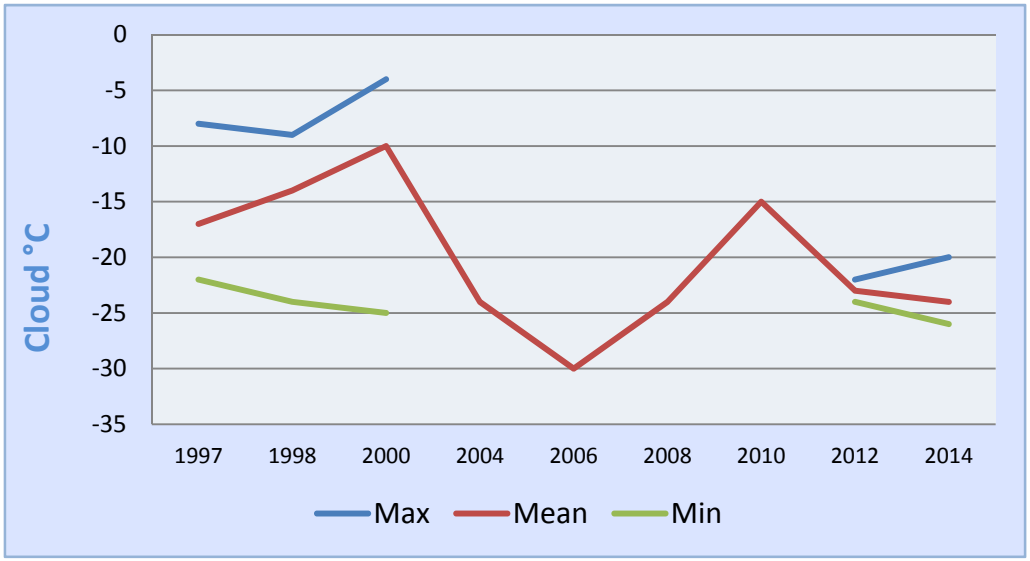
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400193	DIES 1400194	DIES 1400198	DIES 1400200
Cloud Point, °C	-22 (max)	-20	-24	-26	-26	-25	-20	-25
CFPP, °C	-32 (max)	-33	-37	-41	-37	-41	-33	-38
Pour Point, °C		-30	-44	-60	-33	-54	-30	-60
HFRR, µm	460 (max)	427	390	319	400	427	319	413
Wax Content @ 10°C Below Cloud, wt%		0.9	0.7	0.6	0.7	0.6	0.9	0.6
Rancimat, hrs	*	>40	>30	17	17	>40	>40	>40
Sulphur, ppm	10 (max)	<3	<3	<3	<3	<3	<3	<3
Density @15°C, kg/m^3	840 (max)	838	835	830	830	838	833	838
Viscosity @ 40°C, cSt		3.04	2.48	1.92	1.92	2.89	2.07	3.04
Cetane Index $_{2\ Variable}$		53	51	48	48	53	49	53
Cetane Index $_{4\ Variable}$		54	51	47	47	53	48	54
Cetane Number	48 (min)	57	54	53	53	55	57	54
Distillation, °C IBP		169	161	152	165	159	169	152
T_{10}		221	206	192	192	215	195	221
T_{20}		240	223	205	205	235	210	240
T_{50}		278	261	241	241	275	249	278
T_{90}		328	313	295	295	327	303	328
T_{95}	360 (max)	339	329	316	316	338	323	339
FBP		344	341	335	335	344	339	344
% FAME	7 (max)	0	0	0	0	0	0	0

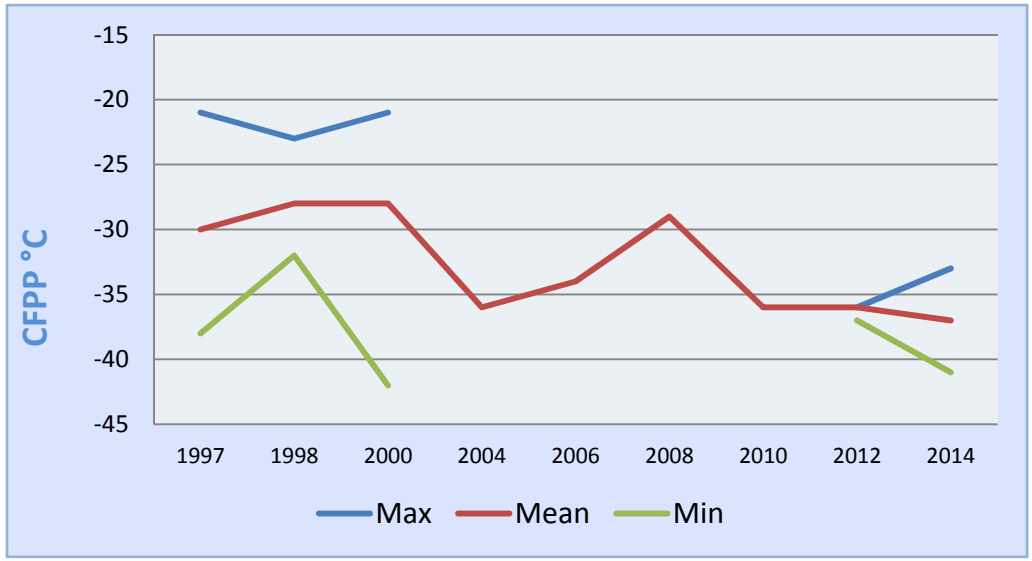
*20 hours min for diesel containing FAME above 2 % V/V

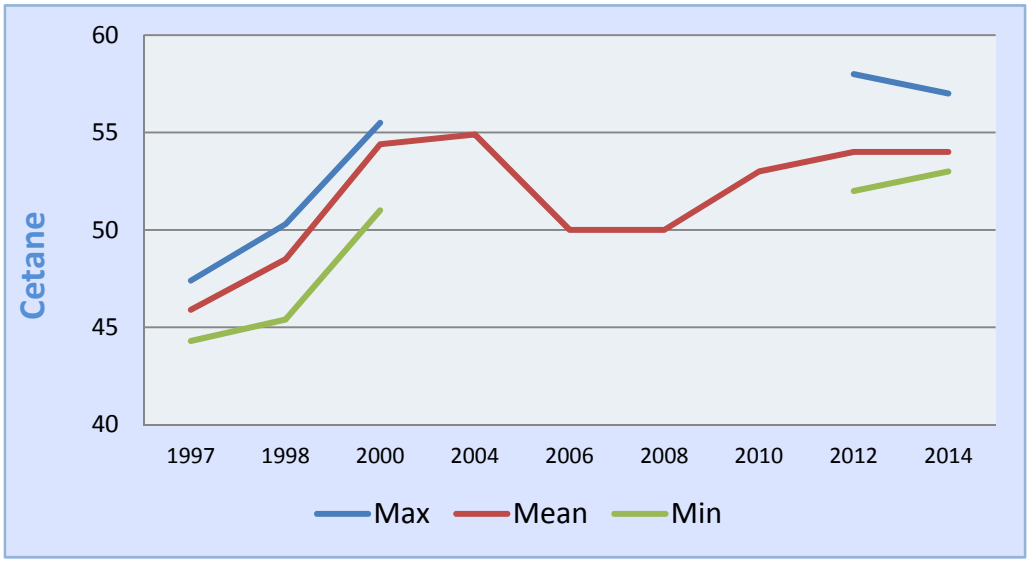
Infineum

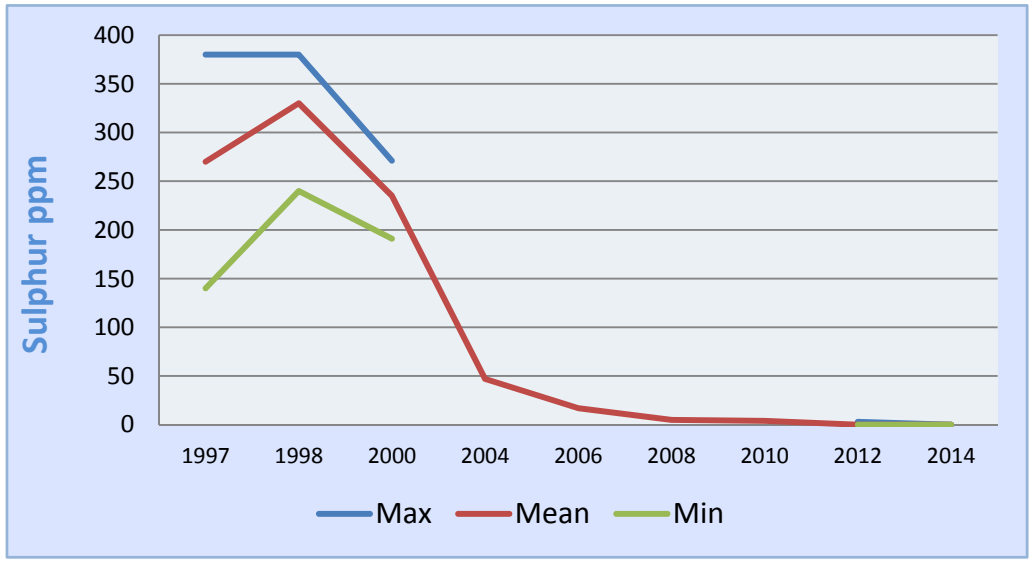
Lithuania

Europe









Norway

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400202	DIES 1400204	DIES 1401030	DIES 1400206
Cloud Point, °C	-22 (max)	-23	-24	-26	-23	-23	-25	-26
CFPP, °C	-32 (max)	-36	-39	-44	-40	-44	-38	-36
Pour Point, °C		-39	-42	-48	-39	-42	-48	-39
HFRR, µm	460 (max)	210	192	178	195	178	186	210
Wax Content @ 10°C Below Cloud, wt%		1.3	1.0	0.6	0.9	0.6	1.2	1.3
Rancimat, hrs	*	>40	>35	30	30	>40	>40	>40
Sulphur, ppm	10 (max)	8	6	<3	7	<3	8	6
Density @15°C, kg/m^3	800 - 840	839	832	818	839	818	837	837
Viscosity @ 40°C, cSt	1.5 - 4.0	2.25	2.14	1.99	2.25	1.99	2.16	2.17
Cetane Index $_{2\ Variable}$		51	48	45	45	51	47	48
Cetane Index $_{4\ Variable}$	46 (min)	51	48	46	46	51	47	47
Cetane Number	51 (min)**	54	52	51	51	54	53	52
Distillation, °C IBP		188	171	165	188	165	165	165
T_{10}	180 (min)	209	195	187	209	187	191	191
T_{20}		216	206	198	216	198	204	205
T_{50}		251	244	237	243	237	248	251
T_{90}		326	318	313	317	326	313	316
T_{95}	340 (max)	338	331	327	331	338	327	329
FBP		345	338	335	338	345	335	335
% FAME	7 (max)	7	7	6	7	7	6	7

Specification shown is Norwgian Arctic Class II

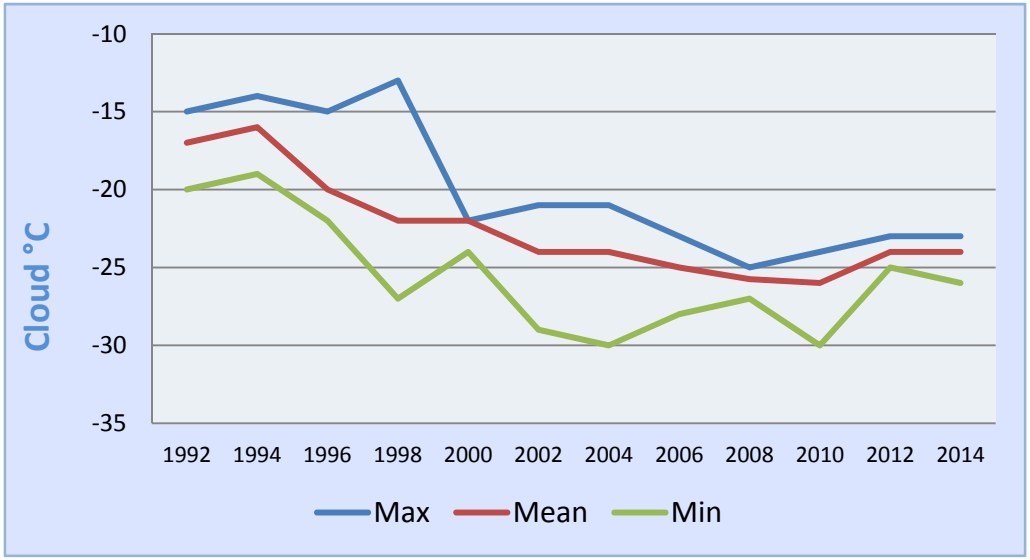
*20 hours min for diesel containing FAME above 2 % V/V

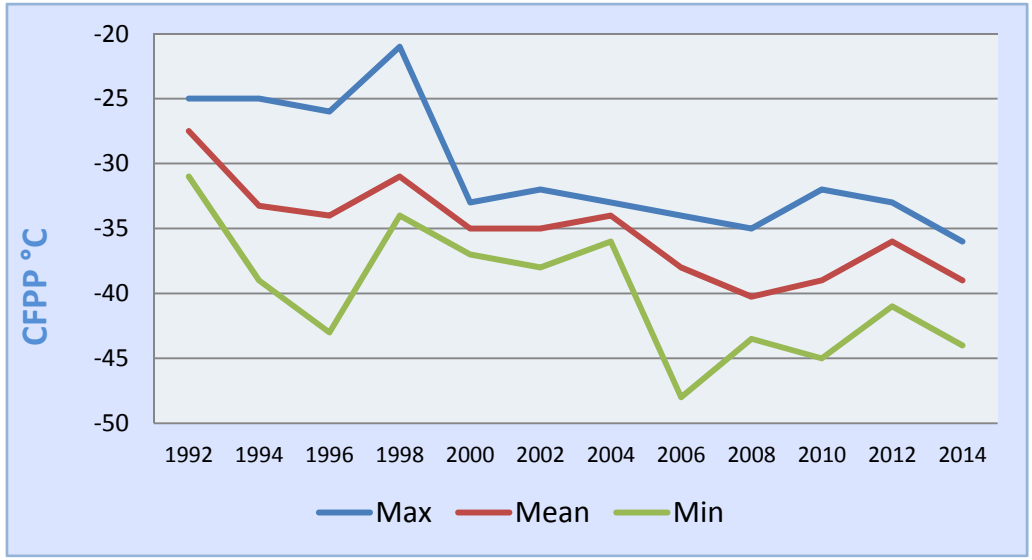
** Cetane number to meet European Fuels Directive 98/70/EC (Otherwise 48 min)

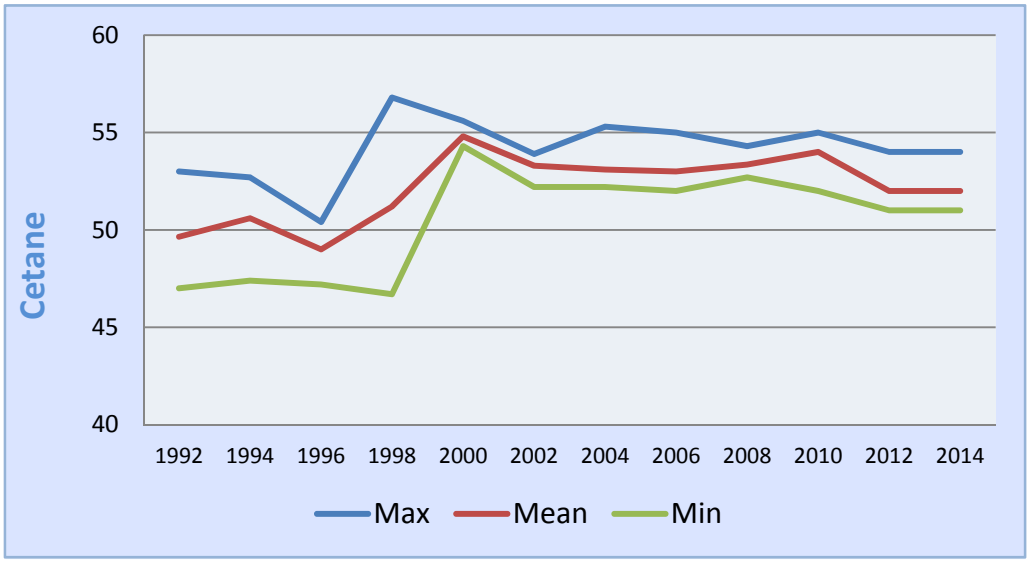
Infineum

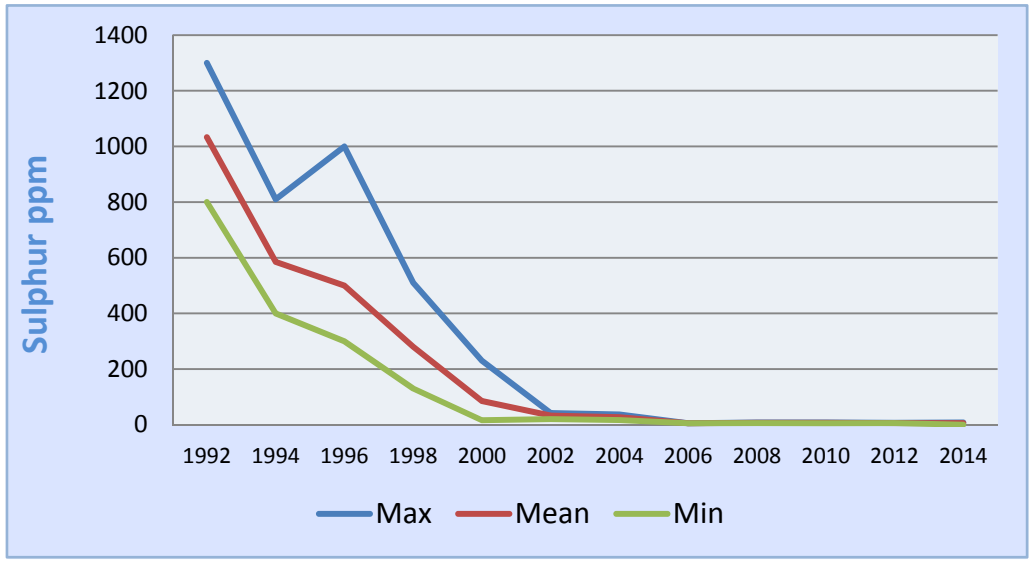
Norway

Europe









Poland

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400207	DIES 1400208	DIES 1400377	DIES 1400378	DIES 1400379	DIES 1400382	DIES 1400383
Cloud Point, °C		-9	-14	-24	-9	-24	-13	-13	-12	-24	-12
CFPP, °C	-10 (max)	-25	-30	-42	-29	-41	-26	-27	-25	-42	-26
Pour Point, °C		-27	-35	-42	-39	-42	-27	-27	-27	-42	-27
HFRR, µm	460 (max)	486	357	164	187	451	440	486	449	399	410
Wax Content @ 10°C Below Cloud, wt%		1.0	0.9	0.8	0.9	0.8	0.9	0.9	0.9	0.9	0.9
Rancimat, hrs	*	>40	>35	32	32	33	>40	>40	>40	>40	34
Sulphur, ppm	10 (max)	7	5	<3	3	<3	7	7	7	<3	6
Density @15°C, kg/m^3	820 - 845	842	832	824	828	842	836	836	835	824	835
Viscosity @ 40°C, cSt	2.0 - 4.5	2.74	2.63	2.34	2.70	2.34	2.74	2.73	2.71	2.34	2.72
Cetane Index 2 Variable		57	53	47	57	47	52	52	52	53	53
Cetane Index 4 Variable	46 (min)	56	53	46	56	46	52	52	52	54	52
Cetane Number	51 (min)	57	54	52	54	56	52	55	52	52	52
Distillation, °C IBP		169	164	155	161	169	164	168	160	169	164
T_{10}		206	200	192	192	200	205	206	204	199	205
T_{20}		222	217	211	212	214	221	222	220	213	221
T_{50}		276	267	254	276	255	267	268	267	254	268
T_{90}		342	335	319	342	319	336	338	337	319	336
T_{95}	360 (max)	359	351	334	356	334	354	359	356	335	354
FBP		365	359	342	362	343	365	365	365	342	364
% FAME	7 (max)	7	2	0	7	0	0	0	0	0	0

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Poland

Europe

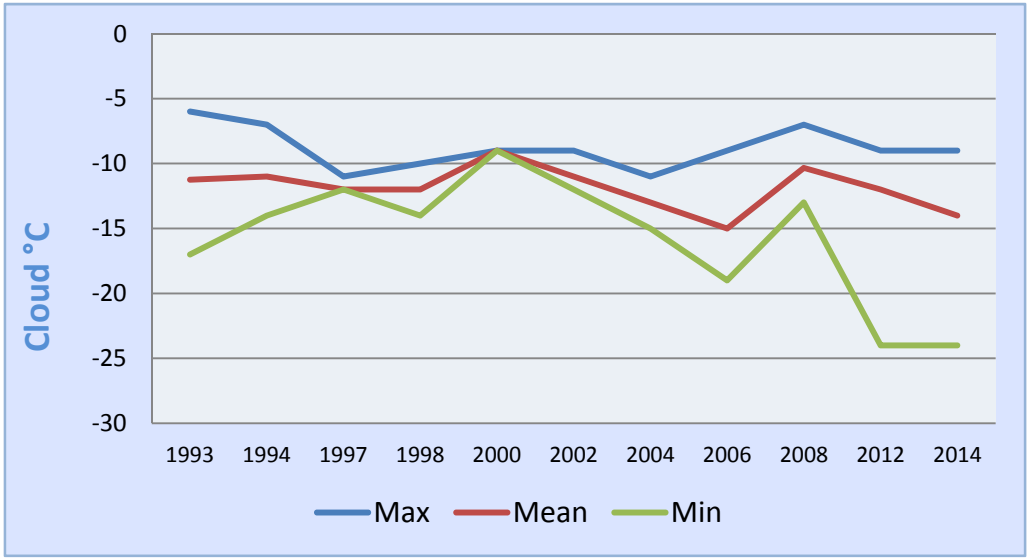
National standards and physical inspection data

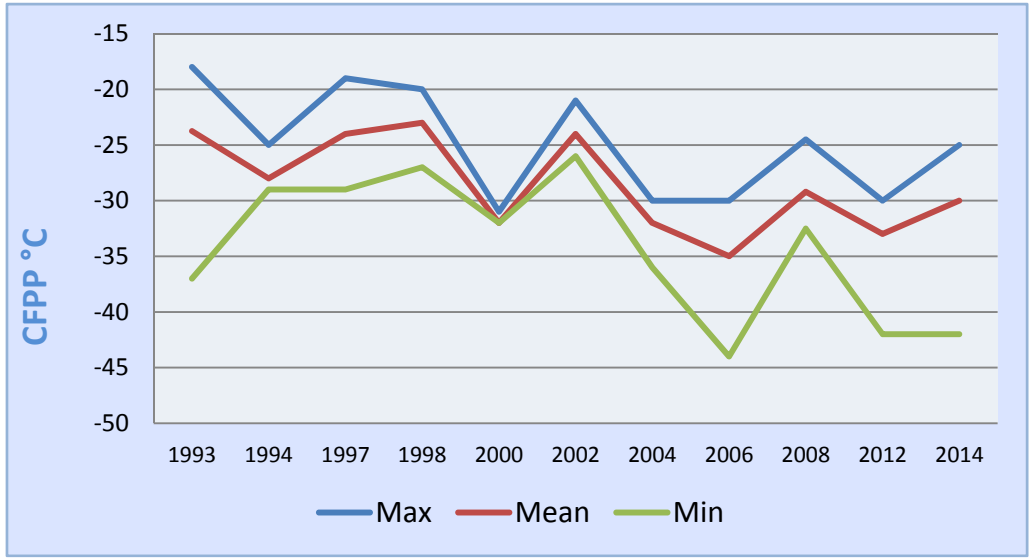
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400384	DIES 1400385	DIES 1400386
Cloud Point, °C		-9	-14	-24	-12	-10	-10
CFPP, °C	-10 (max)	-25	-30	-42	-31	-30	-27
Pour Point, °C		-27	-35	-42	-39	-36	-39
HFRR, µm	460 (max)	486	357	164	405	182	164
Wax Content @ 10°C Below Cloud, wt%		1.0	0.9	0.8	0.9	1.0	1.0
Rancimat, hrs	*	>40	>35	32	>40	>40	>40
Sulphur, ppm	10 (max)	7	5	<3	6	3	3
Density @15°C, kg/m^3	820 - 845	842	832	824	835	828	827
Viscosity @ 40°C, cSt	2.0 - 4.5	2.74	2.63	2.34	2.70	2.66	2.68
Cetane Index $_{2\ Variable}$		57	53	47	52	56	57
Cetane Index $_{4\ Variable}$	46 (min)	56	53	46	52	55	56
Cetane Number	51 (min)	57	54	52	55	57	54
Distillation, °C IBP		169	164	155	155	163	161
T_{10}		206	200	192	205	192	193
T_{20}		222	217	211	220	211	213
T_{50}		276	267	254	268	272	275
T_{90}		342	335	319	337	341	342
T_{95}	360 (max)	359	351	334	355	353	356
FBP		365	359	342	362	361	361
% FAME	7 (max)	7	2	0	0	6	7

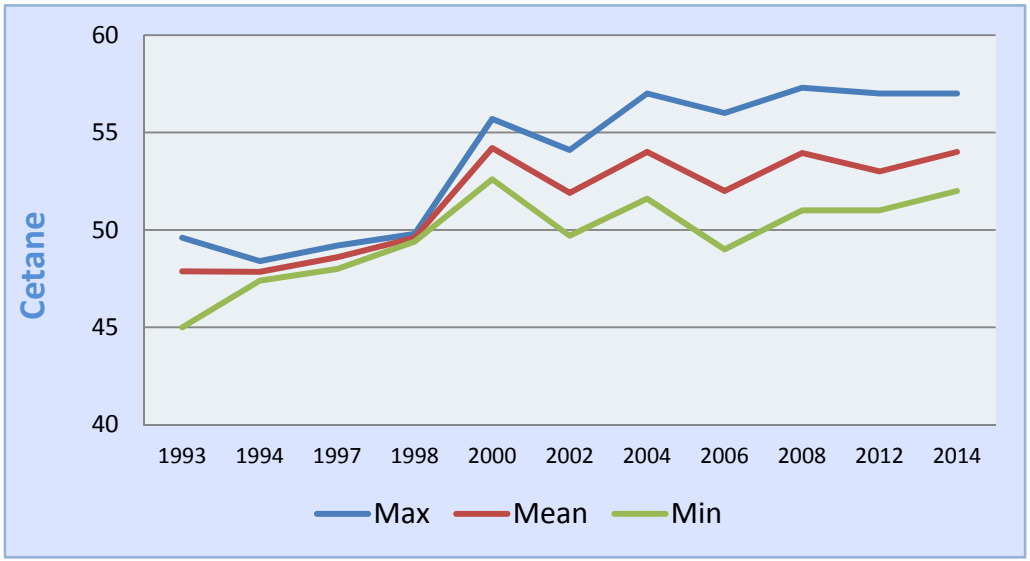
*20 hours min for diesel containing FAME above 2 % V/V

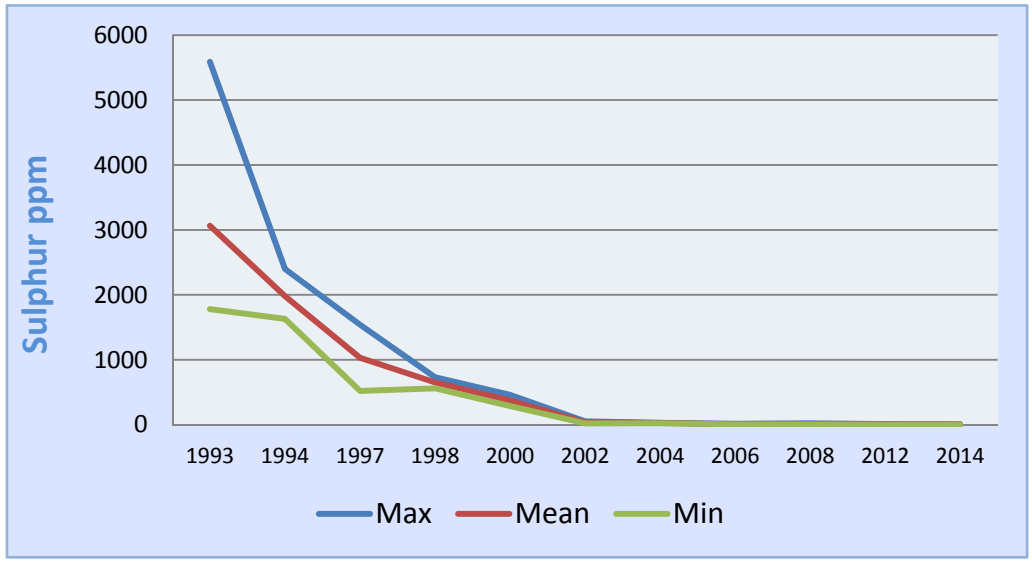
Poland

Europe









Portugal

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400387	DIES 1400388	DIES 1400389
Cloud Point, °C		-4	-5	-5	-5	-5	-4
CFPP, °C	-10 (max) **	-10	-12	-15	-15	-11	-10
Pour Point, °C		-12	-16	-18	-18	-18	-12
HFRR, µm	460 (max)	199	183	170	199	170	181
Wax Content @ 10°C Below Cloud, wt%		2.0	1.6	1.4	1.4	2.0	1.5
Rancimat, hrs	*	>40	>35	32	>40	32	>40
Sulphur, ppm	10 (max)	7	6	3	6	7	3
Density @15°C, kg/m^3	820 - 845	844	841	838	838	844	841
Viscosity @ 40°C, cSt	2.0 - 4.5	3.46	3.21	3.09	3.09	3.46	3.09
Cetane Index $_{2\ Variable}$		54	53	53	54	53	53
Cetane Index $_{4\ Variable}$	46 (min)	54	53	53	54	54	53
Cetane Number	51 (min)	55	54	54	55	54	54
Distillation, °C IBP		188	184	179	179	188	185
T_{10}		230	221	217	217	230	217
T_{20}		247	239	235	235	247	235
T_{50}		286	282	279	281	286	279
T_{90}		342	341	341	342	341	341
T_{95}	360 (max)	357	355	354	357	354	356
FBP		364	362	360	364	360	364
% FAME	7 (max)	7	7	6	6	7	7

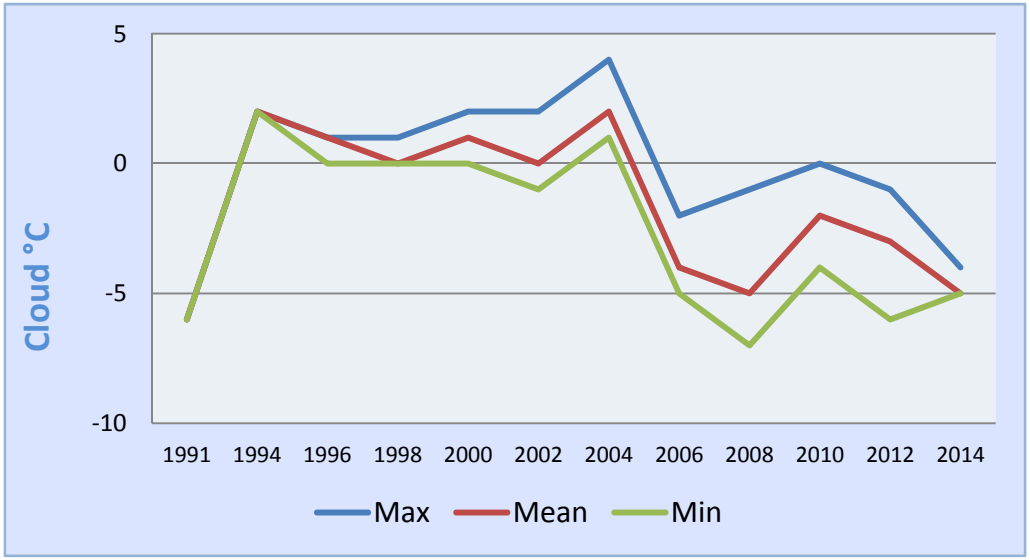
*20 hours min for diesel containing FAME above 2 % V/V

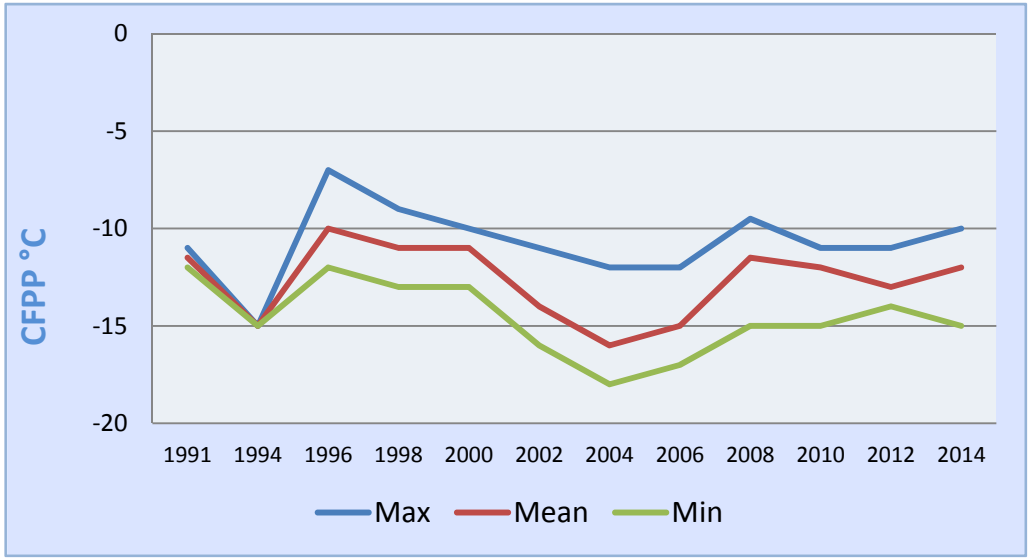
** -5 (max) CFPP used from 1st to 31st Mar and from 15th Oct to 30th Nov

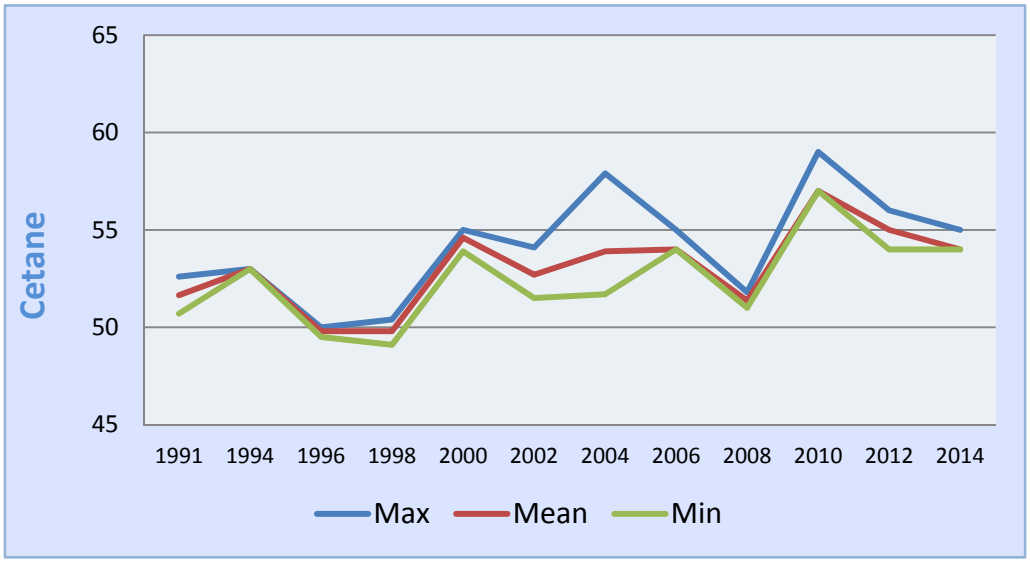
Infineum

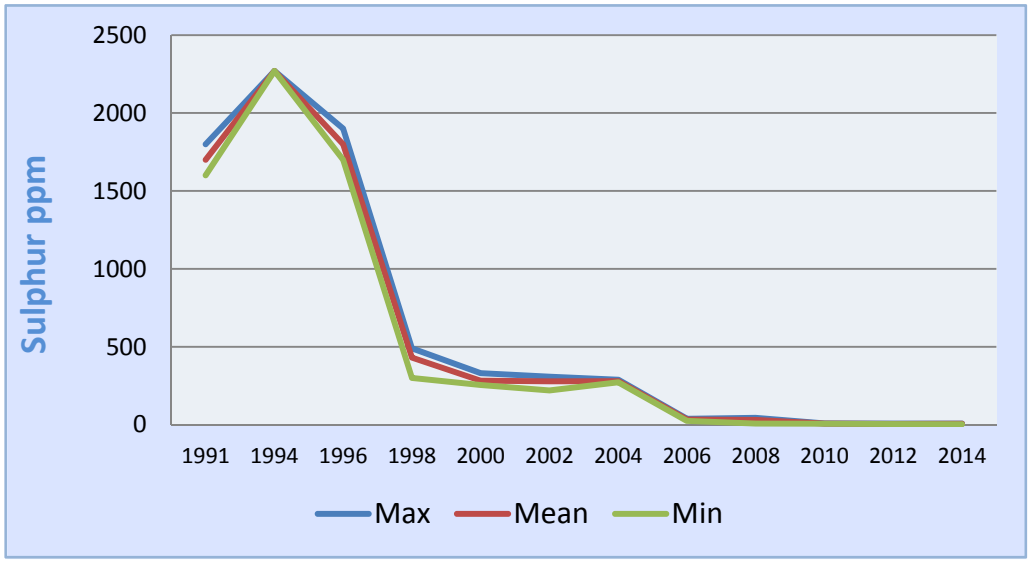
Portugal

Europe









Romania

Europe

National standards and physical inspection data

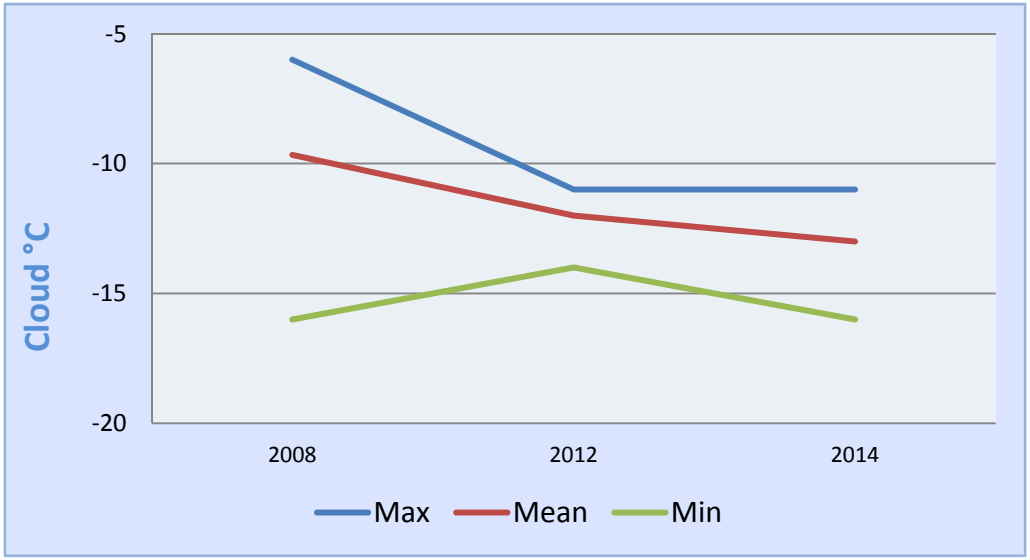
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400390	DIES 1400391	DIES 1400392	DIES 1400393	DIES 1400394
Cloud Point, °C		-11	-13	-16	-11	-12	-12	-16	-16
CFPP, °C	-20 (max)	-21	-26	-33	-21	-22	-27	-28	-33
Pour Point, °C		-27	-31	-33	-30	-33	-30	-27	-33
HFRR, µm	460 (max)	465	346	198	402	252	413	465	198
Wax Content @ 10°C Below Cloud, wt%		2.0	1.8	1.7	1.7	1.8	1.9	2.0	1.7
Rancimat, hrs	*	>40	>25	15	15	18	25	>40	>40
Sulphur, ppm	10 (max)	4	4	<3	4	4	4	<3	<3
Density @15°C, kg/m^3	820 - 845	844	840	834	841	836	834	844	843
Viscosity @ 40°C, cSt	2.0 - 4.5	2.64	2.49	2.40	2.46	2.42	2.40	2.64	2.53
Cetane Index $_{2\ Variable}$		51	49	48	48	51	51	48	48
Cetane Index $_{4\ Variable}$	46 (min)	50	49	48	48	50	50	48	48
Cetane Number	51 (min)	56	52	49	50	56	52	52	49
Distillation, °C IBP		171	155	124	161	156	166	171	124
T_{10}		213	202	191	202	191	198	213	204
T_{20}		229	218	209	217	209	215	229	221
T_{50}		264	261	258	258	264	258	262	262
T_{90}		328	321	315	324	328	320	315	321
T_{95}	360 (max)	341	336	332	340	341	335	332	334
FBP		350	346	342	350	348	345	342	344
% FAME	7 (max)	5	2	0	0	5	0	0	5

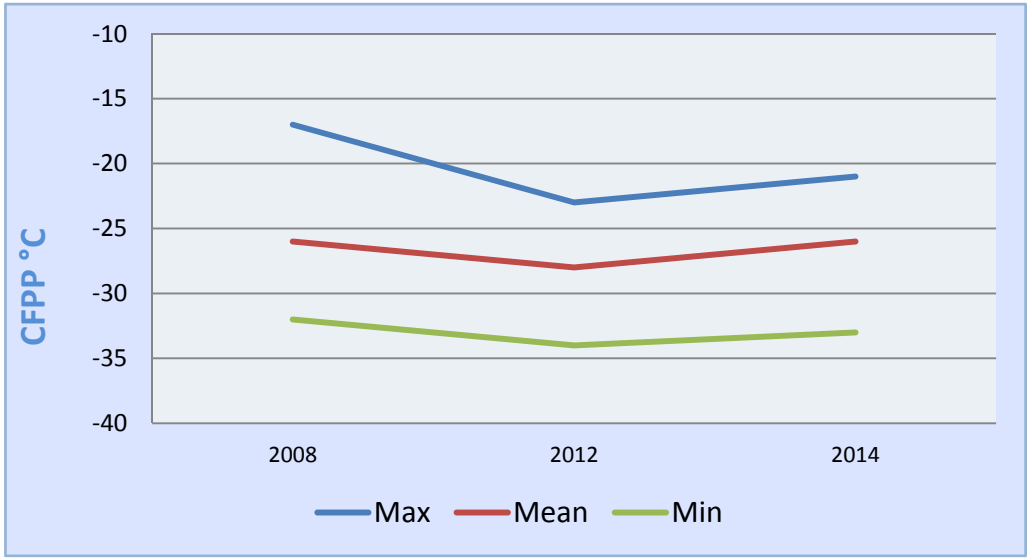
*20 hours min for diesel containing FAME above 2 % V/V

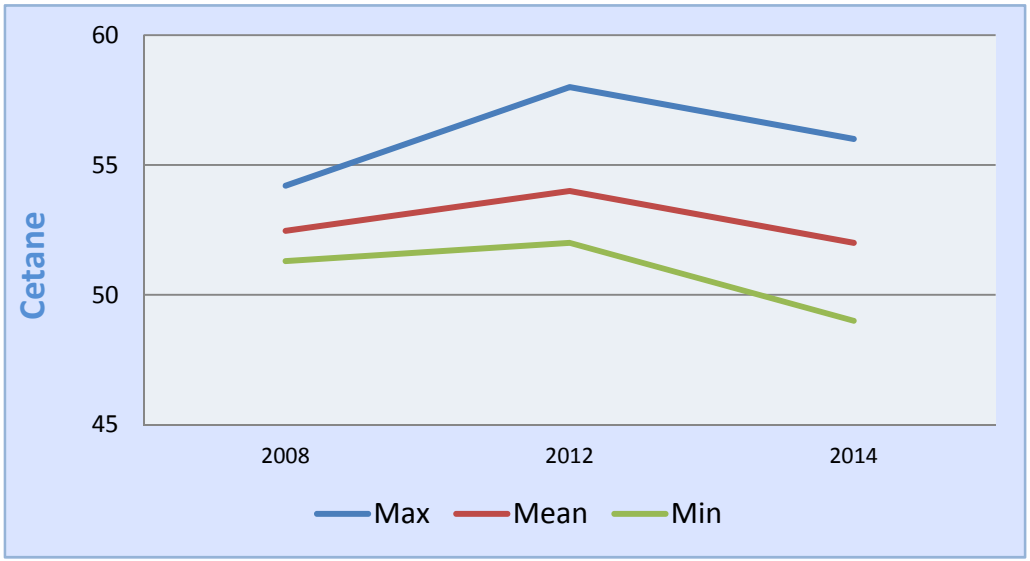
Infineum

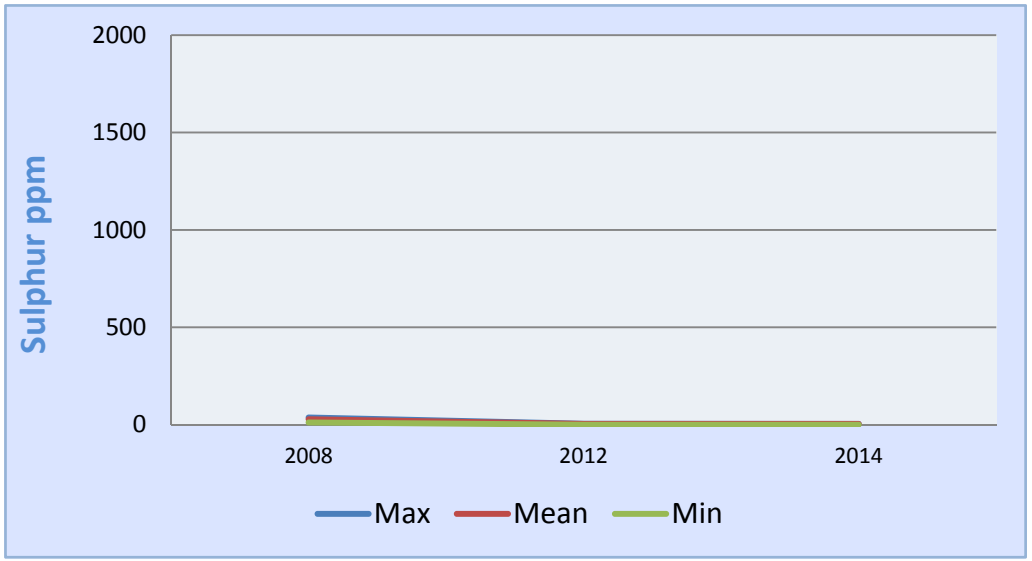
Romania

Europe









Russia

Europe

National standards and physical inspection data

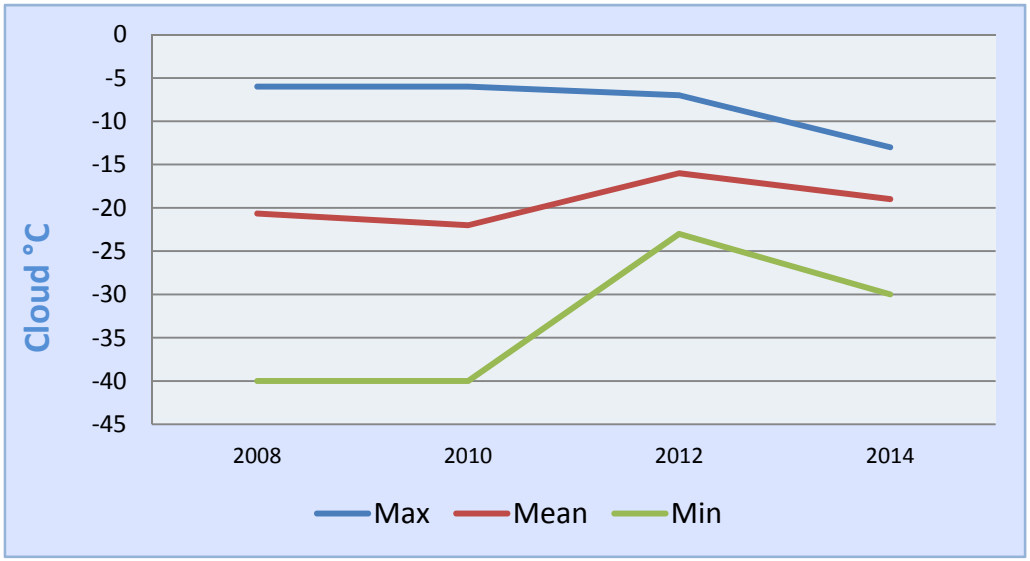
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1403198	DIES 1403199	DIES 1403200	DIES 1403201	DIES 1403202
Cloud Point, °C		-13	-19	-30	-15	-17	-30	-18	-13
CFPP, °C	5 to -44 (max)	-23	-35	-42	-40	-23	-42	-36	-34
Pour Point, °C		-30	-36	-42	-42	-30	-42	-33	-33
HFRR, µm	460 (max)	465	412	306	465	442	413	434	306
Wax Content @ 10°C Below Cloud, wt%		1.8	1.3	0.9	0.9	1.8	1.0	1.4	1.4
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	50 (max)	26	11	3	7	9	3	26	8
Density @15°C, kg/m^3	800-845*	831	821	811	818	824	811	822	831
Viscosity @ 40°C, cSt	1.2 - 4.5*	2.56	2.09	1.68	1.87	2.23	1.68	2.11	2.56
Cetane Index $_{2\ Variable}$		53	51	47	49	52	47	52	53
Cetane Index $_{4\ Variable}$	46- 43 (min)*	53	51	49	50	53	49	53	53
Cetane Number	51- 47 (min)*	55	52	50	52	52	50	55	53
Distillation, °C IBP		176	166	154	154	176	166	166	167
T_{10}		207	195	183	183	203	185	196	207
T_{20}		223	207	193	195	214	193	211	223
T_{50}		262	242	217	232	249	217	248	262
T_{90}		323	309	292	311	311	292	307	323
T_{95}	360 (max)	339	326	311	332	325	311	324	339
FBP		348	338	325	346	338	325	336	348
% FAME	7 (max)	0	0	0	0	0	0	0	0

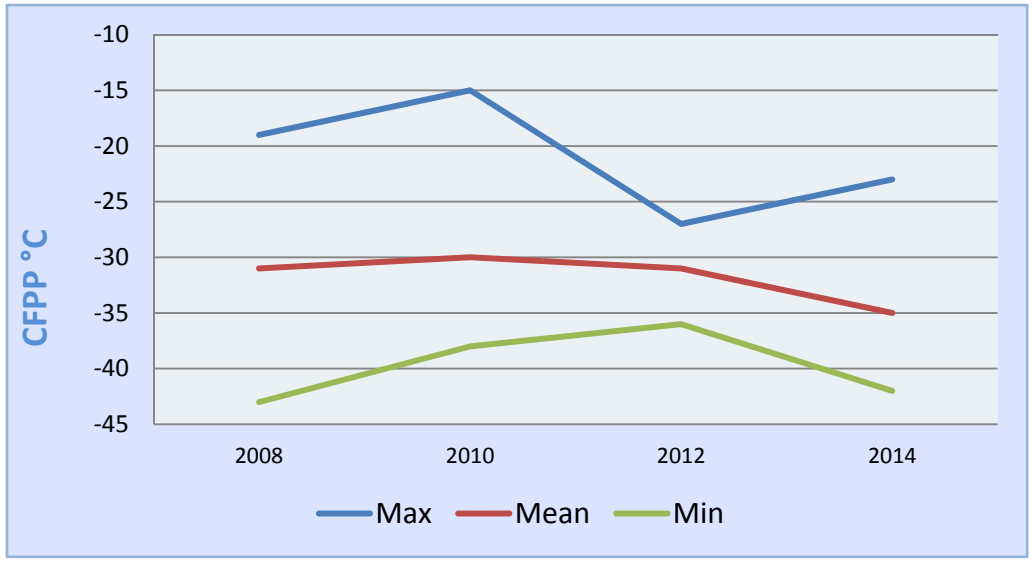
Specification shown is for Type 2 diesel
*depends on climate rating

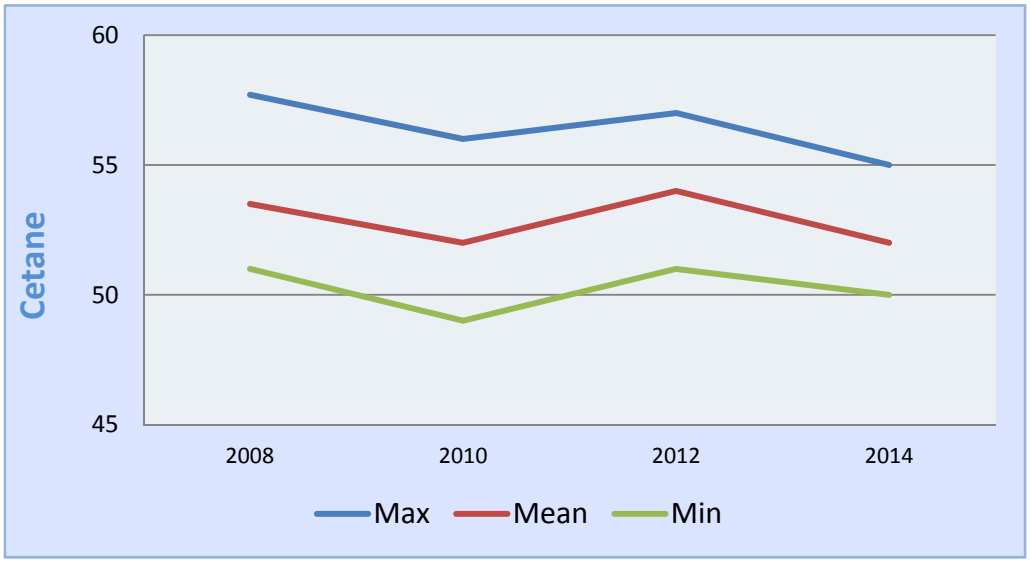
Infineum

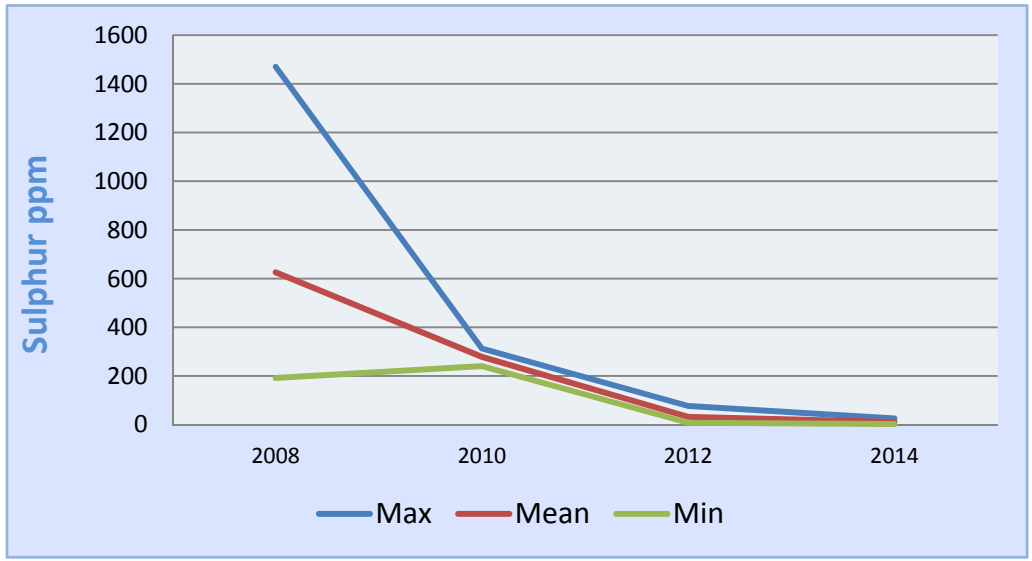
Russia

Europe









Slovak Republic

Europe

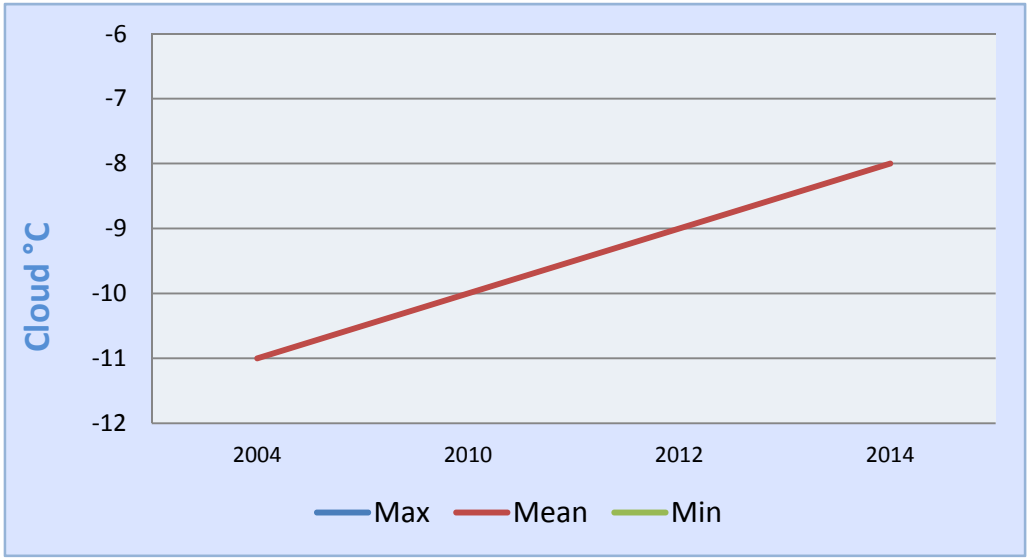
National standards and physical inspection data

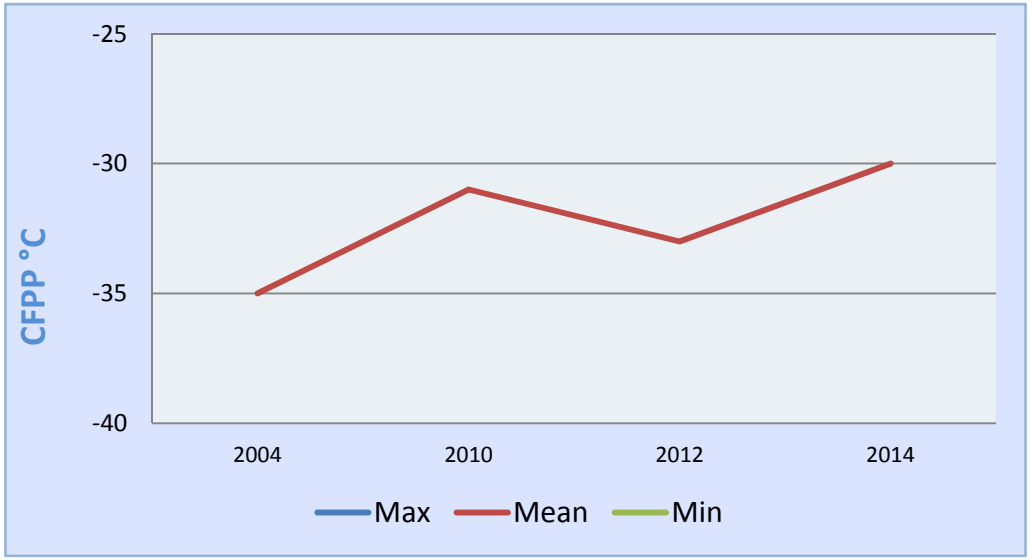
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400395
Cloud Point, °C			-8		-8
CFPP, °C	-10 (max)		-30		-30
Pour Point, °C			-30		-30
HFRR, µm	460 (max)		192		192
Wax Content @ 10°C Below Cloud, wt%			1.4		1.4
Rancimat, hrs	*		>40		>40
Sulphur, ppm	10 (max)		6		6
Density @15°C, kg/m^3	820 - 845		842		842
Viscosity @ 40°C, cSt	2.0 - 4.5		2.88		2.88
Cetane Index $_{2\ Variable}$			52		52
Cetane Index $_{4\ Variable}$	46 (min)		51		51
Cetane Number	51 (min)		54		54
Distillation, °C IBP			167		167
T_{10}			210		210
T_{20}			229		229
T_{50}			278		278
T_{90}			340		340
T_{95}	360 (max)		356		356
FBP			361		361
% FAME	7 (max)		7		7

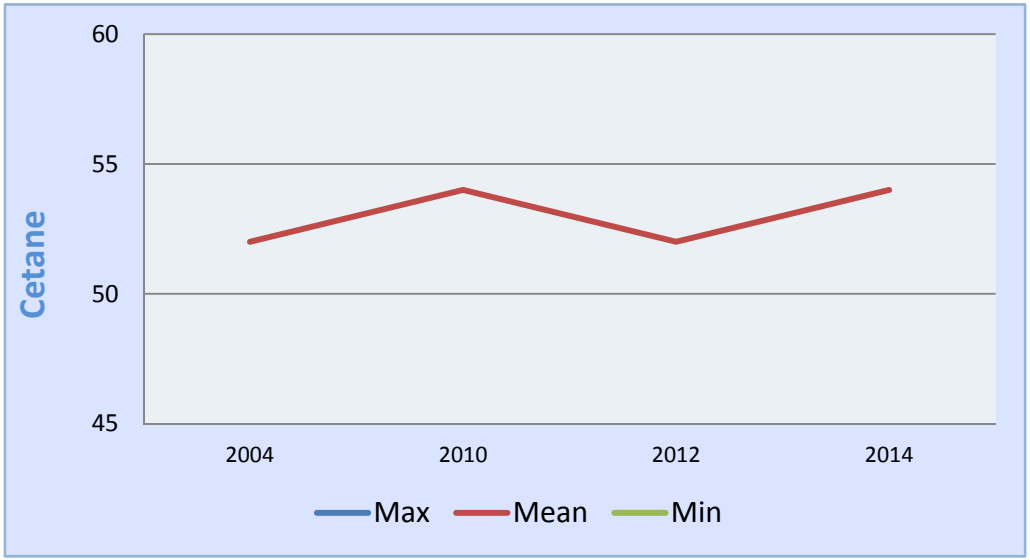
*20 hours min for diesel containing FAME above 2 % V/V

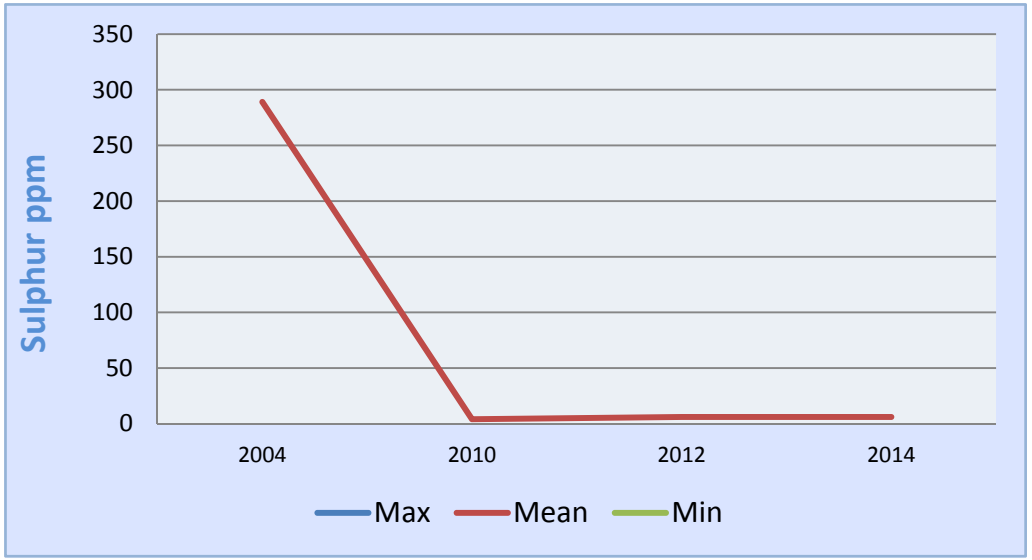
Slovak Republic

Europe









Spain

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400396	DIES 1400397	DIES 1400426	DIES 1400450	DIES 1400451	DIES 1400452	DIES 1400453
Cloud Point, °C		-2	-5	-9	-7	-6	-5	-9	-5	-4	-3
CFPP, °C	-10 (max)	-13	-17	-23	-21	-23	-20	-16	-14	-15	-14
Pour Point, °C		-12	-22	-27	-27	-27	-24	-12	-24	-21	-24
HFRR, µm	460 (max)	440	350	193	363	391	355	193	316	440	335
Wax Content @ 10°C Below Cloud, wt%		2.5	1.6	1.1	2.1	1.2	1.5	2.5	1.1	1.8	1.9
Rancimat, hrs	*	>40	>35	26	>40	>40	>40	26	>40	>40	>40
Sulphur, ppm	10 (max)	9	7	6	7	8	7	6	6	7	9
Density @15°C, kg/m^3	820 - 845	844	838	829	840	836	836	829	832	839	841
Viscosity @ 40°C, cSt	2.0 - 4.5	3.00	2.68	2.35	3.00	2.59	2.76	2.35	2.72	2.75	2.75
Cetane Index $_{2\ Variable}$		54	52	49	53	51	53	52	54	50	52
Cetane Index $_{4\ Variable}$	46 (min)	54	51	48	53	50	52	52	54	50	50
Cetane Number	51 (min)	56	54	51	55	53	55	56	54	53	53
Distillation, °C IBP		171	160	151	171	160	160	160	163	159	160
T_{10}		214	198	189	214	193	196	197	201	212	194
T_{20}		234	218	205	234	212	218	213	223	224	216
T_{50}		279	269	258	279	265	273	258	272	263	275
T_{90}		343	339	327	337	340	343	327	339	337	343
T_{95}	360 (max)	360	357	349	353	359	360	349	357	354	357
FBP		368	366	362	362	368	367	363	366	365	365
% FAME	7 (max)	5	1	0	0	0	2	0	2	0	2

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Spain (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400454	DIES 1400455	DIES 1400484	DIES 1400485
Cloud Point, °C		-2	-5	-9	-2	-6	-5	-5
CFPP, °C	-10 (max)	-13	-17	-23	-13	-17	-19	-20
Pour Point, °C		-12	-22	-27	-18	-18	-21	-24
HFRR, µm	460 (max)	440	350	193	216	399	436	405
Wax Content @ 10°C Below Cloud, wt%		2.5	1.6	1.1	1.4	1.3	1.3	1.6
Rancimat, hrs	*	>40	>35	26	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	7	6	7	9	9	7
Density @15°C, kg/m^3	820 - 845	844	838	829	838	844	842	838
Viscosity @ 40°C, cSt	2.0 - 4.5	3.00	2.68	2.35	2.36	2.78	2.77	2.67
Cetane Index $_{2 \text{ Variable}}$		54	52	49	49	51	51	52
Cetane Index $_{4 \text{ Variable}}$	46 (min)	54	51	48	48	49	50	51
Cetane Number	51 (min)	56	54	51	51	54	52	56
Distillation, °C IBP		171	160	151	162	157	151	158
T_{10}		214	198	189	189	194	195	194
T_{20}		234	218	205	205	219	218	216
T_{50}		279	269	258	258	274	273	271
T_{90}		343	339	327	341	342	342	342
T_{95}	360 (max)	360	357	349	359	358	359	360
FBP		368	366	362	368	367	368	366
% FAME	7 (max)	5	1	0	5	1	0	2

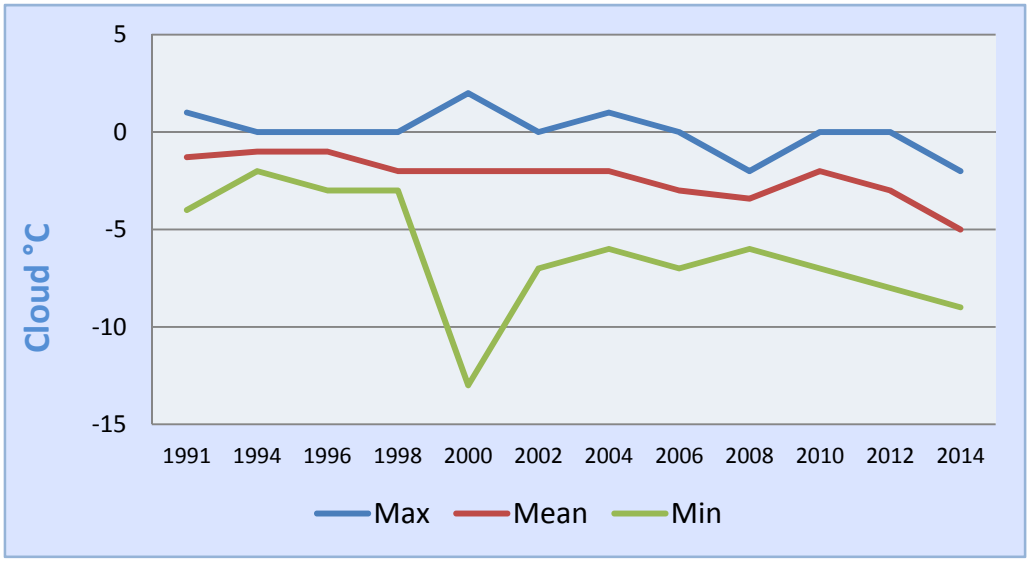
*20 hours min for diesel containing FAME above 2 % V/V

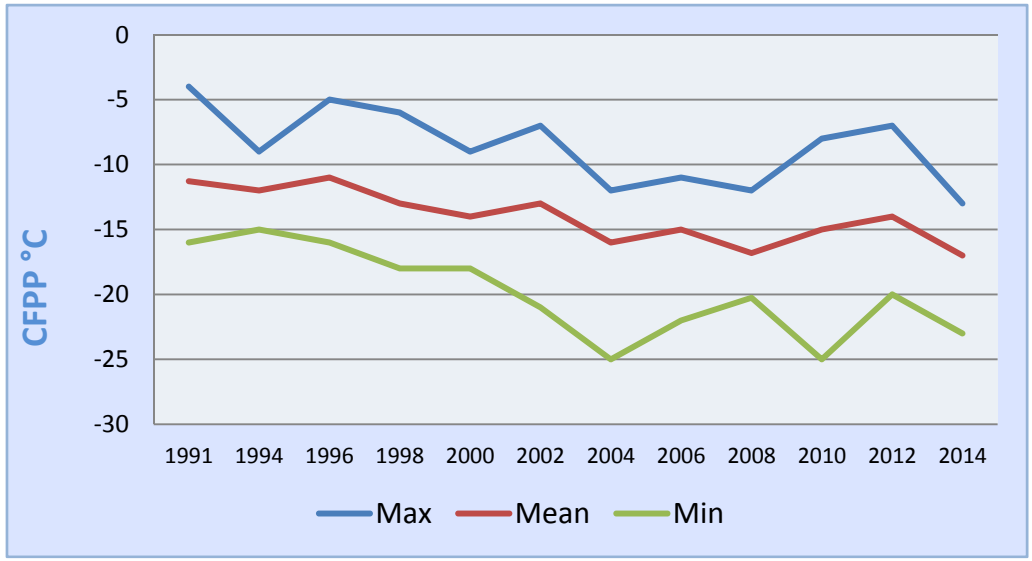
** DIES1201367 is a high Bx fuel and not a standard EN 590 service station fuel.

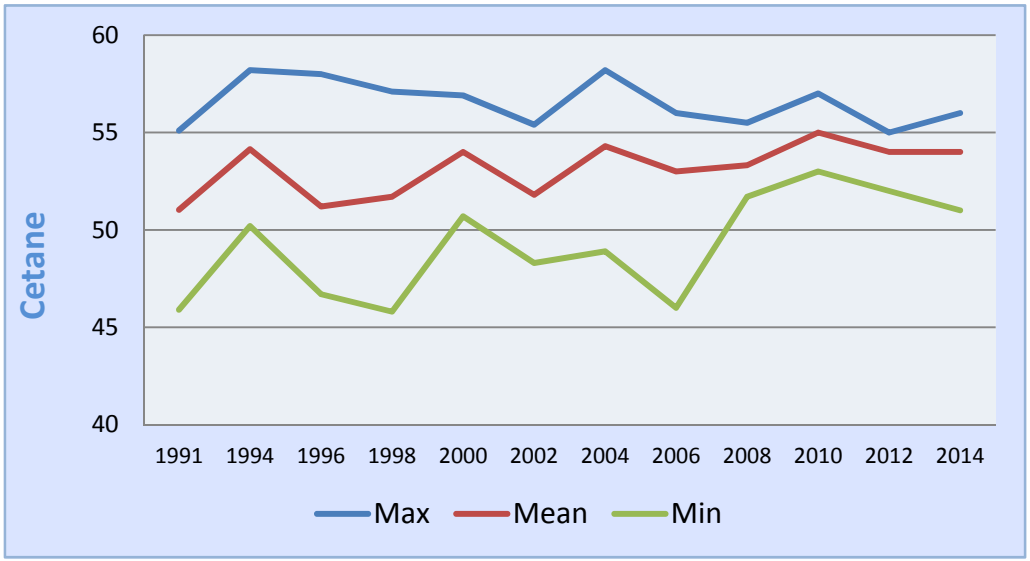
Infineum

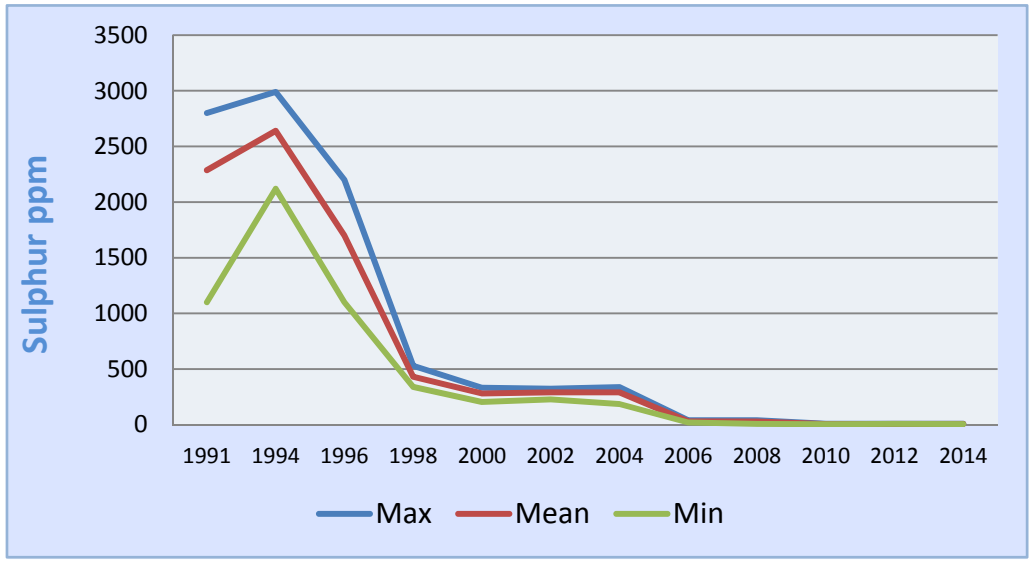
Spain

Europe









Sweden

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400490	DIES 1400491	DIES 1400492	DIES 1400489	DIES 1400495	DIES 1400497	DIES 1400498
Cloud Point, °C	-22 (max)	-25	-29	-33	-30	-25	-28	-32	-32	-33	-25
CFPP, °C	-32 (max)	-25	-31	-34	-34	-26	-33	-35	-34	-34	-25
Pour Point, °C		-27	-30	-33	-30	-27	-30	-33	-33	-33	-27
HFRR, µm	400 (max)	220	195	170	187	205	193	174	212	220	203
Wax Content @ 10°C Below Cloud, wt%		3.1	2.7	2.0	2.5	3.0	2.0	2.5	2.7	2.7	2.9
Rancimat, hrs	*	>40	>30	20	35	20	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Density @15°C, kg/m^3	800 - 830	824	816	812	819	823	813	812	813	812	816
Viscosity @ 40°C, cSt	1.5 - 4.0	2.33	2.15	2.04	2.10	2.17	2.27	2.05	2.05	2.04	2.33
Cetane Index $_{2\ Variable}$		57	53	50	51	50	57	54	53	54	56
Cetane Index $_{4\ Variable}$	50 (min)	59	55	51	53	51	59	55	55	55	58
Cetane Number	51 (min)	58	55	52	52	54	56	53	58	53	58
Distillation, °C IBP	180 (min)	186	182	179	186	181	182	179	184	181	182
T_{10}		212	207	203	210	206	210	203	204	204	212
T_{20}		224	216	211	217	216	221	211	213	212	224
T_{50}		255	244	239	239	242	252	240	239	240	255
T_{90}		306	299	293	297	302	306	293	293	294	303
T_{95}	340 (max)	320	315	309	317	318	320	309	310	312	318
FBP		329	326	323	327	328	329	323	324	323	327
% FAME	5 (max)	7	6	5	7	7	7	5	5	5	7

Specification shown is for B5.
*20 hours min for diesel containing FAME above 2 % V/V

Infineum

Sweden (continued)

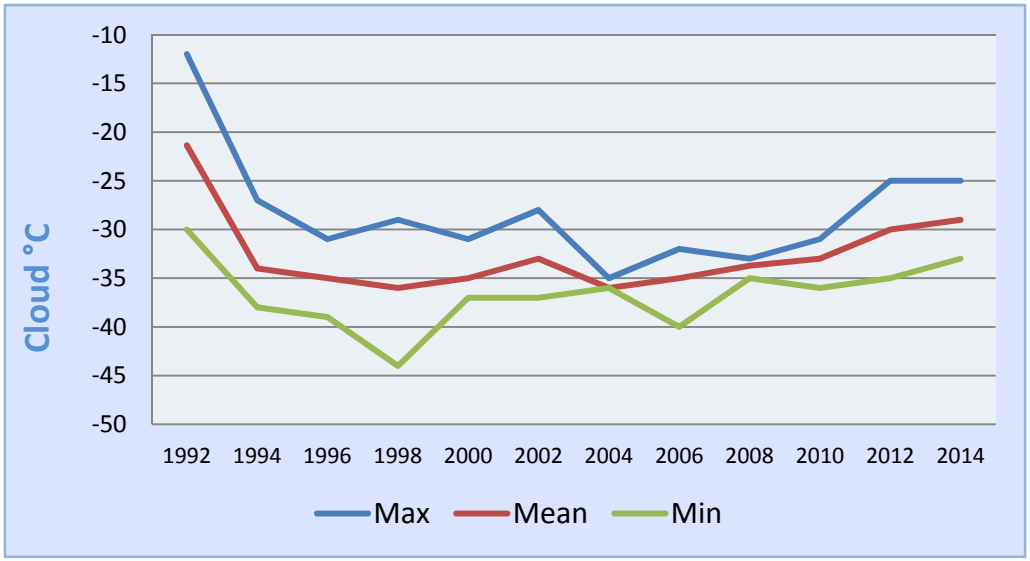
National standards and physical inspection data

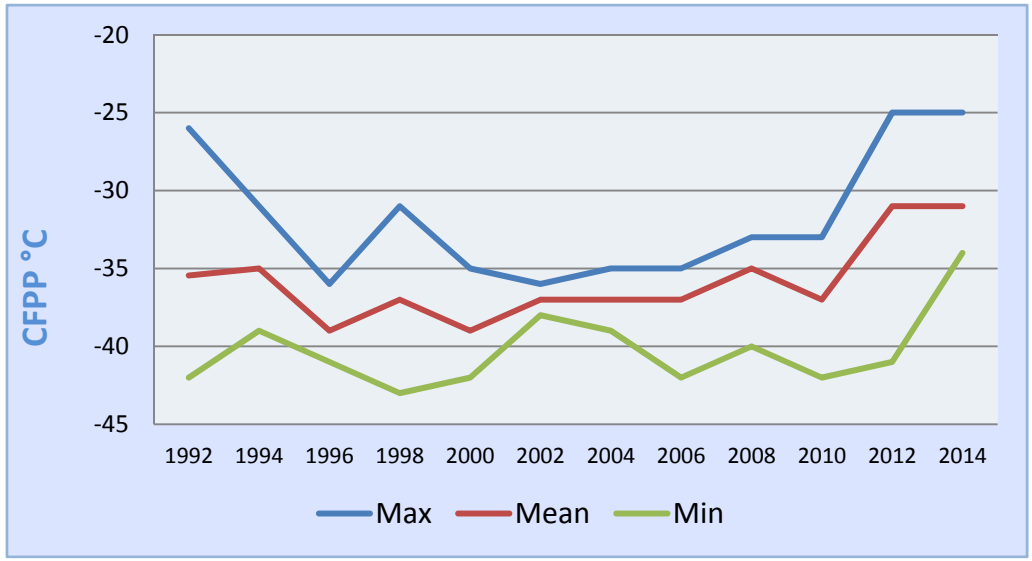
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400513
Cloud Point, °C	-22 (max)	-25	-29	-33	-26
CFPP, °C	-32 (max)	-25	-29	-34	-25
Pour Point, °C		-27	-30	-33	-27
HFRR, µm	400 (max)	220	195	170	170
Wax Content @ 10°C Below Cloud, wt%		3.1	2.7	2.0	3.1
Rancimat, hrs	*	>40	>30	20	20
Sulphur, ppm	10 (max)	<3	<3	<3	<3
Density @15°C, kg/m^3	800 - 830	824	816	812	824
Viscosity @ 40°C, cSt	1.5 - 4.0	2.33	2.15	2.04	2.17
Cetane Index $_{2\ Variable}$		57	53	50	50
Cetane Index $_{4\ Variable}$	50 (min)	59	55	51	51
Cetane Number	51 (min)	58	55	52	55
Distillation, °C IBP	180 (min)	186	182	179	183
T_{10}		212	207	203	207
T_{20}		224	216	211	216
T_{50}		255	244	239	242
T_{90}		306	299	293	302
T_{95}	340 (max)	320	315	309	318
FBP		329	326	323	328
% FAME	5 (max)	7	6	5	7

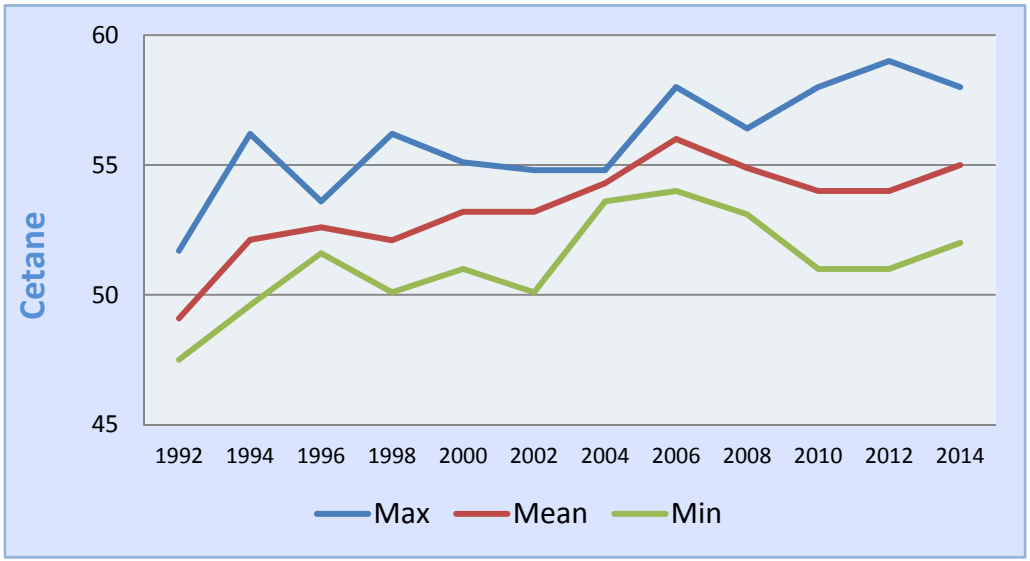
Specification shown is for B5.
*20 hours min for diesel containing FAME above 2 % V/V

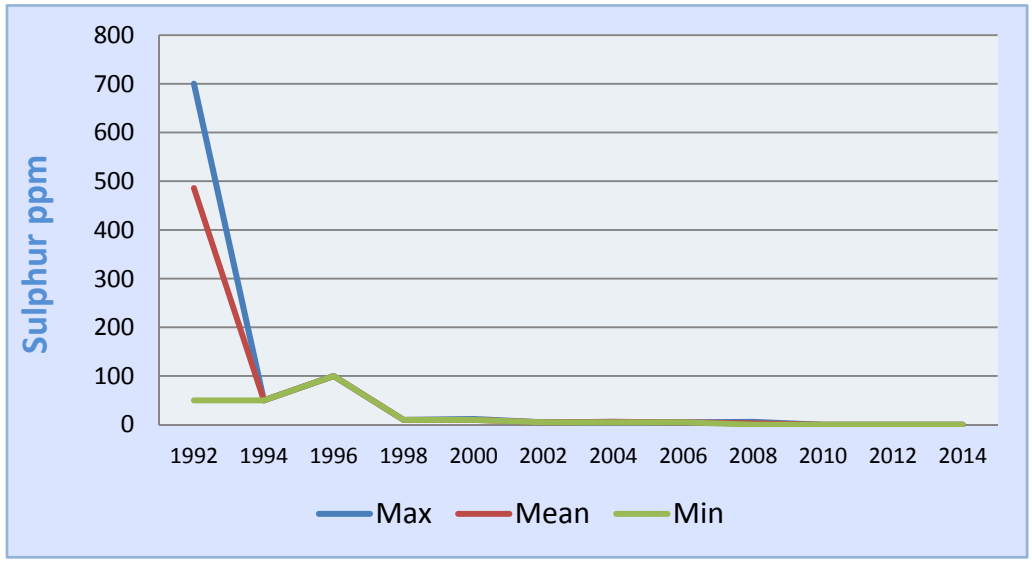
Sweden

Europe









Switzerland

Europe

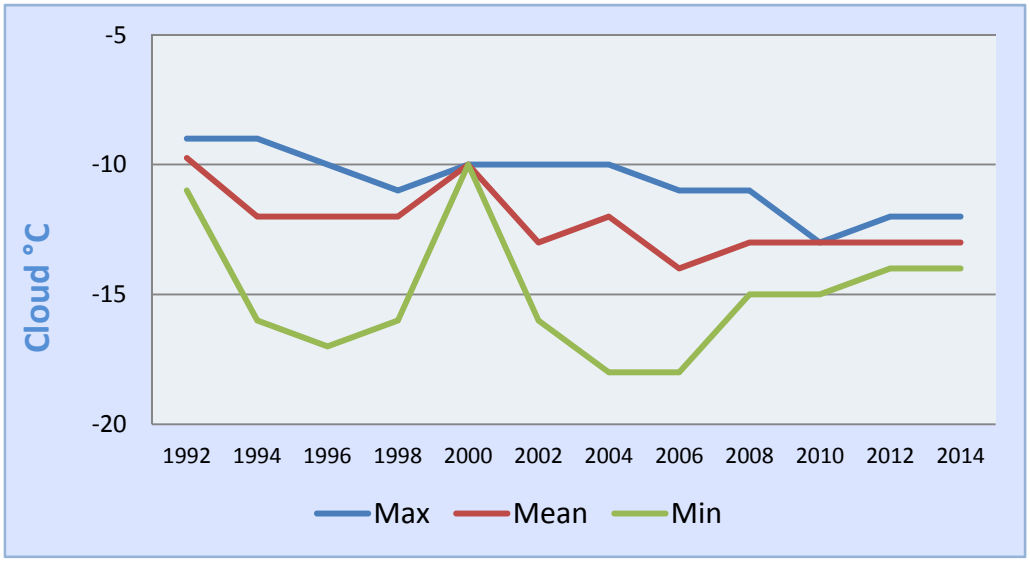
National standards and physical inspection data

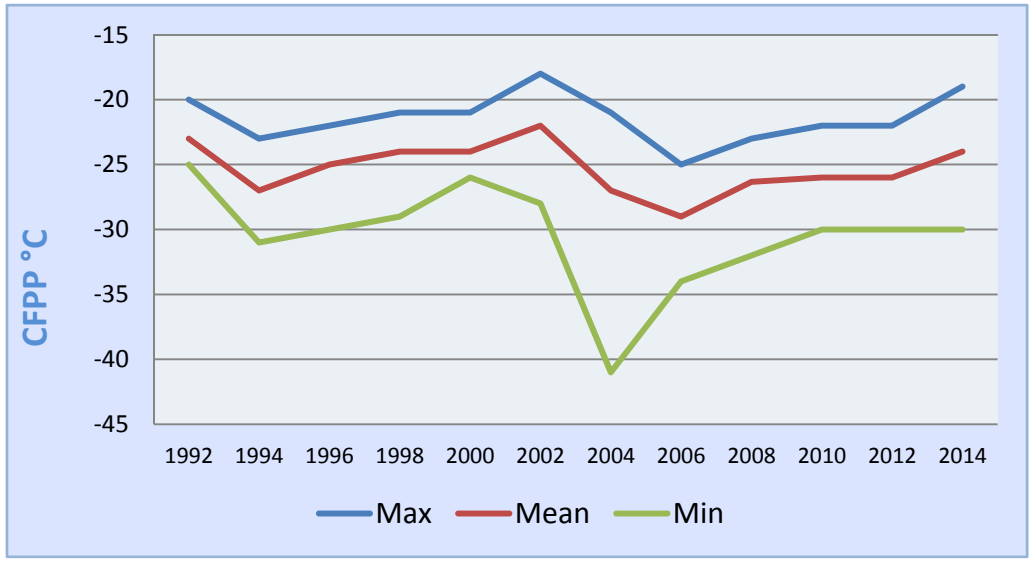
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400514	DIES 1400515	DIES 1400516	DIES 1400518	DIES 1400519	DIES 1400520	DIES 1400521
Cloud Point, °C	-10 (max)	-12	-13	-14	-14	-14	-12	-12	-12	-12	-13
CFPP, °C	-20 (max)	-19	-24	-30	-23	-25	-19	-19	-30	-30	-23
Pour Point, °C		-24	-30	-42	-27	-42	-30	-30	-27	-24	-27
HFRR, µm	460 (max)	470	415	384	384	470	417	408	407	435	386
Wax Content @ 10°C Below Cloud, wt%		2.0	1.5	1.0	1.0	1.3	1.6	1.4	1.9	2.0	1.1
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	7	5	6	5	8	7	8	8	6
Density @15°C, kg/m^3	845 (max)	837	832	826	834	833	826	827	835	837	832
Viscosity @ 40°C, cSt	1.5 – 4.0	2.86	2.45	2.05	2.69	2.11	2.05	2.10	2.72	2.86	2.61
Cetane Index $_{2\ Variable}$		53	51	47	53	47	49	50	53	52	53
Cetane Index $_{4\ Variable}$	46 (min)	53	51	47	53	47	49	50	53	53	53
Cetane Number	51 (min)	55	53	51	54	52	52	52	53	55	51
Distillation, °C IBP		179	169	162	173	162	163	163	174	179	168
T_{10}	180 (min)	218	203	186	215	190	186	189	213	218	212
T_{20}		236	219	198	232	202	198	201	231	236	229
T_{50}		271	257	242	266	242	242	244	268	271	265
T_{90}		323	320	315	320	323	315	317	322	323	320
T_{95}	360 (max)	340	337	332	337	340	332	335	338	339	340
FBP		352	348	345	352	347	345	346	347	348	350
% FAME		0	0	0	0	0	0	0	0	0	0

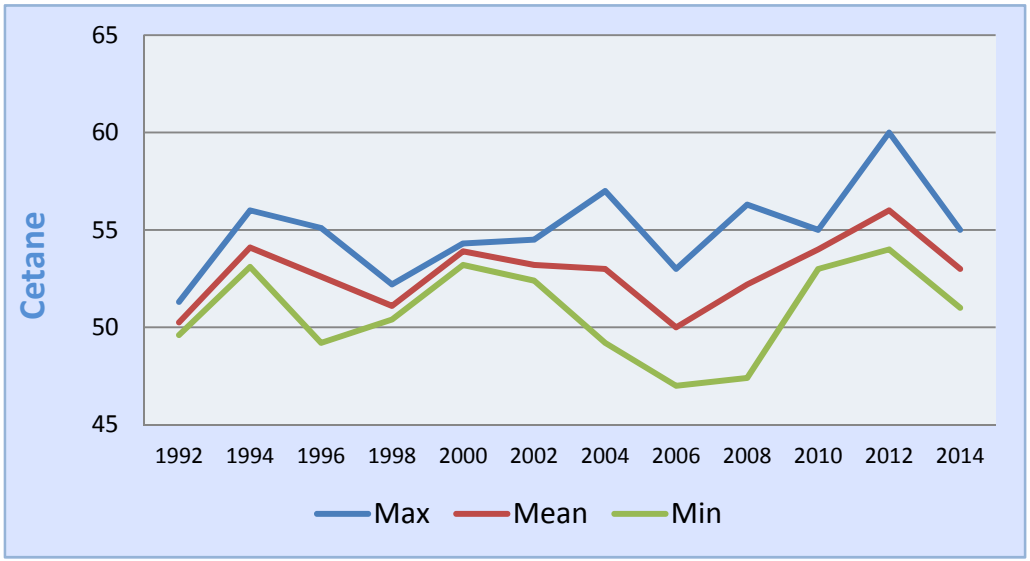
National standard shown is EN 590 Arctic Class 0

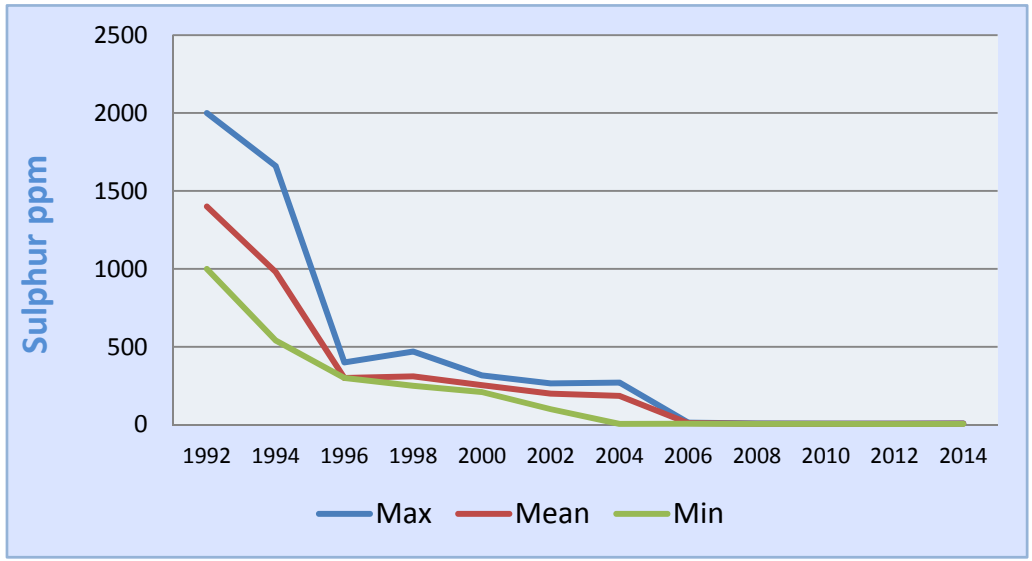
Switzerland

Europe









Turkey

Europe

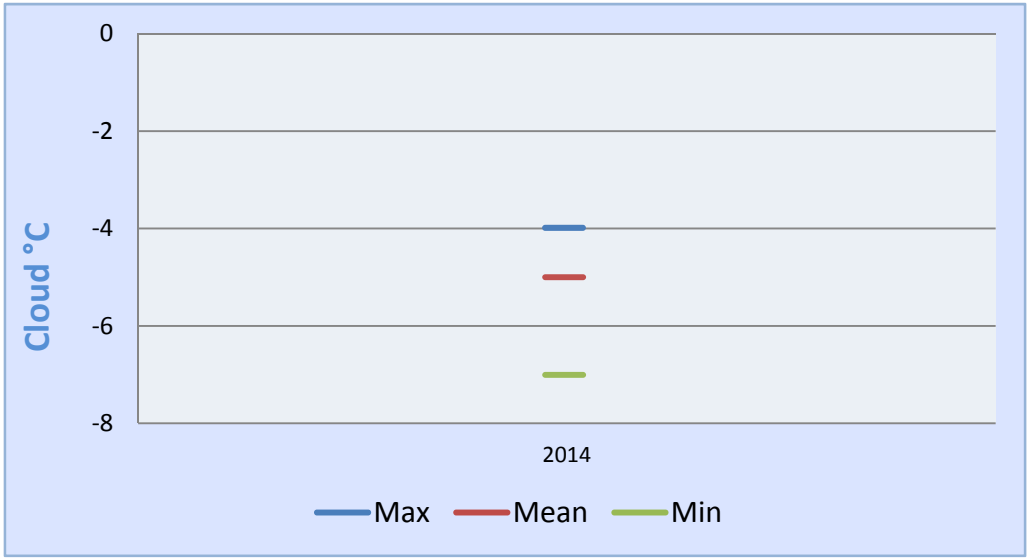
National standards and physical inspection data

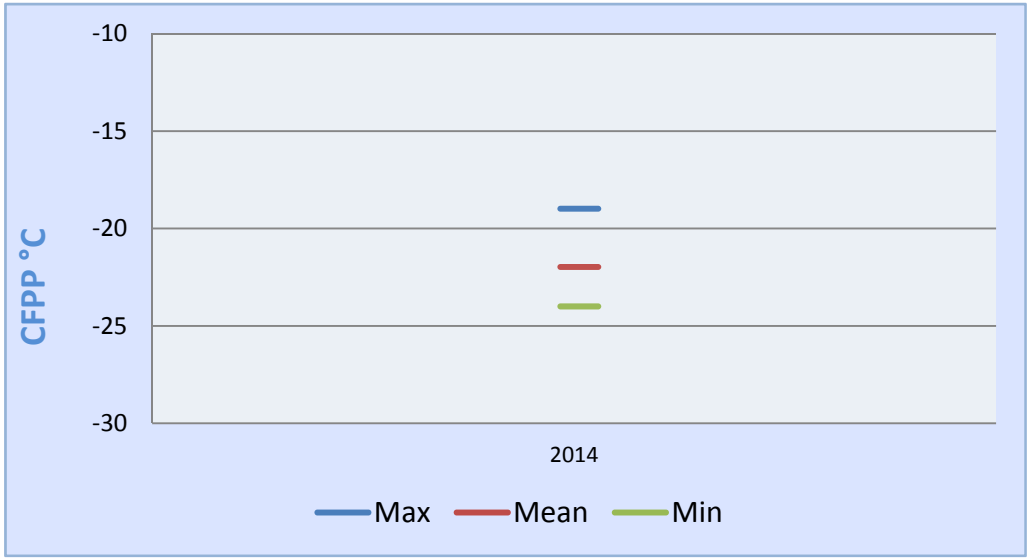
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400522	DIES 1400591
Cloud Point, °C		-4	-5	-7	-4	-7
CFPP, °C		-19	-22	-24	-19	-24
Pour Point, °C		-30	-30	-30	-30	-30
HFRR, µm	460 (max)	457	435	412	412	457
Wax Content @ 10°C Below Cloud, wt%		1.6	1.5	1.3	1.6	1.3
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	5	5	4	4	5
Density @15°C, kg/m^3	820-845	830	829	828	830	828
Viscosity @ 40°C, cSt	2.0 – 4.5	2.91	2.61	2.31	2.91	2.31
Cetane Index 2 Variable		56	54	52	56	52
Cetane Index 4 Variable	46 (min)	56	53	51	56	51
Cetane Number	51 (min)	58	57	56	58	56
Distillation, °C IBP		163	162	162	163	162
T_{10}		209	200	191	209	191
T_{20}		231	218	205	231	205
T_{50}		275	264	254	275	254
T_{90}		340	337	334	340	334
T_{95}	360 (max)	356	354	353	356	353
FBP		365	363	361	365	361
% FAME	7 (max)	0	0	0	0	0

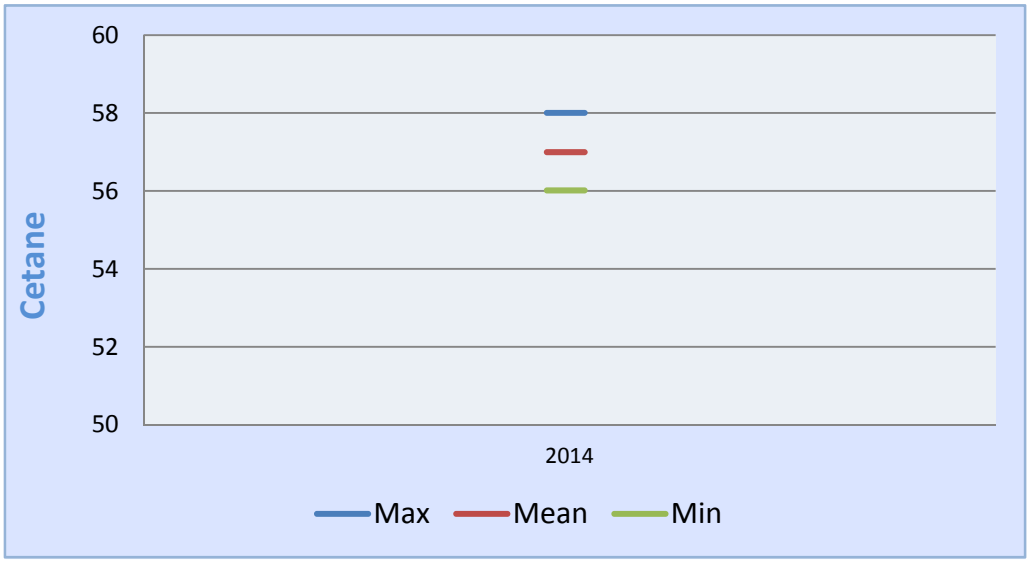
National standard shown is EN 590 Arctic Class 0

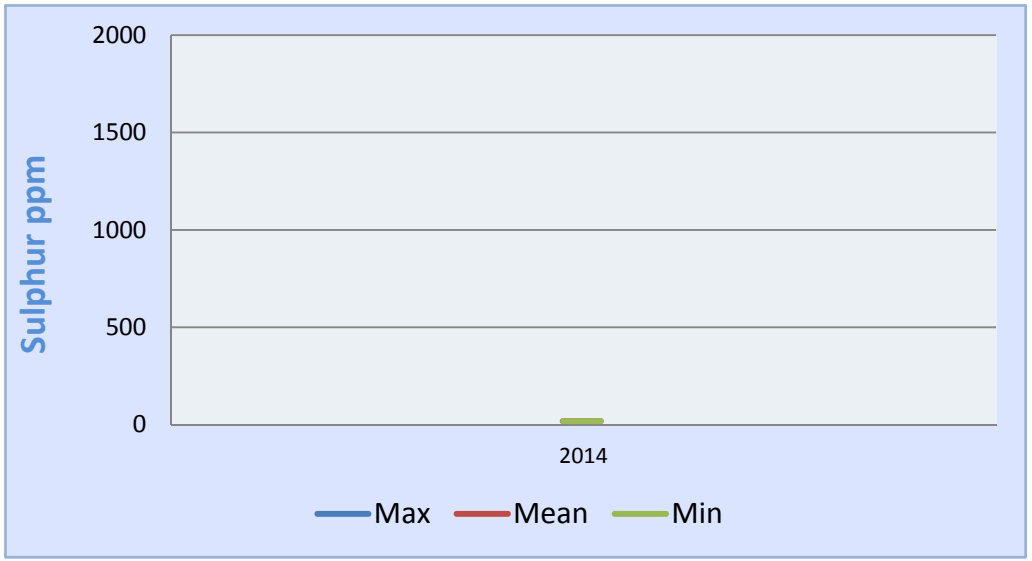
Turkey

Europe









United Kingdom

Europe

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400530	DIES 1400531	DIES 1400532	DIES 1400533	DIES 1400535	DIES 1400536	DIES 1400537
Cloud Point, °C		-5	-9	-20	-10	-9	-9	-9	-9	-6	-12
CFPP, °C	-15 (max)	-15	-20	-26	-21	-19	-24	-20	-20	-19	-24
Pour Point, °C		-12	-26	-33	-27	-27	-27	-27	-27	-30	-30
HFRR, µm	460 (max)	424	374	206	422	420	371	375	322	390	380
Wax Content @ 10°C Below Cloud, wt%		2.9	1.8	0.7	1.5	1.8	1.7	1.8	0.7	1.8	1.5
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	7	4	9	9	8	8	4	5	8
Density @15°C, kg/m^3	820 - 845	844	838	824	840	839	841	839	844	841	827
Viscosity @ 40°C, cSt	2.0 - 4.5	3.17	2.58	2.20	2.42	2.46	2.51	2.46	2.80	2.82	2.26
Cetane Index $_{2\ Variable}$		54	51	48	50	51	51	51	49	52	53
Cetane Index $_{4\ Variable}$	46 (min)	54	50	47	49	49	49	50	48	51	52
Cetane Number	51 (min)	59	54	51	54	55	54	55	51	52	52
Distillation, °C IBP		174	163	158	159	158	159	159	171	172	158
T_{10}		223	198	189	189	191	192	192	207	203	192
T_{20}		245	219	210	210	212	214	213	225	220	210
T_{50}		279	267	255	267	267	270	268	265	274	257
T_{90}		337	329	318	329	330	334	331	335	337	321
T_{95}	360 (max)	356	346	333	344	345	350	346	356	350	337
FBP		364	355	343	357	356	357	354	364	359	347
% FAME	7 (max)	6	1	0	1	1	1	1	2	0	0

*20 hours min for diesel containing FAME above 2 % V/V

Infineum

United Kingdom (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400538	DIES 1400539	DIES 1400540	DIES 1400541	DIES 1400542	DIES 1400543	DIES 1400544
Cloud Point, °C		-5	-9	-20	-7	-5	-5	-10	-8	-20	-14
CFPP, °C	-15 (max)	-15	-20	-26	-20	-15	-17	-19	-22	-26	-24
Pour Point, °C		-12	-26	-33	-33	-12	-15	-27	-27	-18	-30
HFRR, µm	460 (max)	424	374	206	356	404	424	403	381	206	395
Wax Content @ 10°C Below Cloud, wt%		2.9	1.8	0.7	2.1	2.9	2.1	1.7	1.1	2.6	1.7
Rancimat, hrs	*	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	7	4	8	5	4	9	9	7	8
Density @15°C, kg/m^3	820 - 845	844	838	824	833	838	839	840	841	843	824
Viscosity @ 40°C, cSt	2.0 - 4.5	3.17	2.58	2.20	2.67	2.99	3.17	2.43	2.47	2.37	2.20
Cetane Index $_{2\ Variable}$		54	51	48	54	53	53	51	50	48	54
Cetane Index $_{4\ Variable}$	46 (min)	54	50	47	53	53	54	49	49	47	53
Cetane Number	51 (min)	59	54	51	57	55	59	55	53	53	51
Distillation, °C IBP		174	163	158	165	169	174	159	159	158	158
T_{10}		223	198	189	202	215	223	191	192	199	192
T_{20}		245	219	210	224	240	245	211	212	217	210
T_{50}		279	267	255	270	275	279	268	265	261	255
T_{90}		337	329	318	331	323	330	332	334	318	318
T_{95}	360 (max)	356	346	333	349	340	349	350	352	333	334
FBP		364	355	343	356	352	359	358	364	344	343
% FAME	7 (max)	6	1	0	0	0	0	1	1	6	0

*20 hours min for diesel containing FAME above 2 % V/V

United Kingdom (continued)

National standards and physical inspection data

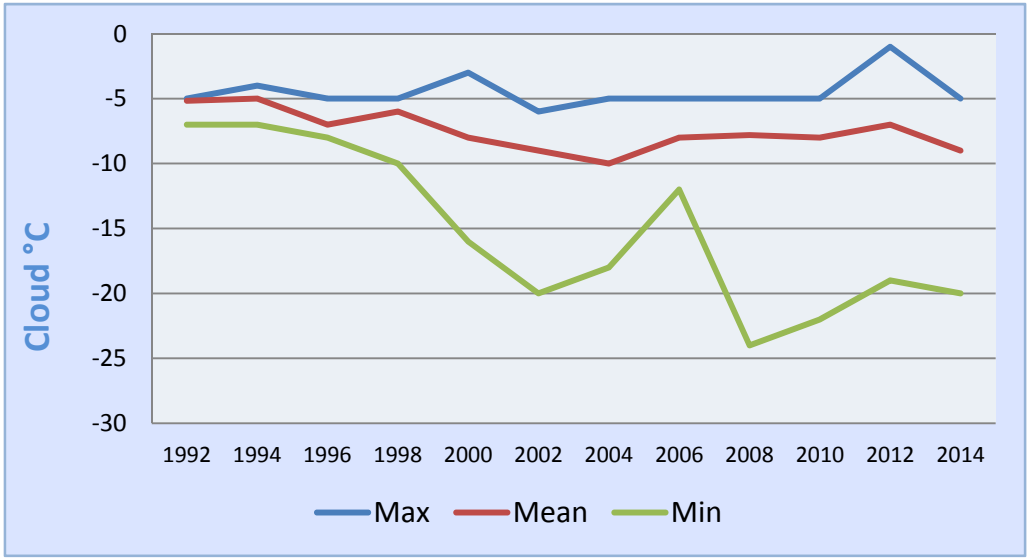
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400545
Cloud Point, °C		-5	-9	-20	-6
CFPP, °C	-15 (max)	-15	-20	-26	-19
Pour Point, °C		-12	-26	-33	-30
HFRR, µm	460 (max)	424	374	206	368
Wax Content @ 10°C Below Cloud, wt%		2.9	1.8	0.7	1.9
Rancimat, hrs	*	>40	>40	>40	>40
Sulphur, ppm	10 (max)	9	7	4	7
Density @15°C, kg/m^3	820 - 845	844	838	824	837
Viscosity @ 40°C, cSt	2.0 - 4.5	3.17	2.58	2.20	2.65
Cetane Index $_{2\ Variable}$		54	51	48	52
Cetane Index $_{4\ Variable}$	46 (min)	54	50	47	51
Cetane Number	51 (min)	59	54	51	55
Distillation, °C IBP		174	163	158	161
T_{10}		223	198	189	199
T_{20}		245	219	210	221
T_{50}		279	267	255	270
T_{90}		337	329	318	333
T_{95}	360 (max)	356	346	333	350
FBP		364	355	343	359
% FAME	7 (max)	6	1	0	0

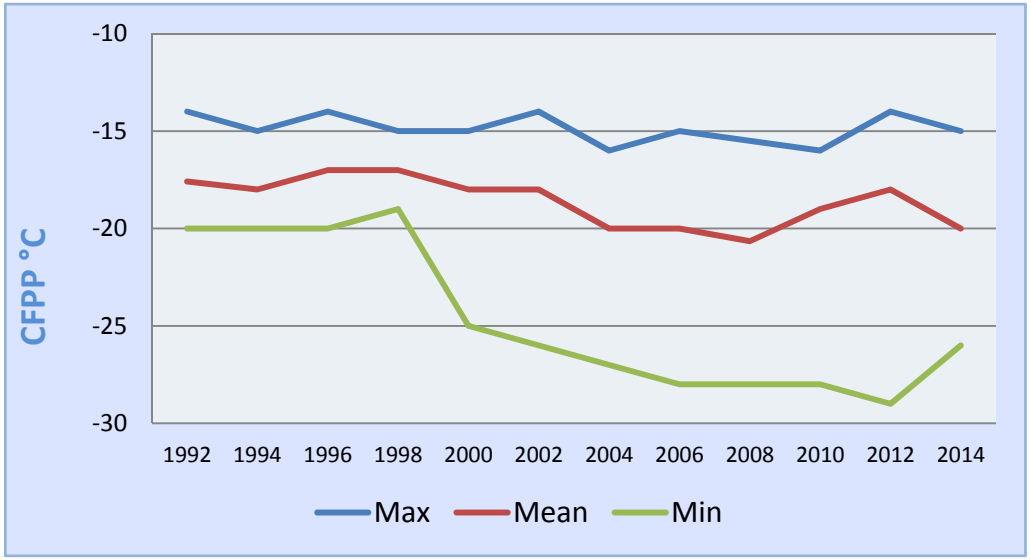
*20 hours min for diesel containing FAME above 2 % V/V

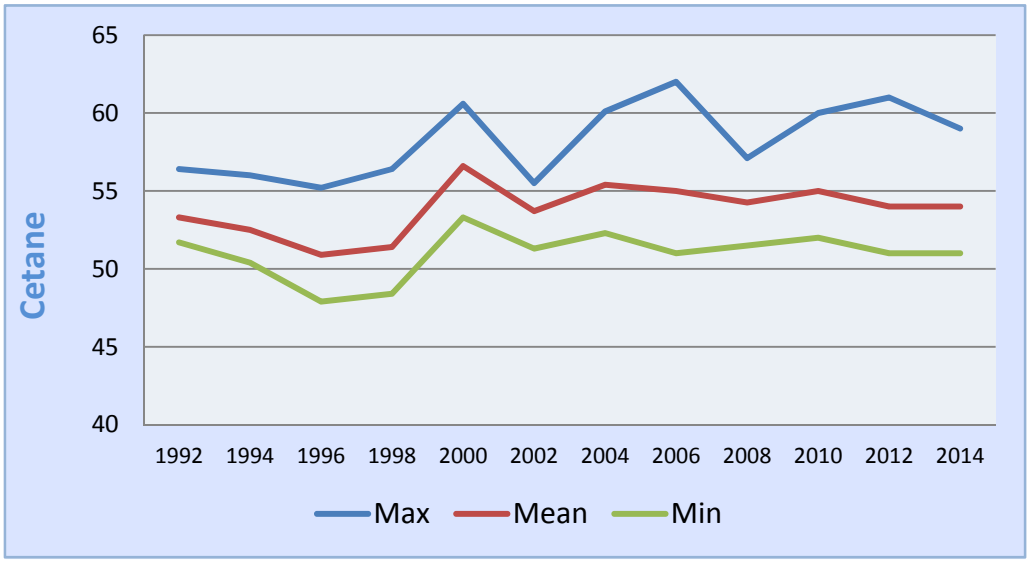
Infineum

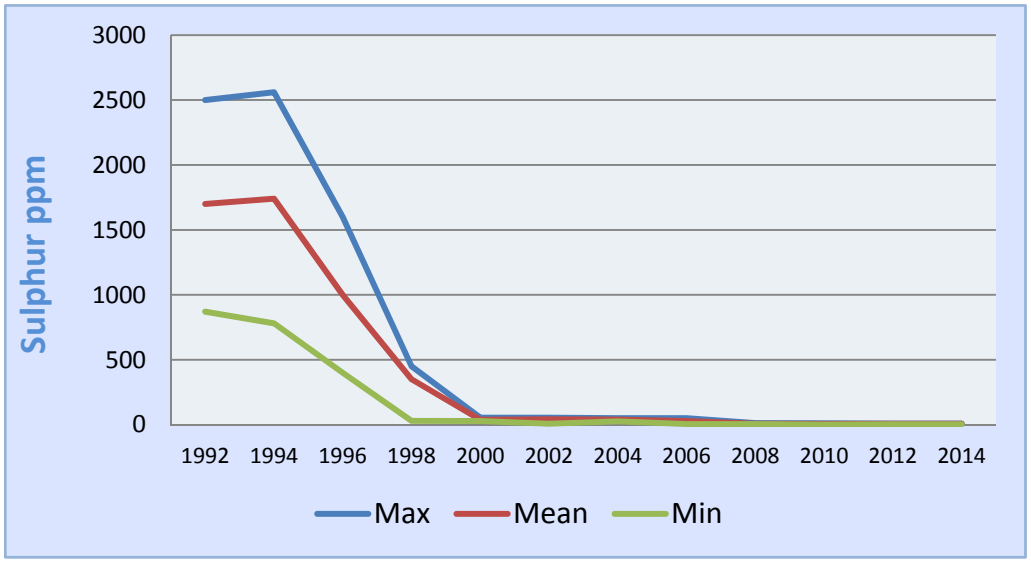
United Kingdom

Europe









Ukraine

Europe

National standards and physical inspection data

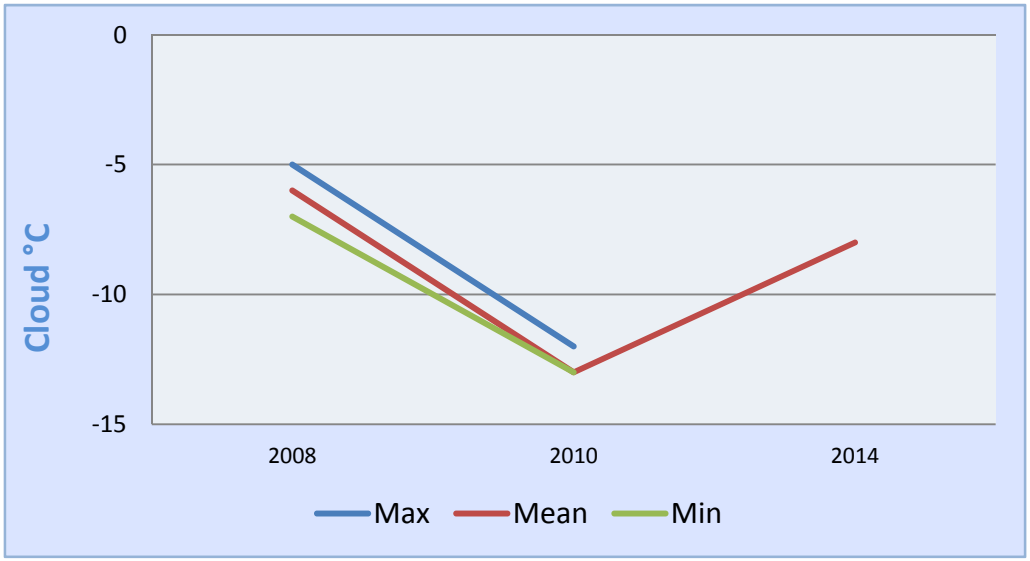
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400546
Cloud Point, °C			-8		-8
CFPP, °C	-20 (max)		-30		-30
Pour Point, °C			-33		-33
HFRR, µm	460 (max)		466		466
Wax Content @ 10°C Below Cloud, wt%			1.7		1.7
Rancimat, hrs			>40		>40
Sulphur, ppm	50 (max)		23		23
Density @15°C, kg/m^3			830		830
Viscosity @ 40°C, cSt			2.63		2.63
Cetane Index $_{2\ Variable}$			54		54
Cetane Index $_{4\ Variable}$			54		54
Cetane Number	51 (min)		50		50
Distillation, °C IBP			170		170
T_{10}			204		204
T_{20}			222		222
T_{50}			266		266
T_{90}			334		334
T_{95}	360 (max)		349		349
FBP			352		352
% FAME	5 (max)* 7 (max)*		0		0

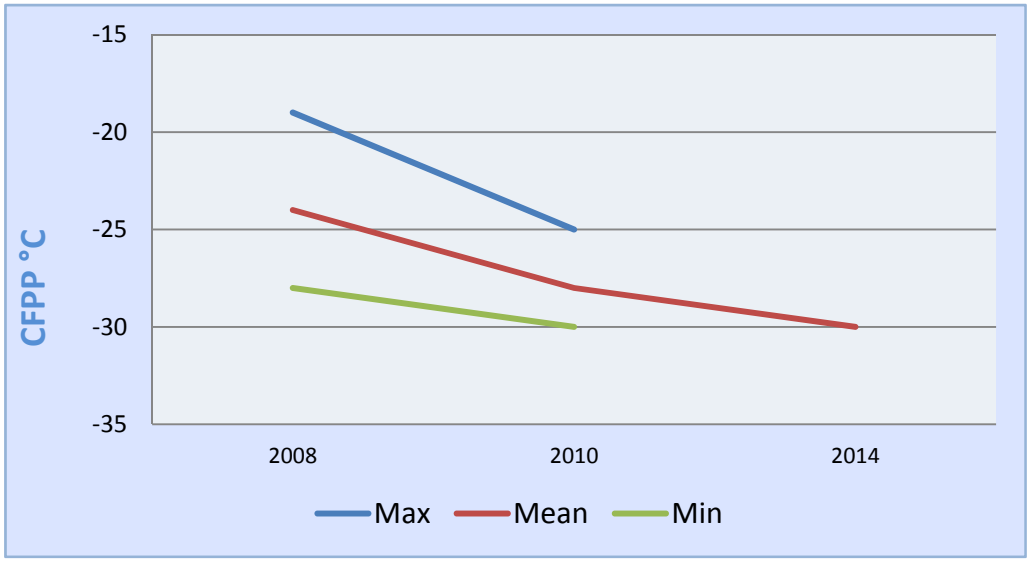
Specification shown for EVR04 diesel.

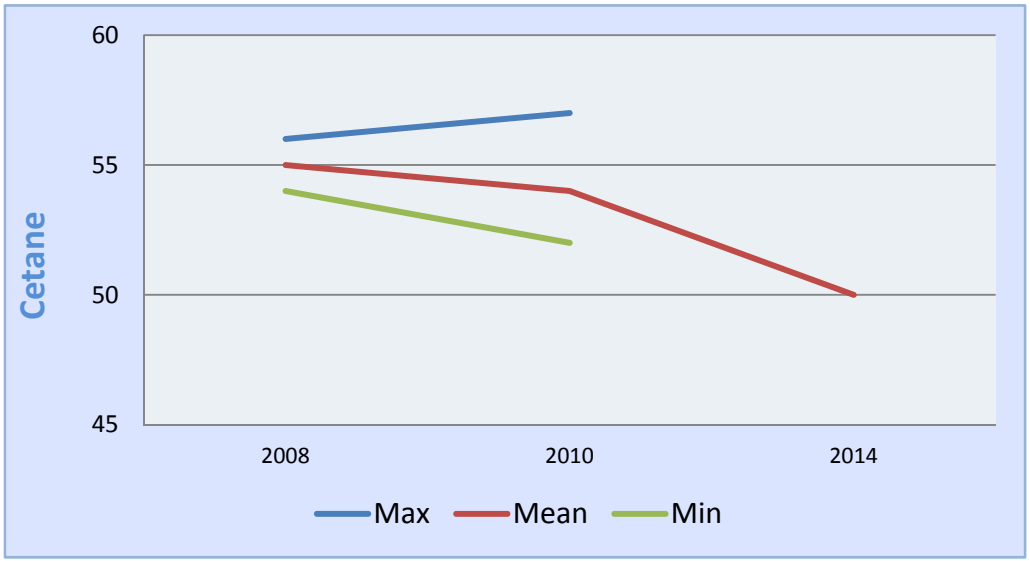
*For ambient temperatures below -20°C, using biodiesel is not recommended. Two grades are allowed on the market.

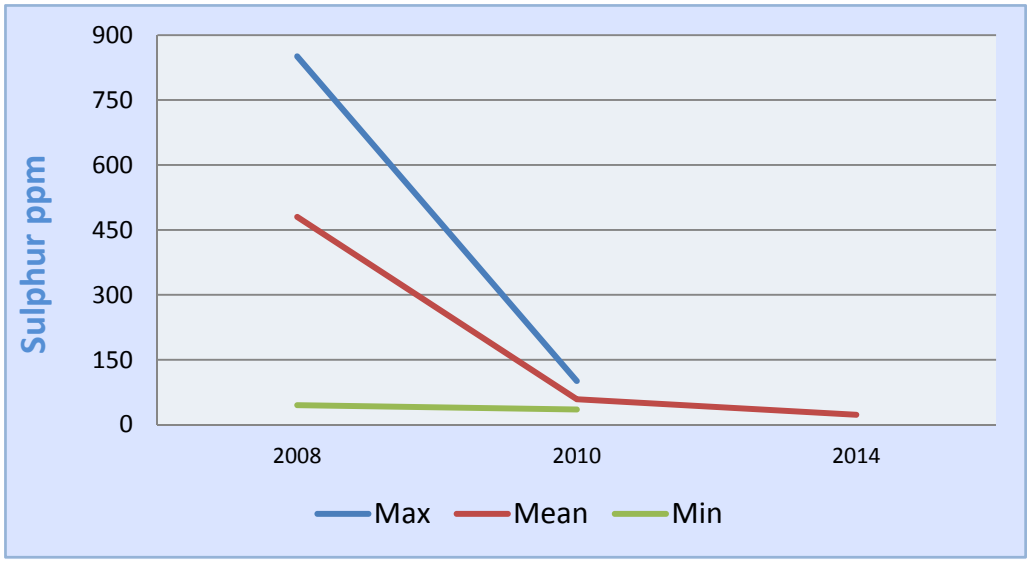
Ukraine

Europe









Worldwide Survey – Asia Pacific

Australia

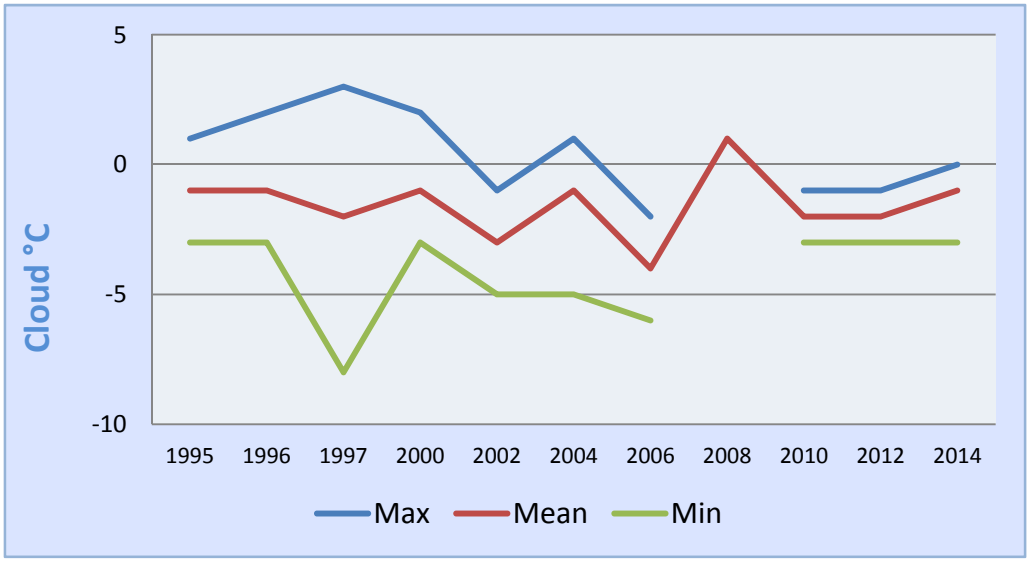
National standards and physical inspection data

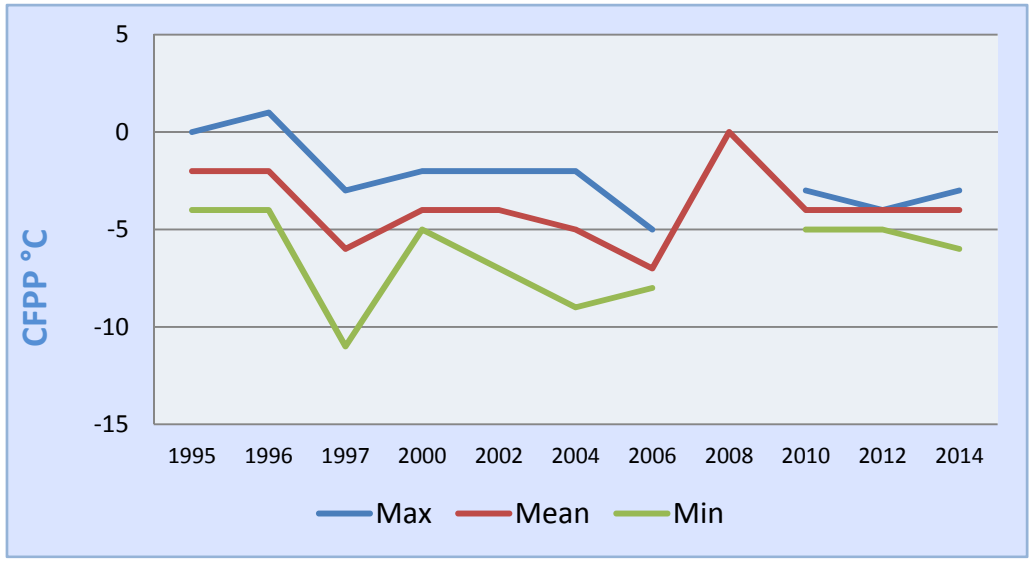
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1304957	DIES 1304958	DIES 1304959	DIES 1304960
Cloud Point, °C		0	-1	-3	0	-2	0	-3
CFPP, °C		-3	-4	-6	-3	-6	-3	-5
Pour Point, °C		-3	-5	-12	-3	-12	-3	-3
HFRR, µm	460 (max)	402	357	294	402	346	294	387
Wax Content @ 10°C Below Cloud, wt%		6.6	5.1	3.4	4.6	3.4	5.6	6.6
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	8	8	7	7	8	8	8
Density @15°C, kg/m^3	820 - 850	849	839	832	832	833	842	849
Viscosity @ 40°C, cSt	2.0 - 4.5	2.89	2.71	2.46	2.79	2.46	2.71	2.89
Cetane Index $_{2 \text{ Variable}}$		54	52	49	54	54	50	49
Cetane Index $_{4 \text{ Variable}}$	46 (min)	55	52	49	55	55	50	49
Cetane Number	51 (min)	54	52	50	54	52	50	52
Distillation, °C IBP		191	182	172	191	172	178	187
T_{10}		231	220	213	222	215	213	231
T_{20}		245	237	232	237	236	232	245
T_{50}		273	272	270	271	273	270	273
T_{90}		330	326	318	329	330	327	318
T_{95}	360 (max)	348	341	331	345	348	339	331
FBP		355	349	340	354	355	347	340
% FAME	5 (max)	4	1	0	0	0	4	0

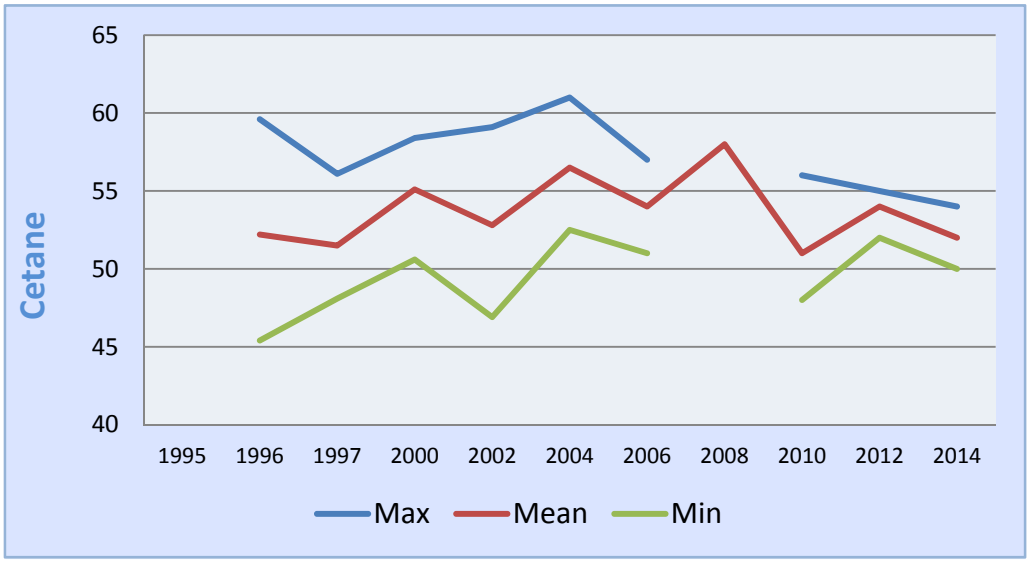
Infineum

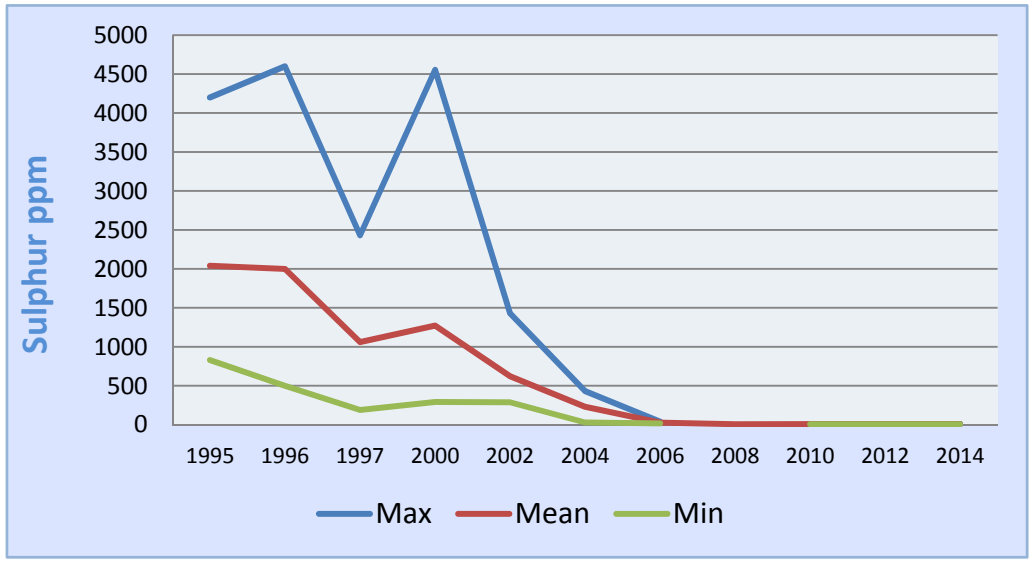
Australia

Asia Pacific









Peoples' Republic of China

Asia Pacific

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	E00251-125-1	E00251-125-2	E00251-125-3	E00251-125-4	E00251-125-5	E00251-125-6	E00251-125-7
Cloud Point, °C	*	–	–	–	–	–	–	–	–	–	–
CFPP, °C		-2	-10	-34	-2	-3	-7	-12	-4	-11	-7
Solid Point, °C	*	-8	-22	-49	-8	-14	-16	-18	-10	-18	-16
HFRR, µm	460 (max)	439	385	206	360	414	342	345	385	393	414
Wax Content @ 10°C Below Cloud, wt%		–	–	–	–	–	–	–	–	–	–
Rancimat, hrs		–	–	–	–	–	–	–	–	–	–
Sulphur, ppm	350 (max)	900	172	2	310	2	900	3	184	178	288
Density @15°C, kg/m^3		858	833	809	856	822	853	838	840	831	858
Viscosity @ 20°C, cSt	*	5.54	4.16	2.29	4.71	3.95	4.20	5.34	4.55	4.89	5.00
Cetane Index $_{2\ Variable}$	*	58	52	46	47	54	46	53	51	56	47
Cetane Index $_{4\ Variable}$		63	56	49	49	59	49	57	55	60	49
Cetane Number	45 (min)	60	52	46	46	60	46	53	52	53	46
Distillation, °C IBP		–	–	–	–	–	–	–	–	–	–
T_{50}	300 (max)	284	262	213	272	256	266	277	271	277	277
T_{90}	355 (max)	342	327	290	338	339	336	321	319	325	335
T_{95}	365 (max)	358	342	305	354	358	351	333	333	338	348

Specification shown for China III (Automobile diesel)
*Various spec depend on grade, see table below

Grade	5°C	0°C	-10°C	-20°C	-35°C
Solid Point °C Max.	5	0	-10	-20	-35
CFPP °C Max.	8	4	-5	-14	-29
Cetane Number Min.	49	49	49	46	45
Density @20°C, kg/m^3	810-850	810-850	810-850	790-840	790-840
Viscosity @20°C, cSt	3 - 8	3 - 8	3 - 8	2.5 - 8	1.8 - 7

Peoples' Republic of China (continued)

Asia Pacific

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	E00251-125-8	E00251-125-9	E00251-125-10	E00251-125-11	E00251-125-12	E00251-125-13	E00251-125-14
Cloud Point, °C	*	–	–	–	–	–	–	–	–	–	–
CFPP, °C		-2	-10	-34	-8	-4	-9	-2	-6	-8	-10
Solid Point, °C	*	-8	-22	-49	-18	-18	-22	-12	-18	-14	-28
HFRR, µm	460 (max)	439	385	206	404	384	369	404	206	420	396
Wax Content @ 10°C Below Cloud, wt%		–	–	–	–	–	–	–	–	–	–
Rancimat, hrs		–	–	–	–	–	–	–	–	–	–
Sulphur, ppm	350 (max)	900	172	2	332	31	198	21	224	245	9
Density @15°C, kg/m^3		858	833	809	854	839	828	837	842	820	824
Viscosity @ 20°C, cSt	*	5.54	4.16	2.29	4.46	5.54	4.65	5.35	4.50	3.80	4.12
Cetane Index $_{2\ Variable}$	*	58	52	46	47	54	56	55	51	58	55
Cetane Index $_{4\ Variable}$		63	56	49	50	58	60	58	55	63	60
Cetane Number	45 (min)	60	52	46	46	51	53	53	51	59	55
Distillation, °C IBP		–	–	–	–	–	–	–	–	–	–
T_{50}	300 (max)	284	262	213	269	284	274	284	274	267	263
T_{90}	355 (max)	342	327	290	333	340	333	342	341	322	340
T_{95}	365 (max)	358	342	305	348	354	346	357	355	333	353

Specification shown for China III (Automobile diesel)
*Various spec depend on grade, see table below

Grade	5°C	0°C	-10°C	-20°C	-35°C
Solid Point °C Max.	5	0	-10	-20	-35
CFPP °C Max.	8	4	-5	-14	-29
Cetane Number Min.	49	49	49	46	45
Density @20°C, kg/m^3	810-850	810-850	810-850	790-840	790-840
Viscosity @20°C, cSt	3 - 8	3 - 8	3 - 8	2.5 - 8	1.8 - 7

Peoples' Republic of China (continued)

National standards and physical inspection data

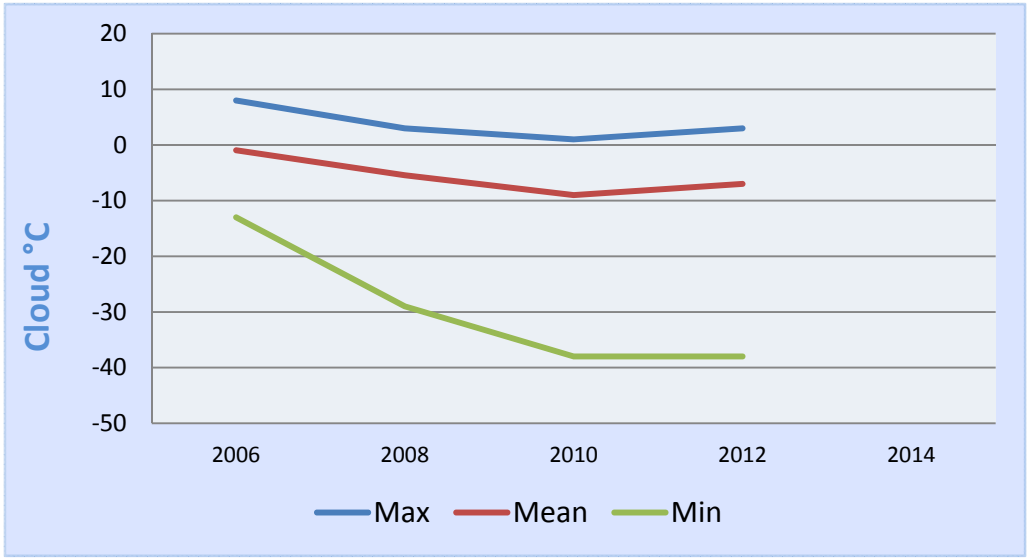
	National Standard	Maximum Observed	Mean	Minimum Observed	E00251-125-15	E00251-125-16	E00251-125-17	E00251-125-18	E00251-125-19
Cloud Point, °C	*	–	–	–	–	–	–	–	–
CFPP, °C		-2	-10	-34	-10	-11	-16	-34	-32
Solid Point, °C	*	-8	-22	-49	-30	-30	-26	-49	-44
HFRR, µm	460 (max)	439	385	206	439	402	426	392	415
Wax Content @ 10°C Below Cloud, wt%		–	–	–	–	–	–	–	–
Rancimat, hrs		–	–	–	–	–	–	–	–
Sulphur, ppm	350 (max)	900	172	2	21	24	122	138	42
Density @15°C, kg/m^3		858	833	809	820	820	818	813	809
Viscosity @ 20°C, cSt	*	5.54	4.16	2.29	3.09	3.11	3.12	2.35	2.29
Cetane Index $_{2\ Variable}$	*	58	52	46	52	52	53	49	48
Cetane Index $_{4\ Variable}$		63	56	49	57	57	58	56	54
Cetane Number	45 (min)	60	52	46	55	51	55	55	56
Distillation, °C IBP		–	–	–	–	–	–	–	–
T_{50}	300 (max)	284	262	213	243	243	244	225	213
T_{90}	355 (max)	342	327	290	322	323	319	290	300
T_{95}	365 (max)	358	342	305	339	340	366	335	324

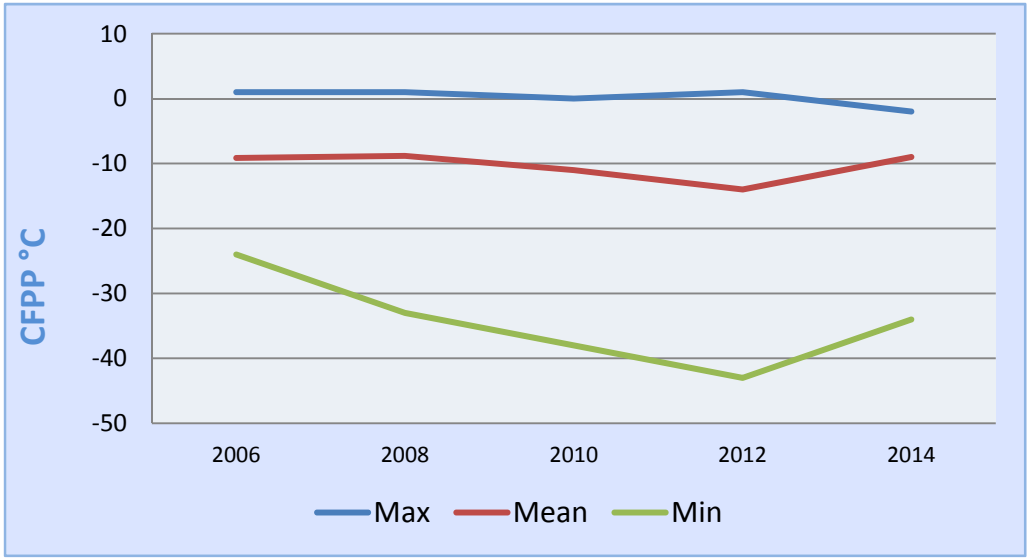
Specification shown for China III (Automobile diesel)
*Various spec depend on grade, see table below

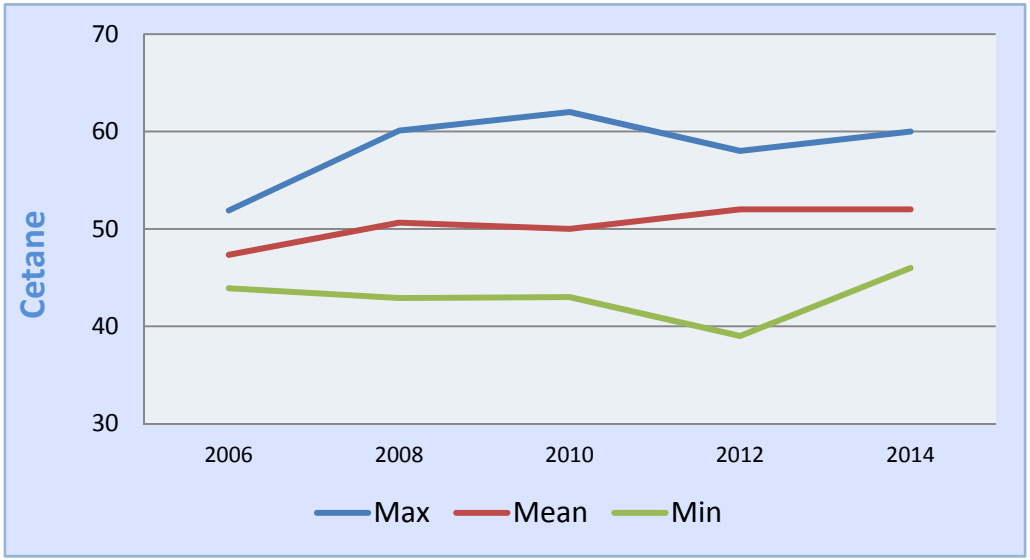
Grade	5°C	0°C	-10°C	-20°C	-35°C
Solid Point °C Max.	5	0	-10	-20	-35
CFPP °C Max.	8	4	-5	-14	-29
Cetane Number Min.	49	49	49	46	45
Density @20°C, kg/m^3	810-850	810-850	810-850	790-840	790-840
Viscosity @20°C, cSt	3 - 8	3 - 8	3 - 8	2.5 - 8	1.8 - 7

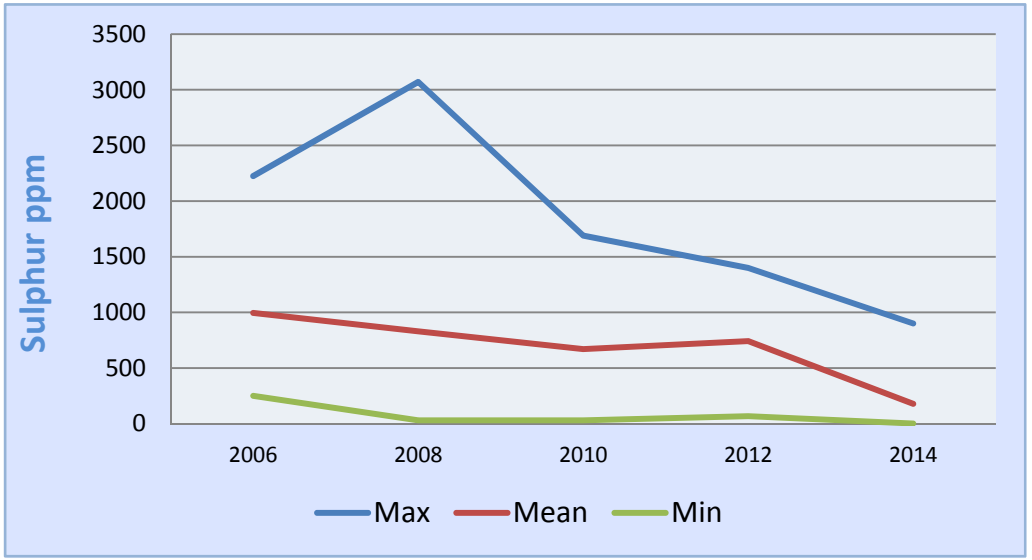
Peoples' Republic of China

Asia Pacific









India

Asia Pacific

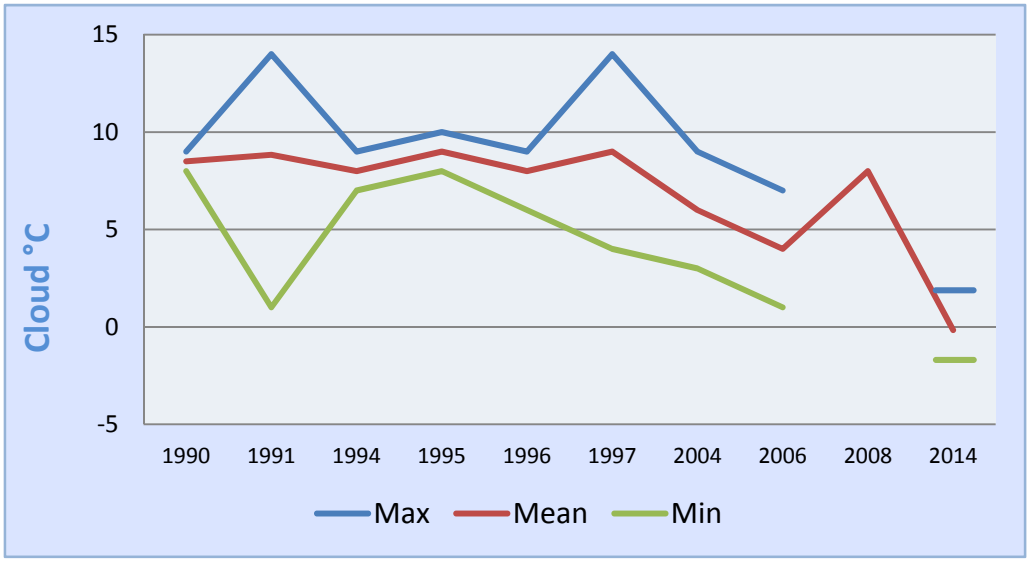
National standards and physical inspection data

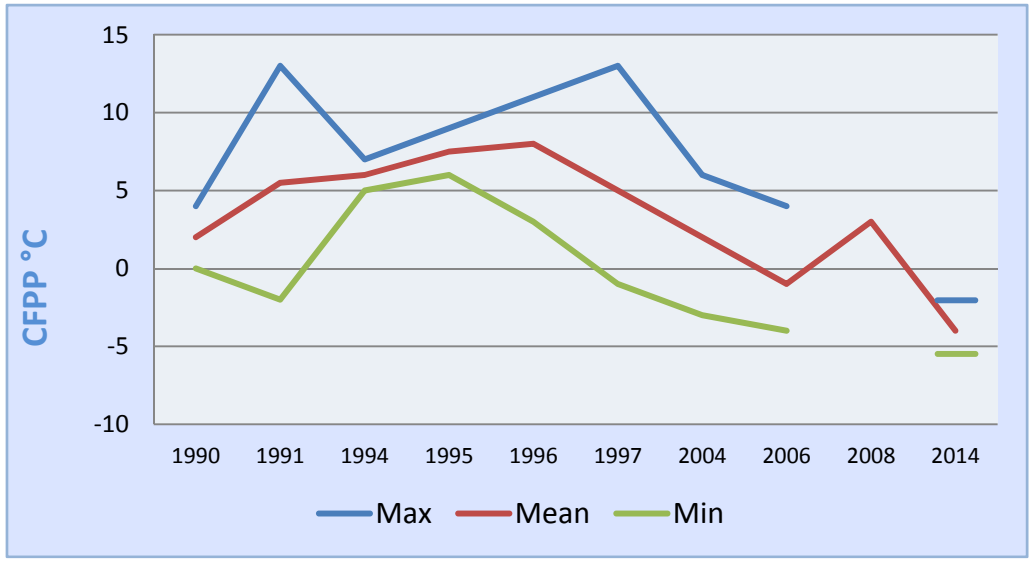
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400582	DIES 1400583	DIES 1400584
Cloud Point, °C		2	0	-2	-1	-2	2
CFPP, °C	6 (max)	-2	-4	-6	-2	-5	-6
Pour Point, °C	3 (max)	-6	-11	-18	-9	-18	-6
HFRR, µm	460 (max)	466	432	415	416	466	415
Wax Content @ 10°C Below Cloud, wt%		2.6	2.2	1.9	2.1	1.9	2.6
Rancimat, hrs		>40	>30	23	>40	23	>40
Sulphur, ppm	50 (max)	41	30	16	41	34	16
Density @15°C, kg/m^3	820 - 850	833	832	831	831	833	831
Viscosity @ 40°C, cSt	2.0 - 4.5	3.04	2.57	2.32	2.32	2.37	3.04
Cetane Index 2 Variable		56	53	51	52	51	56
Cetane Index 4 Variable	46 (min)	56	52	50	50	50	56
Cetane Number	51 (min)	57	54	52	53	57	52
Distillation, °C IBP		143	137	132	132	135	143
T_{10}		201	188	180	180	182	201
T_{20}		233	215	205	206	205	233
T_{50}		281	267	260	260	260	281
T_{90}		343	337	334	334	334	343
T_{95}	360 (max)	361	355	352	352	353	361
FBP		372	366	363	363	365	372
% FAME	5 (max)	0	0	0	0	0	0

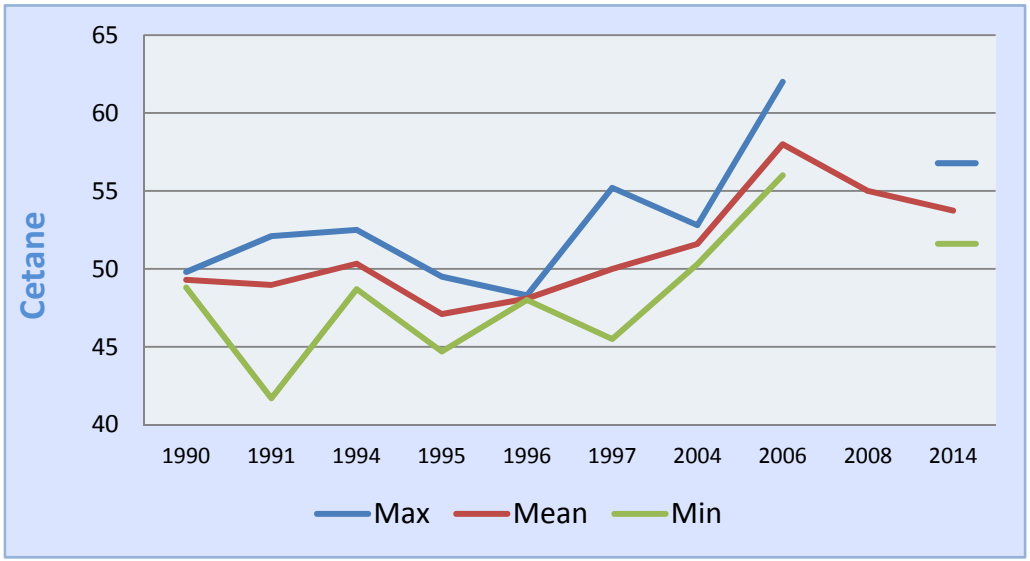
Specification shown for Bharat IV grade fuels'

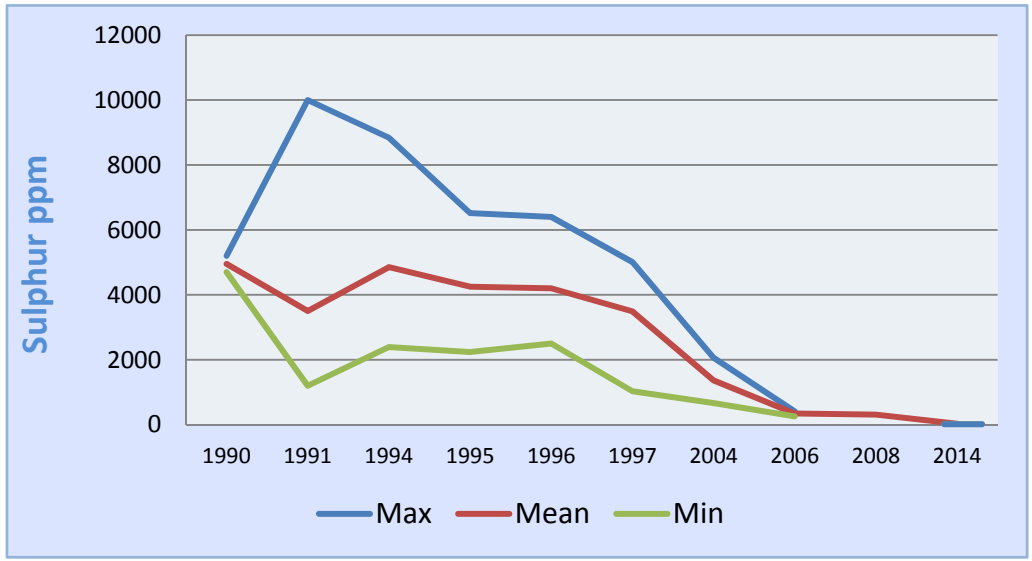
India

Asia Pacific









Indonesia

Asia Pacific

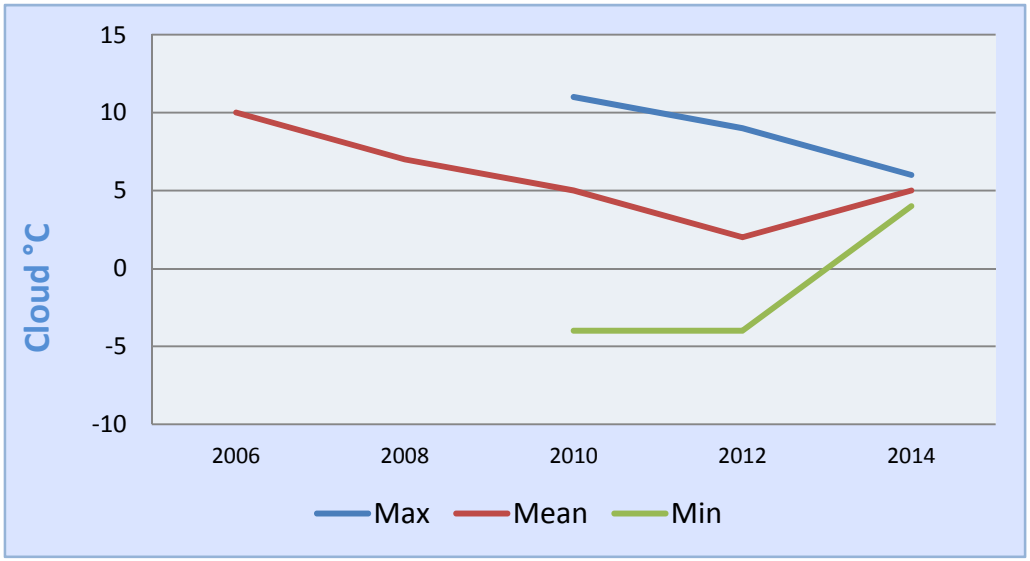
National standards and physical inspection data

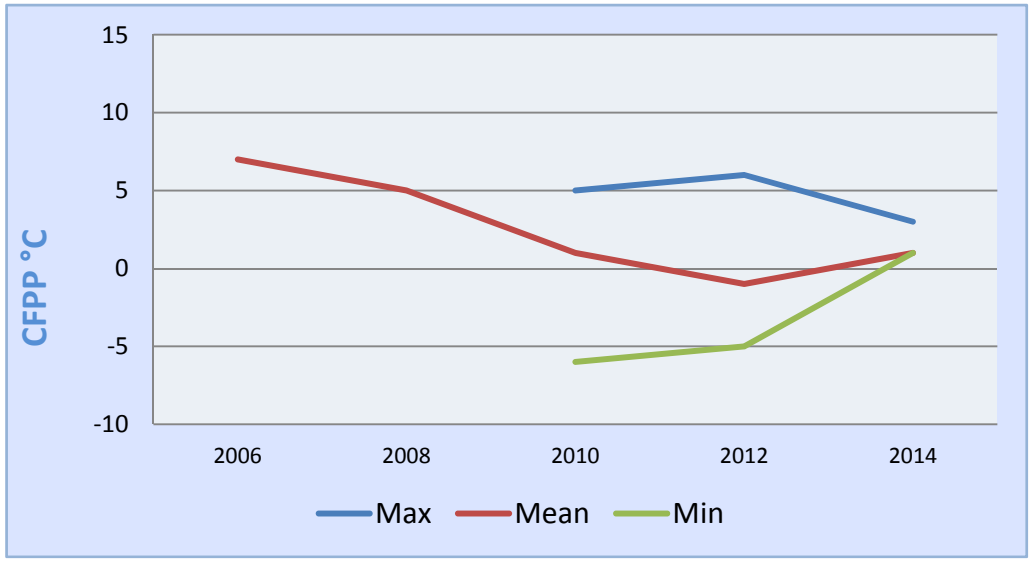
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400586	DIES 1400588	DIES 1400589
Cloud Point, °C		6	5	4	6	4	5
CFPP, °C		3	1	-1	3	-1	2
Pour Point, °C	18 (max)	0	-8	-18	-18	-6	0
HFRR, µm		397	338	237	237	380	397
Wax Content @ 10°C Below Cloud, wt%		3.9	2.7	1.7	2.4	1.7	3.9
Rancimat, hrs		>40	>40	>40	>40	>40	>40
Sulphur, ppm	3500 (max)	3320	2237	292	3100	3320	292
Density @15°C, kg/m^3	815 - 870	853	850	846	853	852	846
Viscosity @ 40°C, cSt	2.0 - 5.0	3.88	3.67	3.55	3.88	3.55	3.58
Cetane Index 2 Variable		54	52	51	54	51	51
Cetane Index 4 Variable	45 (min)	53	51	50	51	50	53
Cetane Number	48 (min)	54	52	50	52	50	54
Distillation, °C IBP		202	176	159	159	167	202
T_{10}		241	221	210	210	214	241
T_{20}		253	247	240	249	240	253
T_{50}		310	294	281	310	291	281
T_{90}	370 (max)	366	356	341	366	361	341
T_{95}		380	373	359	380	379	359
FBP		385	379	370	383	385	370
% FAME	10 (max)	2	2	1	2	1	2

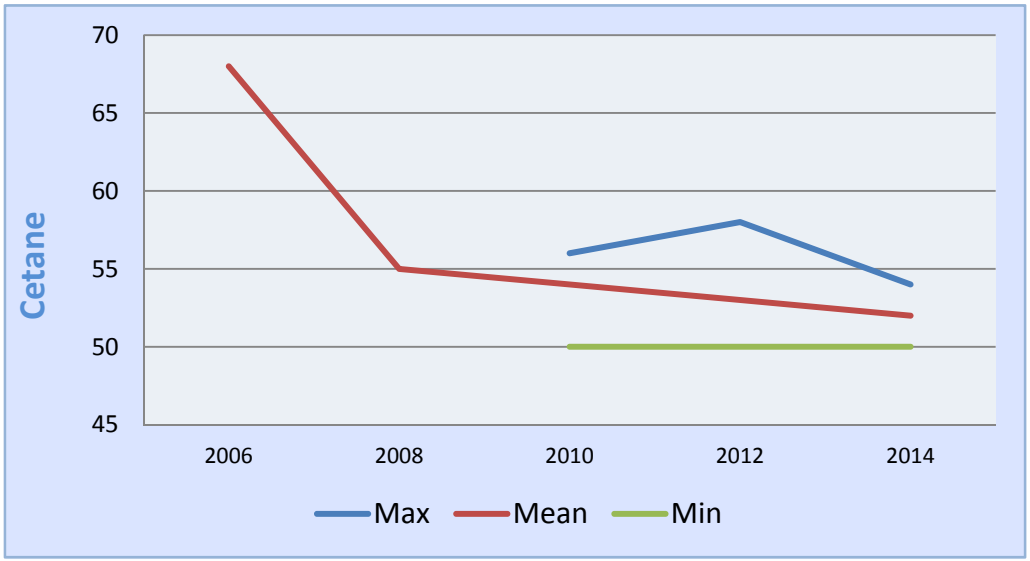
Specification shown for PSO graded fuels

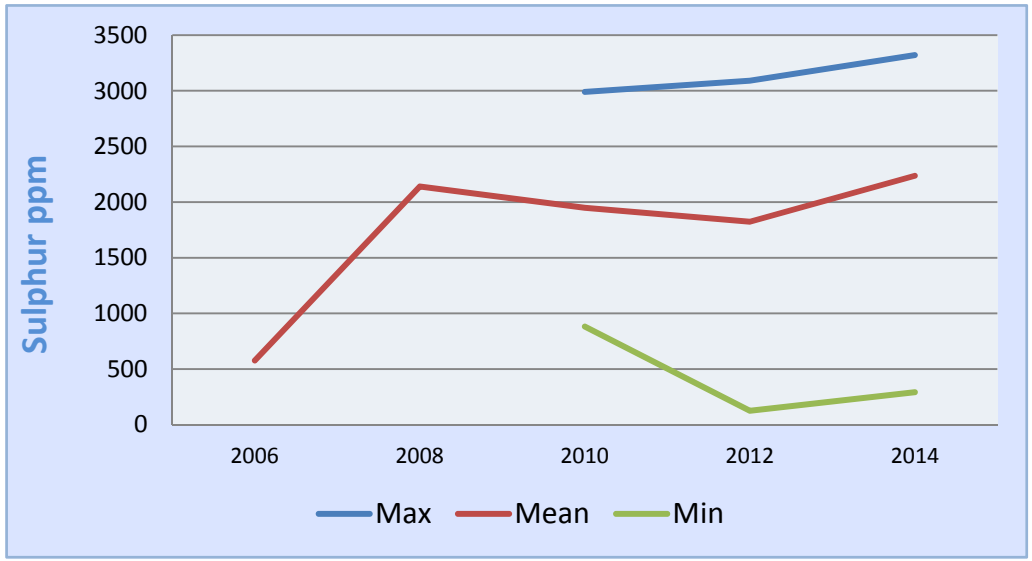
Indonesia

Asia Pacific









Japan – Grade 2

Asia Pacific

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1402503	DIES 1402504	DIES 1402505	DIES 1402507	DIES 1402508	DIES 1402509	DIES 1402510
Cloud Point, °C		-1	-7	-16	-6	-6	-7	-6	-6	-9	-4
CFPP, °C	-5 (max)	-7	-13	-18	-16	-14	-15	-14	-14	-16	-18
Pour Point, °C	-7.5 (max) *	-12.5	-20	-32.5	-22.5	-27.5	-20	-20	-17.5	-20	-20
HFRR, µm		434	342	218	218	246	288	344	348	403	406
Wax Content @ -10°C , wt%	**	2.3	1.2	0.0	0.7	1.5	0.7	0.9	1.0	0.3	1.1
Rancimat, hrs		–	–	–	–	–	–	–	–	–	–
Sulphur, ppm	10 (max)	9	7	5	7	7	7	7	8	8	7
Density @15°C, kg/m^3		845	832	821	840	829	829	833	833	833	821
Viscosity @ 30°C, cSt		4.50	3.59	3.17	4.50	3.62	3.21	3.17	3.20	3.47	3.20
Cetane Index $_{2\ Variable}$		60	55	51	54	57	55	53	53	53	57
Cetane Index $_{4\ Variable}$	45 (min)	60	56	51	57	57	54	53	53	54	58
Cetane Number	45 (min)	56	52	47	51	53	51	49	50	50	54
Distillation, °C IBP		–	–	–	–	–	–	–	–	–	–
T_{10}		245	213	192	245	206	197	201	204	216	199
T_{20}		256	234	219	256	233	220	221	223	235	219
T_{50}		285	276	264	283	281	268	268	268	270	268
T_{90}	350 (max)	341	330	309	334	331	326	330	331	325	336
T_{95}		354	343	322	347	343	340	345	345	342	351
FBP		364	355	338	357	352	351	356	358	356	362

*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -10°C for Grade 2

Infineum

Japan – Grade 2 (continued)

Asia Pacific

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1402512	DIES 1402513	DIES1 402514	DIES 1402515	DIES 1402516	DIES 1402517	DIES 1402518
Cloud Point, °C		-1	-7	-16	-5	-3	-4	-6	-1	-7	-6
CFPP, °C	-5 (max)	-7	-13	-18	-10	-9	-17	-8	-11	-13	-14
Pour Point, °C	-7.5 (max) *	-12.5	-20	-32.5	-12.5	-15	-17.5	-27.5	-15	-17.5	-17.5
HFRR, µm		434	342	218	420	360	349	304	282	434	381
Wax Content @ -10°C , wt%	**	2.3	1.2	0.0	1.9	2.1	1.7	1.9	2.3	1.0	1.1
Rancimat, hrs		–	–	–	–	–	–	–	–	–	–
Sulphur, ppm	10 (max)	9	7	5	7	7	6	7	7	5	7
Density @15°C, kg/m^3		845	832	821	825	825	828	828	823	835	828
Viscosity @ 30°C, cSt		4.50	3.59	3.17	3.41	3.61	3.62	3.74	3.65	3.89	3.29
Cetane Index $_{2\ Variable}$		60	55	51	58	59	57	58	60	55	56
Cetane Index $_{4\ Variable}$	45 (min)	60	56	51	59	59	57	57	60	56	56
Cetane Number	45 (min)	56	52	47	54	55	54	55	56	52	52
Distillation, °C IBP		–	–	–	–	–	–	–	–	–	–
T_{10}		245	213	192	204	210	206	192	201	229	202
T_{20}		256	234	219	230	233	230	224	231	244	224
T_{50}		285	276	264	279	281	278	281	284	278	274
T_{90}	350 (max)	341	330	309	332	333	333	338	341	330	333
T_{95}		354	343	322	345	345	349	351	354	344	347
FBP		364	355	338	356	356	361	360	364	358	362

*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -10°C for Grade 2

Infineum

Japan – Grade 2 (continued)

Asia Pacific

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1402519	DIES 1402520	DIES 1402521	DIES 1402522	DIES 1402523	DIES 1402524	DIES 1402525
Cloud Point, °C		-1	-7	-16	-5	-16	-13	-12	-5	-5	-4
CFPP, °C	-5 (max)	-7	-13	-18	-8	-16	-11	-12	-10	-13	-7
Pour Point, °C	-7.5 (max) *	-12.5	-20	-32.5	-32.5	-17.5	-27.5	-25	-22.5	-20	-15
HFRR, µm		434	342	218	342	274	423	314	298	397	352
Wax Content @ -10°C , wt%	**	2.3	1.2	0.0	2.0	0.0	0.0	0.0	1.6	1.0	1.7
Rancimat, hrs		–	–	–	–	–	–	–	–	–	–
Sulphur, ppm	10 (max)	9	7	5	9	9	7	7	7	6	7
Density @15°C, kg/m^3		845	832	821	835	836	833	835	834	845	836
Viscosity @ 30°C, cSt		4.50	3.59	3.17	3.89	3.18	3.45	3.53	3.86	3.89	4.05
Cetane Index $_{2 \text{ Variable}}$		60	55	51	55	51	54	53	56	51	55
Cetane Index $_{4 \text{ Variable}}$	45 (min)	60	56	51	56	52	55	55	56	51	57
Cetane Number	45 (min)	56	52	47	52	47	51	51	52	47	52
Distillation, °C IBP		–	–	–	–	–	–	–	–	–	–
T_{10}		245	213	192	228	226	231	231	211	217	230
T_{20}		256	234	219	244	239	244	245	239	237	252
T_{50}		285	276	264	280	264	270	272	284	278	285
T_{90}	350 (max)	341	330	309	330	309	314	317	332	335	335
T_{95}		354	343	322	342	322	324	329	344	349	347
FBP		364	355	338	354	338	338	343	355	362	358

*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -10°C for Grade 2

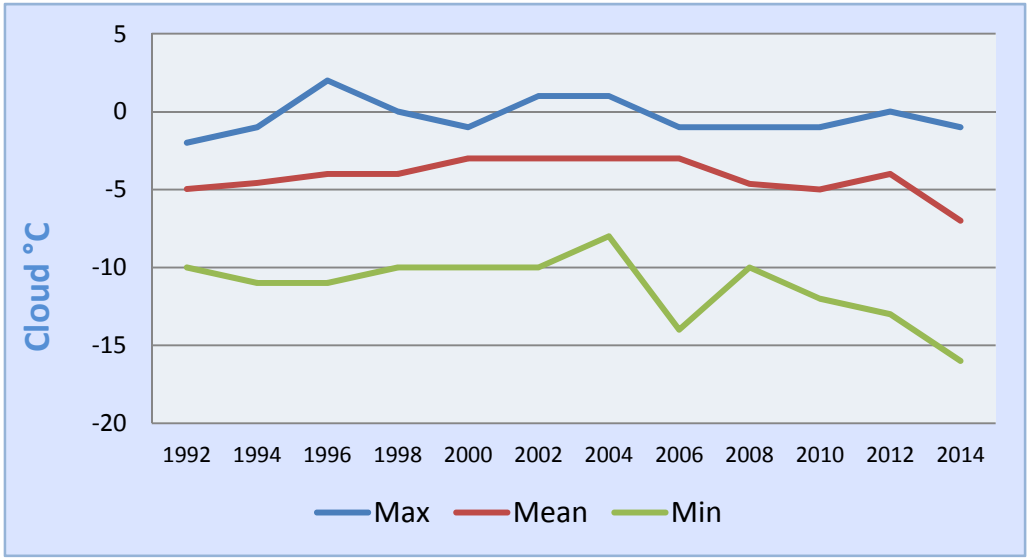
Japan – Grade 2 (continued)

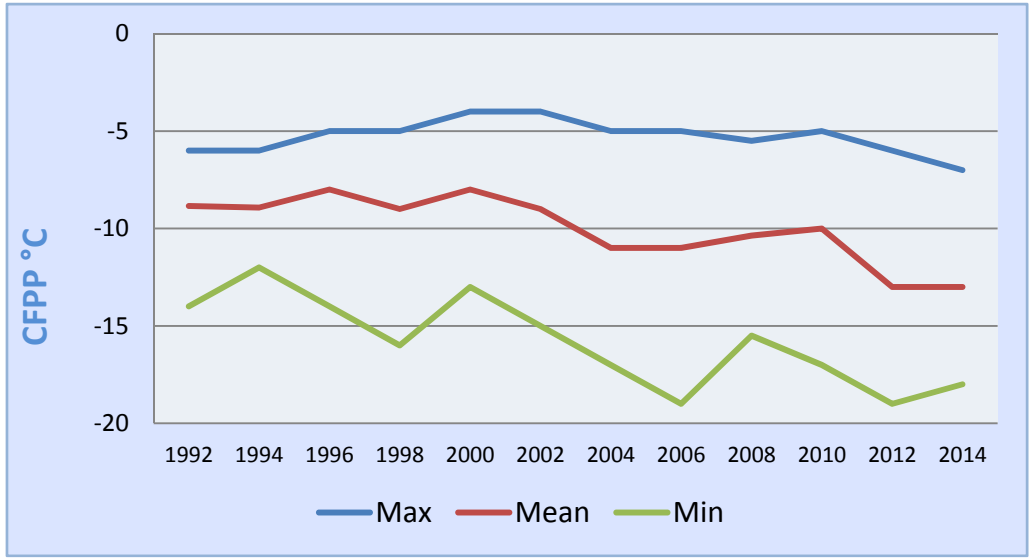
National standards and physical inspection data

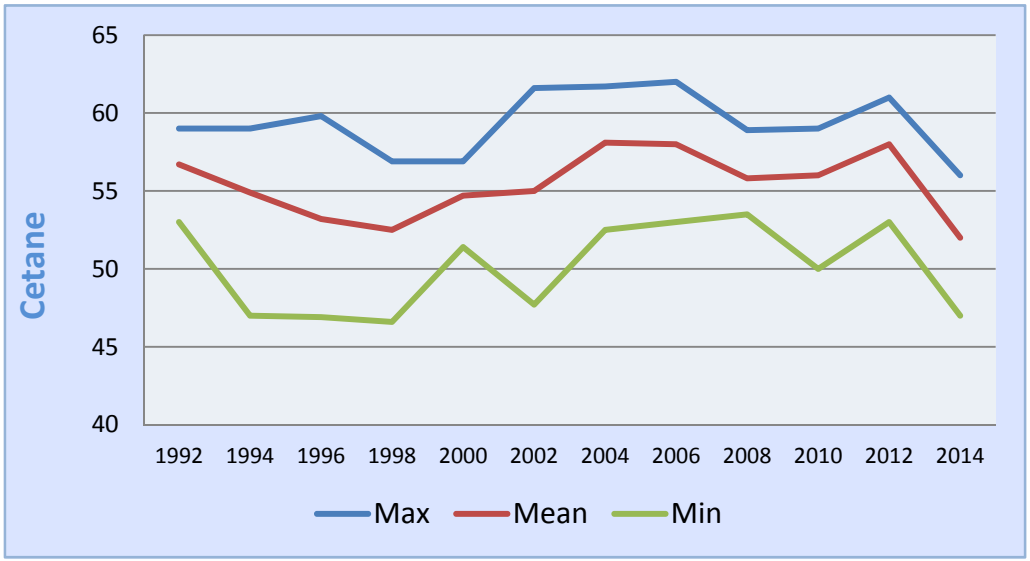
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1402526	DIES 1402527
Cloud Point, °C		-1	-7	-16	-4	-13
CFPP, °C	-5 (max)	-7	-13	-18	-6	-11
Pour Point, °C	-7.5 (max) *	-12.5	-20	-32.5	-23	-15
HFRR, µm		434	342	218	383	405
Wax Content @ -10°C , wt%	**	2.3	1.2	0.0	2.4	0.0
Rancimat, hrs		–	–	–	–	–
Sulphur, ppm	10 (max)	9	7	5	7	7
Density @15°C, kg/m^3		845	832	821	836	829
Viscosity @ 30°C, cSt		4.50	3.59	3.17	4.12	3.51
Cetane Index 2 Variable		60	55	51	56	55
Cetane Index 4 Variable	45 (min)	60	56	51	57	57
Cetane Number	45 (min)	56	52	47	53	52
Distillation, °C IBP		–	–	–	–	–
T_{10}		245	213	192	229	231
T_{20}		256	234	219	251	243
T_{50}		285	276	264	287	269
T_{90}	350 (max)	341	330	309	335	316
T_{95}		354	343	322	347	328
FBP		364	355	338	358	340

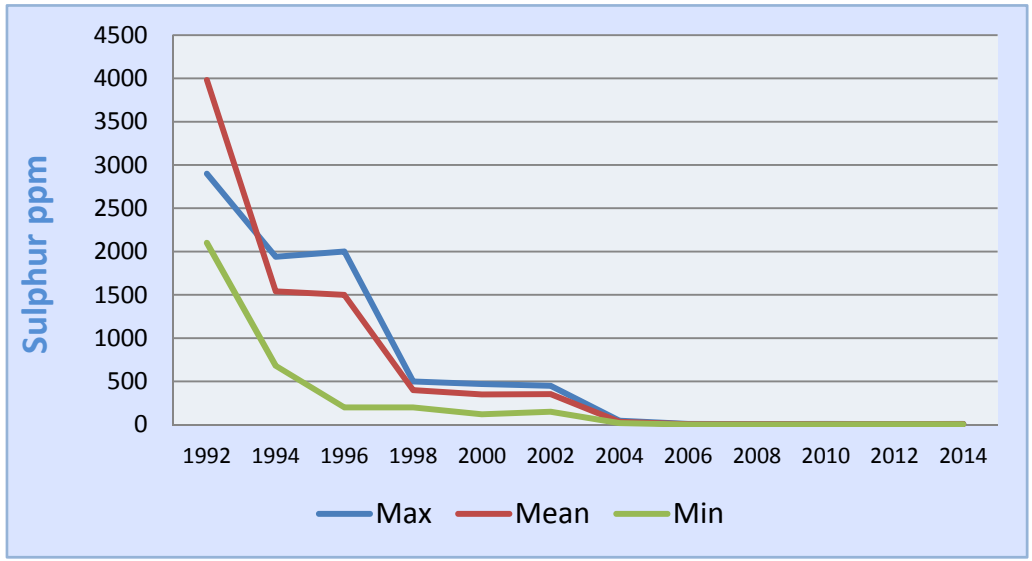
*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -10°C for Grade 2

Japan – Grade 2









Japan – Grade 3

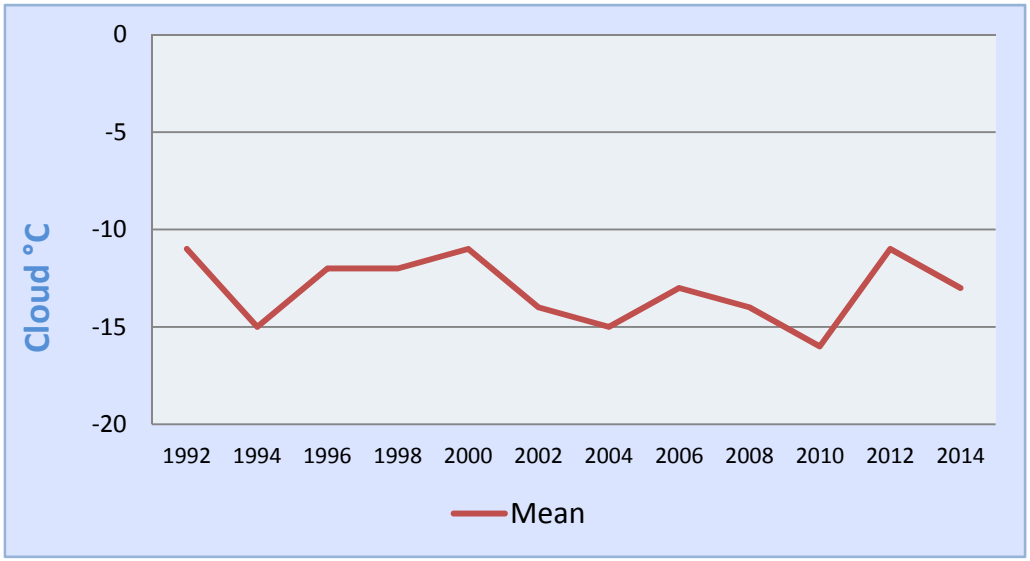
National standards and physical inspection data

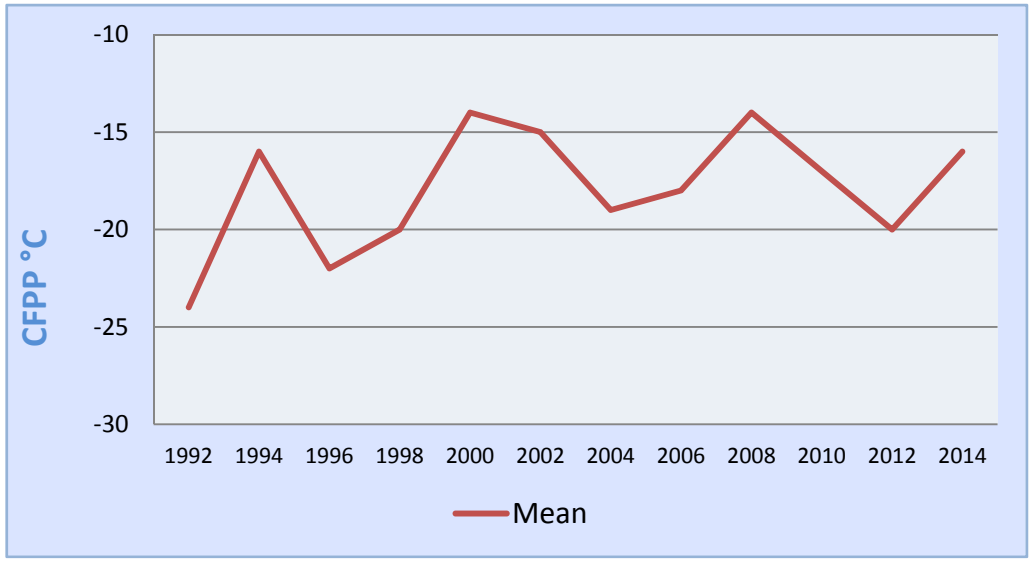
	National Standard	Minimum Observed	Mean	Maximum Observed	DIES 1402502
Cloud Point, °C			-13		-13
CFPP, °C	-12 (max)		-16		-16
Pour Point, °C	-20 (max)*		-22.5		-22.5
HFRR, µm			304		304
Wax Content @ -20°C , wt%	**		2.0		2.0
Rancimat, hrs			–		–
Sulphur, ppm	10 (max)		6		6
Density @15°C, kg/m^3			818		818
Viscosity @ 30°C, cSt			2.54		2.54
Cetane Index 2 Variable			55		55
Cetane Index 4 Variable	45 (min)		54		54
Cetane Number	45 (min)		50		50
Distillation, °C IBP			–		–
T_{10}			184		184
T_{20}			202		202
T_{50}			253		253
T_{90}	330 (max)		318		318
T_{95}			332		332
FBP			345		345

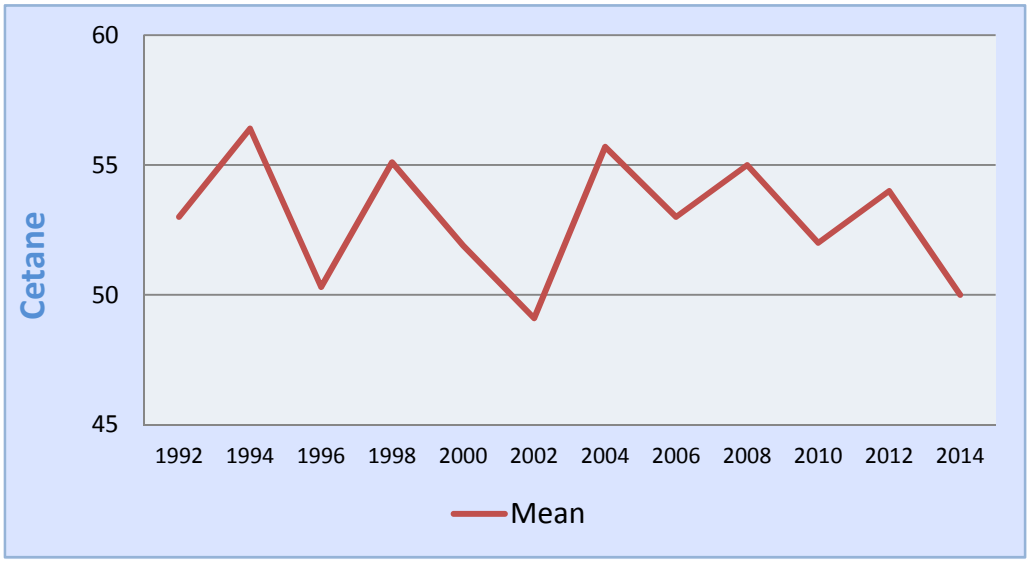
*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -20°C for Grade 3

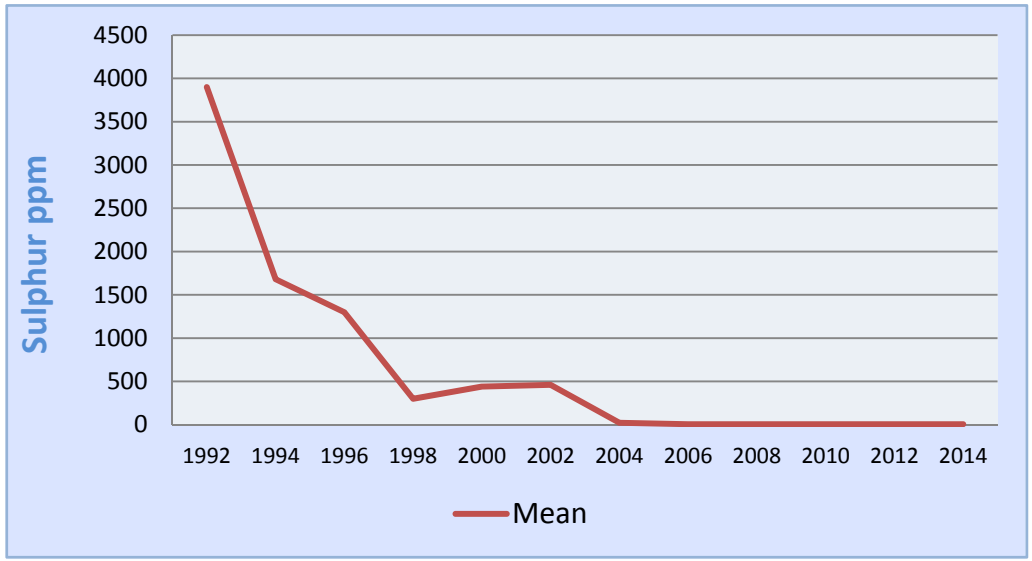
Japan – Grade 3

Asia Pacific









Japan – Special Grade 3

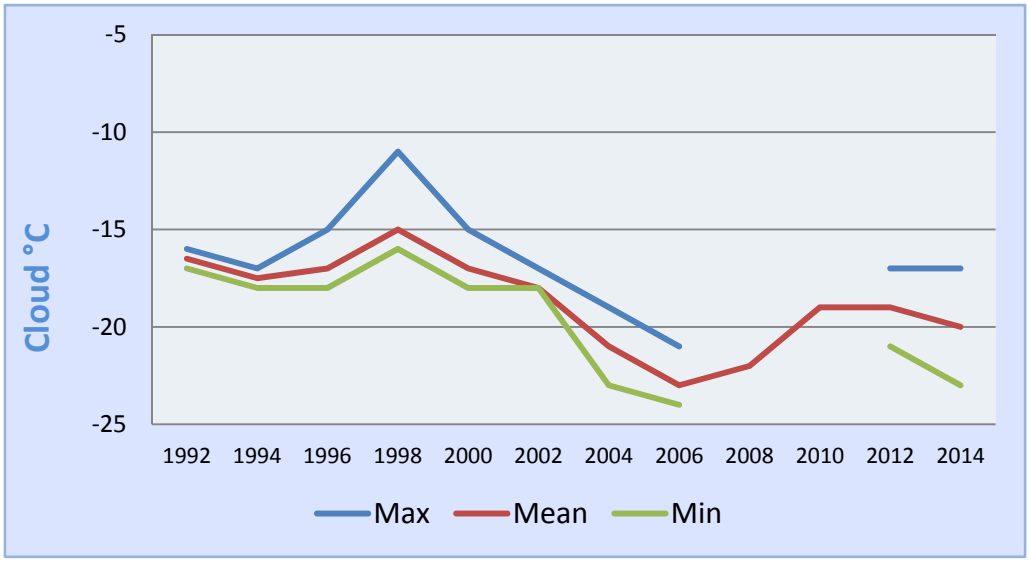
National standards and physical inspection data

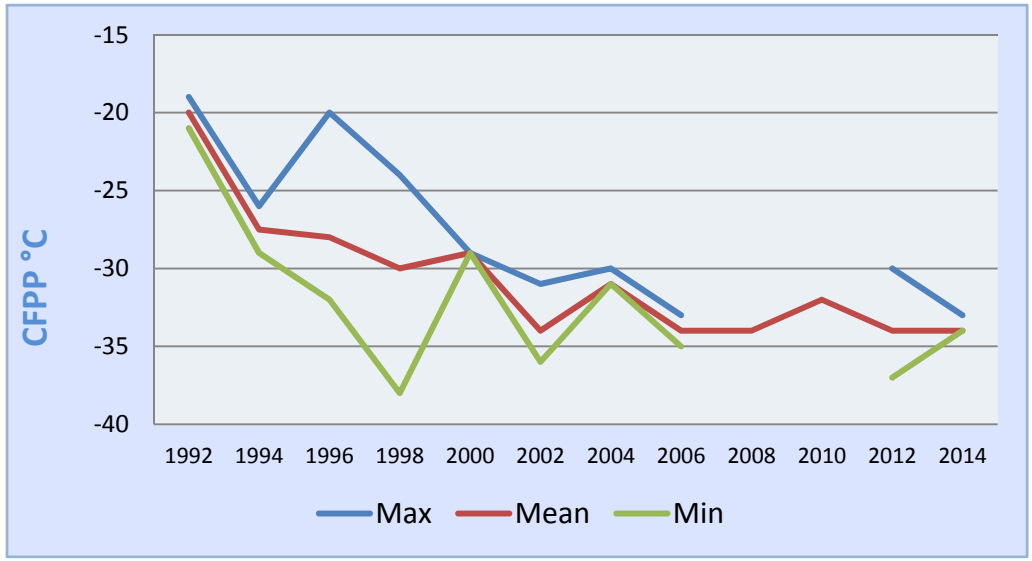
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1402501	DIES 1402511
Cloud Point, °C		-17	-20	-23	-23	-17
CFPP, °C	-19 (max)	-33	-34	-34	-33	-34
Pour Point, °C	-30 (max)*	-37.5	-40	-42.5	-42.5	-37.5
HFRR, µm		471	463	455	455	471
Wax Content @ -30°C, wt%	**	1.7	1.4	1.1	1.7	1.1
Rancimat, hrs		–	–	–	–	–
Sulphur, ppm	10 (max)	9	7	5	9	5
Density @15°C, kg/m^3		818	813	808	808	818
Viscosity @ 40°C, cSt		2.53	2.19	1.86	1.86	2.53
Cetane Index 2 Variable		53	51	49	49	53
Cetane Index 4 Variable	45 (min)	53	51	50	50	53
Cetane Number	45 (min)	49	48	47	47	49
Distillation, °C IBP		–	–	–	–	–
T_{10}		177	174	171	171	177
T_{20}		192	186	181	181	192
T_{50}		246	233	220	220	246
T_{90}	330 (max)	330	313	297	297	330
T_{95}		345	329	313	313	345
FBP		356	342	328	328	356

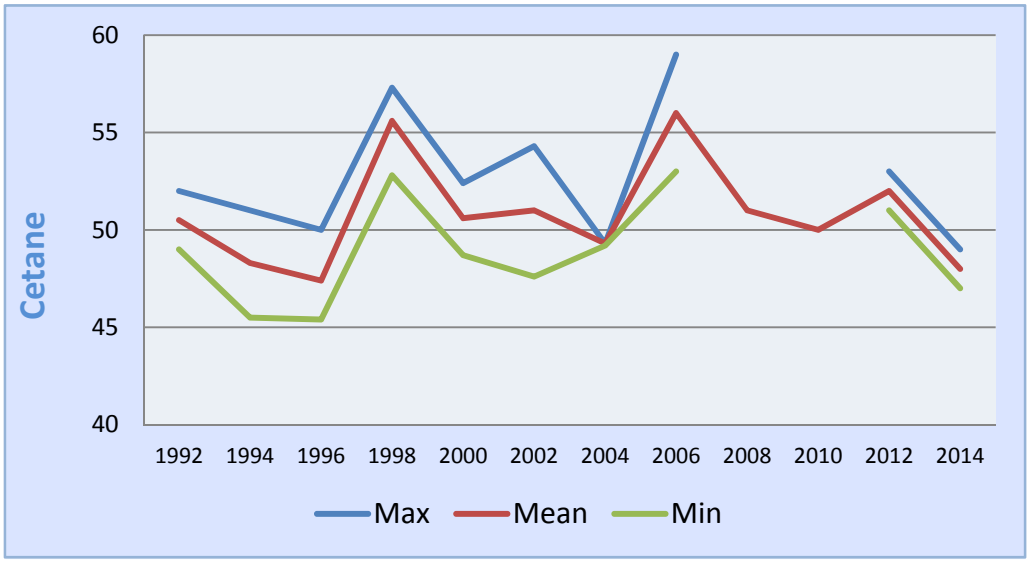
*Pour point measured at 2.5°C intervals (Japanese Industry Standard).
**Wax content measured at -30°C for Sp Grade 3

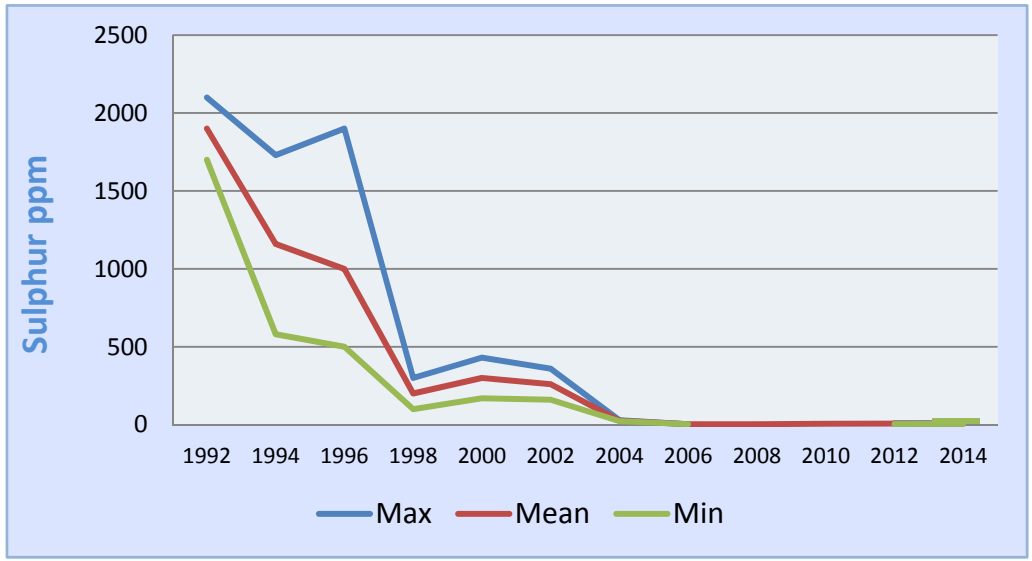
Infineum

Japan – Special Grade 3









Malaysia

Asia Pacific

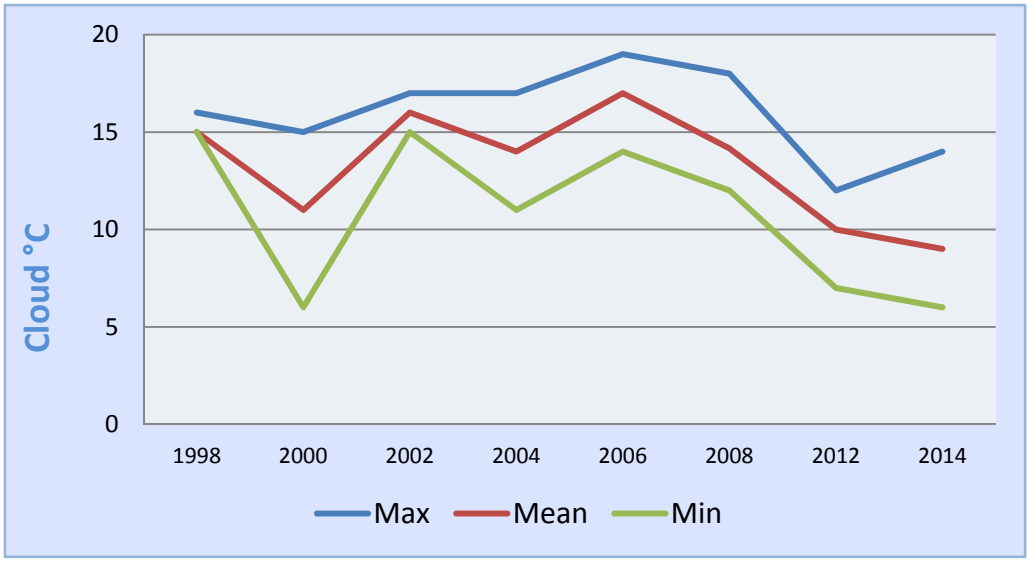
National standards and physical inspection data

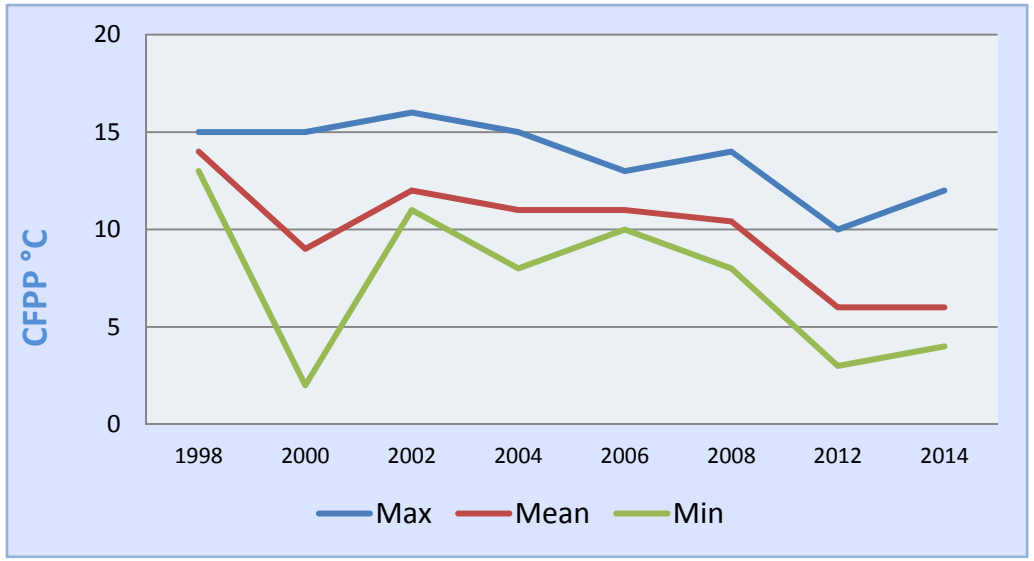
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400277	DIES 1400278	DIES 1400279
Cloud Point, °C	19 (max)	14	9	6	14	6	6
CFPP, °C		12	6	4	12	4	4
Pour Point, °C		9	4	0	9	3	0
HFRR, µm	460 (min)	394	270	191	225	394	191
Wax Content @ 10°C Below Cloud, wt%		4.9	3.5	1.9	4.9	3.6	1.9
Rancimat, hrs		>40	>40	>40	>40	>40	>40
Sulphur, ppm	500 (max)	405	395	380	405	399	380
Density @15°C, kg/m^3	810 - 870	854	848	838	838	852	854
Viscosity @ 40°C, cSt	1.5 - 5.8	3.82	3.35	3.03	3.20	3.82	3.03
Cetane Index $_{2\ Variable}$		54	51	48	54	49	48
Cetane Index $_{4\ Variable}$	49 (min)	54	49	46	54	47	46
Cetane Number	49 (min)	60	55	52	60	54	52
Distillation, °C IBP		168	165	164	168	164	164
T_{10}		215	207	203	215	203	203
T_{20}		237	230	227	237	227	227
T_{50}		283	280	279	283	279	279
T_{90}		351	350	349	351	349	349
T_{95}	370 (max)	369	369	368	368	369	369
FBP		377	377	377	377	377	377
% FAME	5 (max)	6	5	5	5	5	6

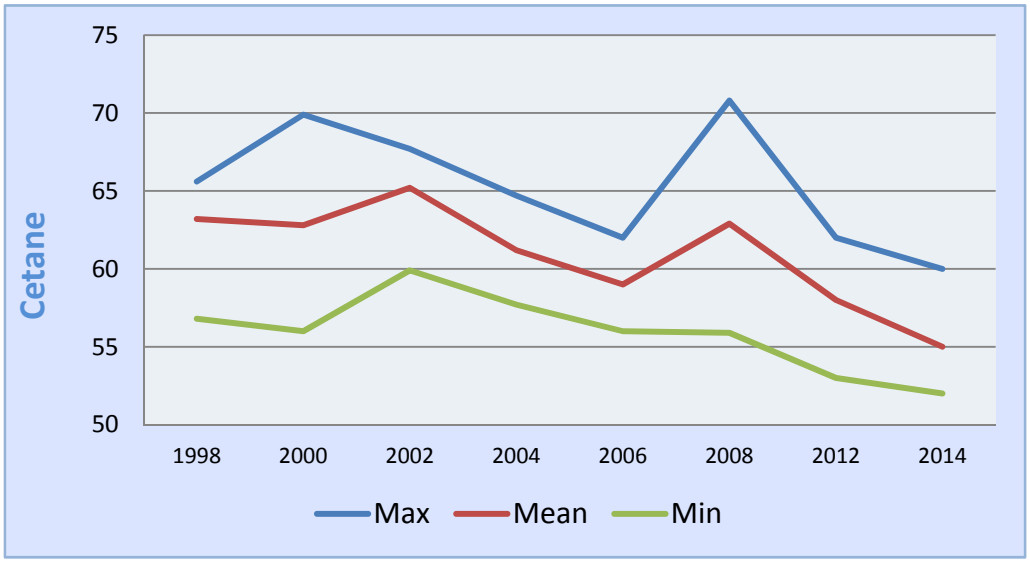
Infineum

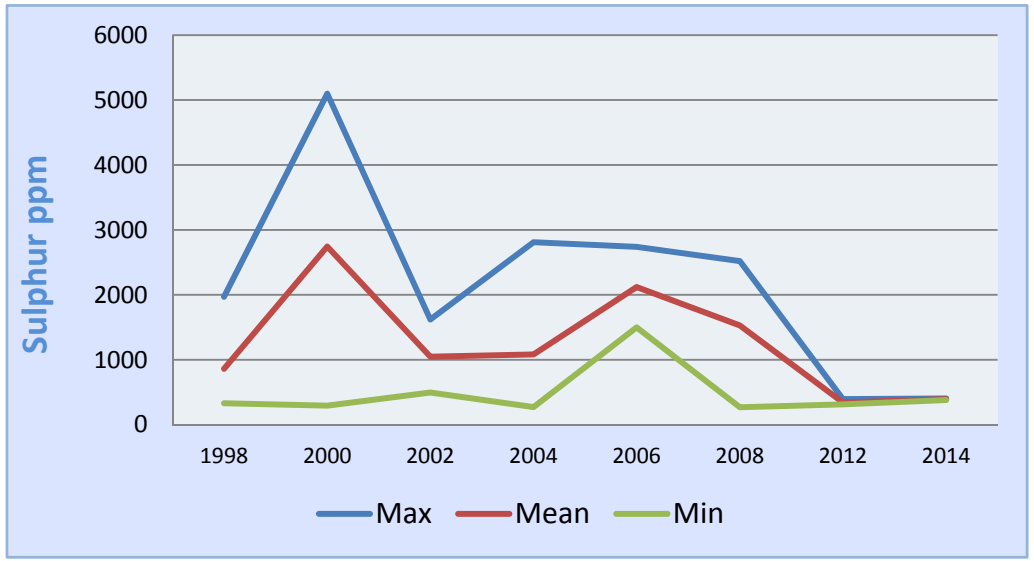
Malaysia

Asia Pacific









New Zealand

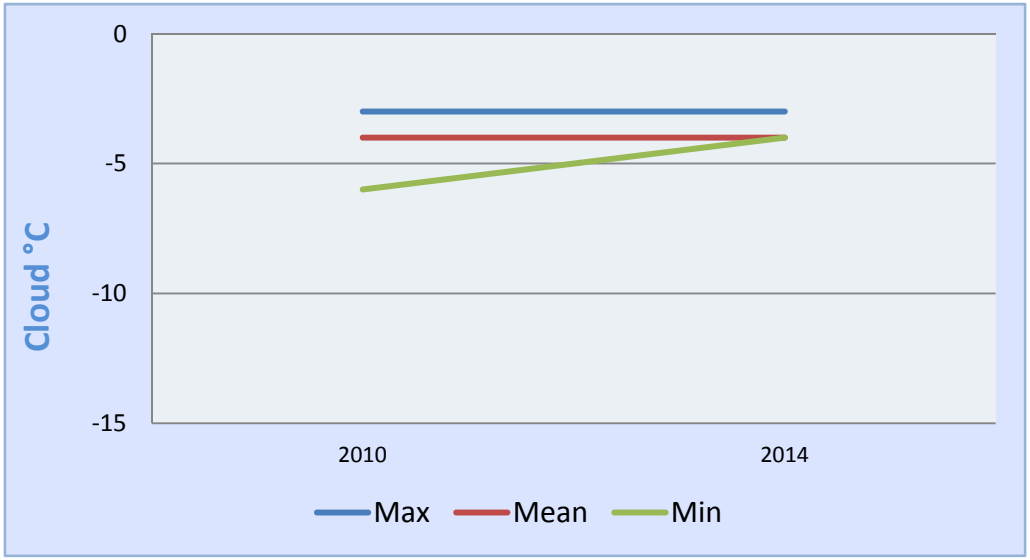
Asia Pacific

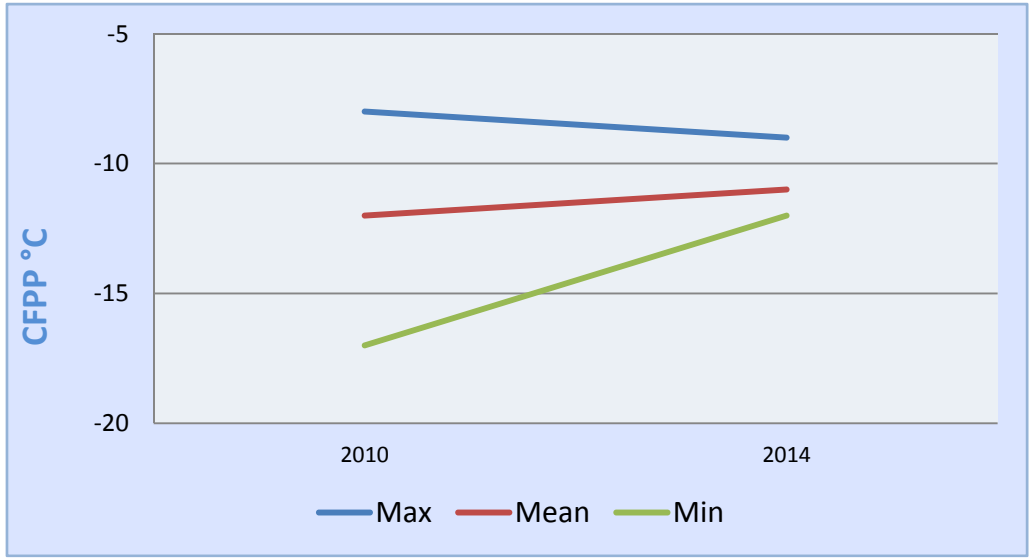
National standards and physical inspection data

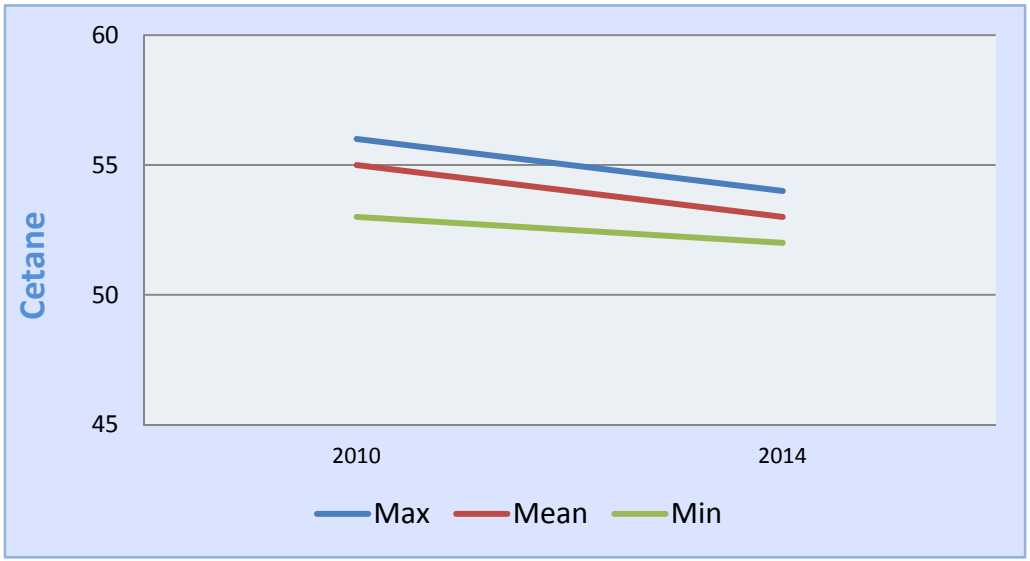
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1305463	DIES 1305464
Cloud Point, °C		-3	-4	-4	-3	-4
CFPP, °C		-9	-11	-12	-9	-12
Pour Point, °C		-15	-17	-18	-18	-15
HFRR, µm	460 (max)	386	380	373	386	373
Wax Content @ 10°C Below Cloud, wt%		2.3	2.3	2.2	2.3	2.2
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	7	7	7	7	7
Density @15°C, kg/m^3	820 - 850	838	834	830	838	830
Viscosity @ 40°C, cSt	2.0 - 4.5	3.33	3.16	2.99	3.33	2.99
Cetane Index 2 Variable	47 (min)	56	55	54	54	56
Cetane Index 4 Variable		57	56	56	56	57
Cetane Number	51 (min)	54	53	52	52	54
Distillation, °C IBP		177	174	171	177	171
T_{10}		230	224	218	230	218
T_{20}		247	242	237	247	237
T_{50}		282	279	276	282	276
T_{90}		338	336	334	338	334
T_{95}	360 (max)	351	350	349	351	349
FBP		357	357	357	357	357
% FAME	5 (max)	0	0	0	0	0

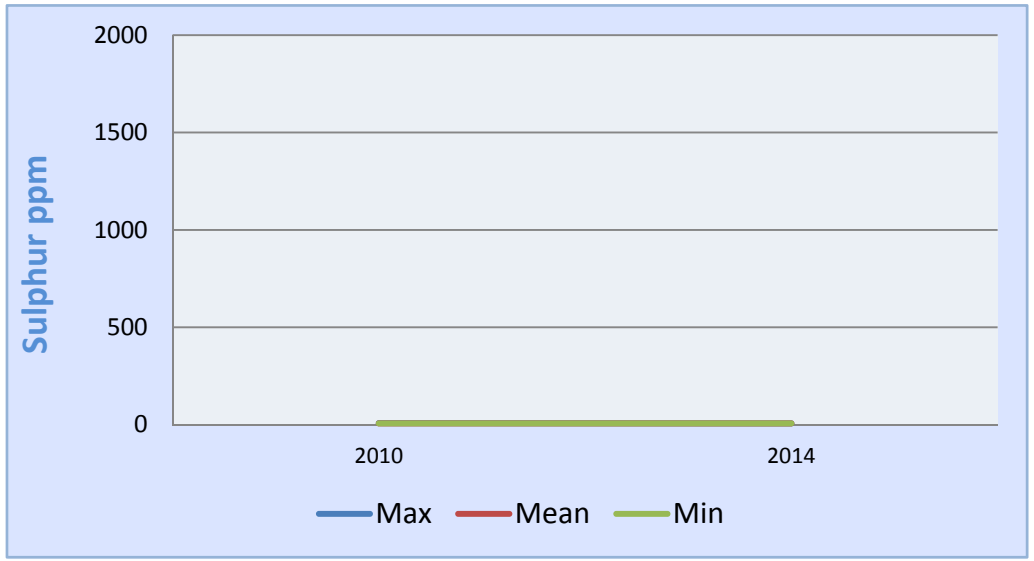
New Zealand

Asia Pacific









Singapore

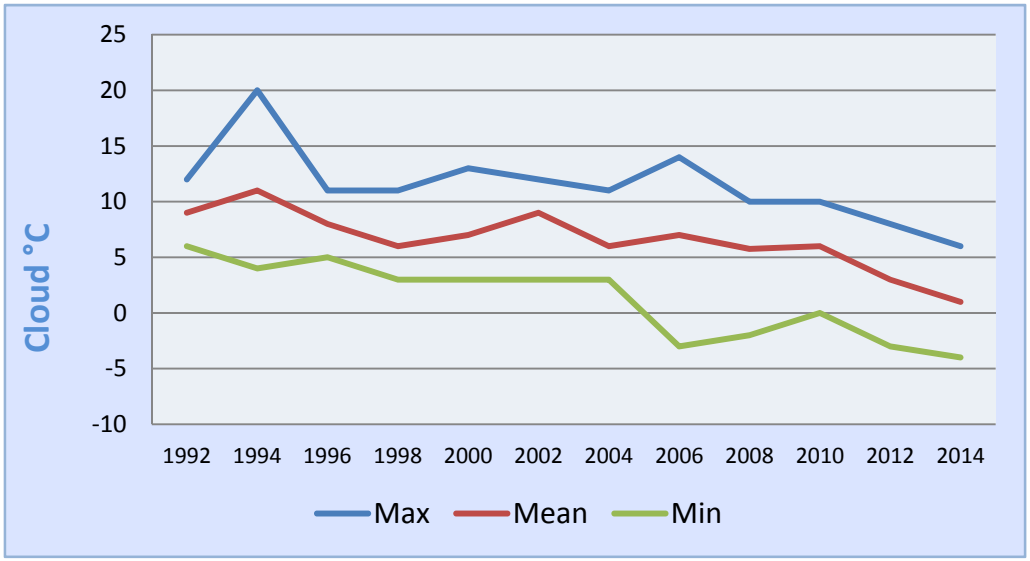
National standards and physical inspection data

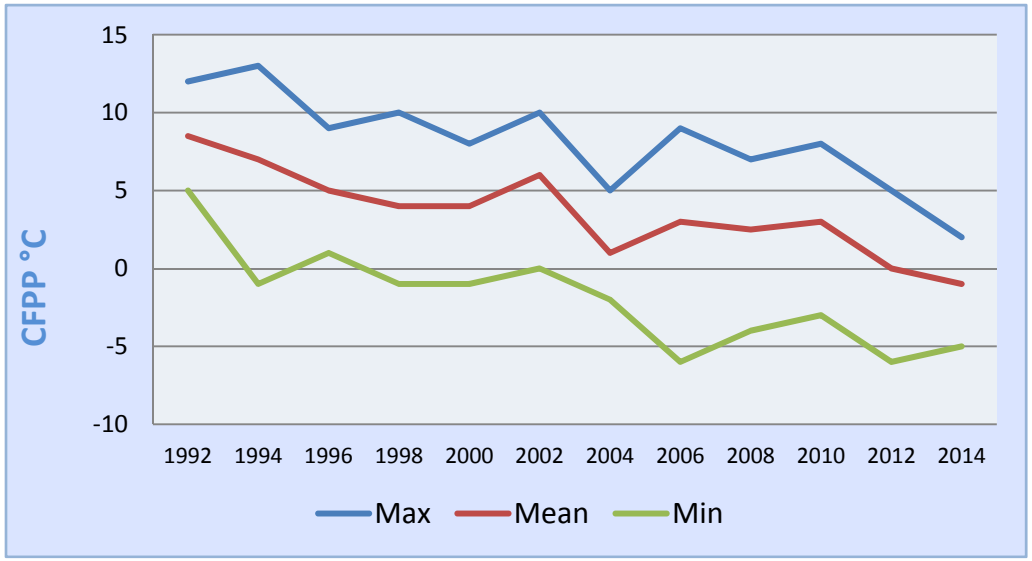
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400195	DIES 1400196	DIES 1400197	DIES 1400201
Cloud Point, °C		6	1	-4	-4	6	-3	4
CFPP, °C		2	-1	-5	-5	2	-4	2
Pour Point, °C		0	-5	-9	-9	-3	-6	0
HFRR, µm		349	322	279	279	349	325	334
Wax Content @ 10°C Below Cloud, wt%		3.2	2.4	1.2	2.5	1.2	2.7	3.2
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	7	5	5	5	5	5	7
Density @15°C, kg/m^3		847	840	836	836	847	837	842
Viscosity @ 40°C, cSt		4.17	3.56	3.29	3.29	3.41	3.39	4.17
Cetane Index 2 Variable		56	55	51	56	51	55	56
Cetane Index 4 Variable		59	56	51	57	51	57	59
Cetane Number		55	53	50	54	50	54	55
Distillation, °C IBP		187	182	177	179	177	186	187
T_{10}		243	229	218	225	218	231	243
T_{20}		265	248	236	245	236	248	265
T_{50}		302	289	283	285	283	287	302
T_{90}		368	352	342	342	368	344	356
T_{95}		385	367	356	356	385	357	370
FBP		388	373	365	365	388	366	375
% FAME		0	0	0	0	0	0	0

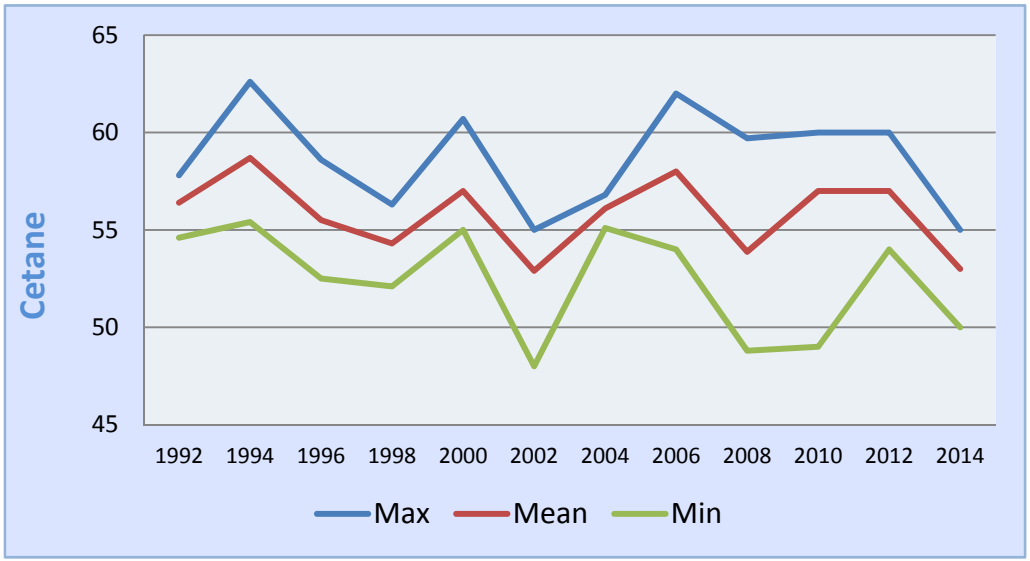
Infineum

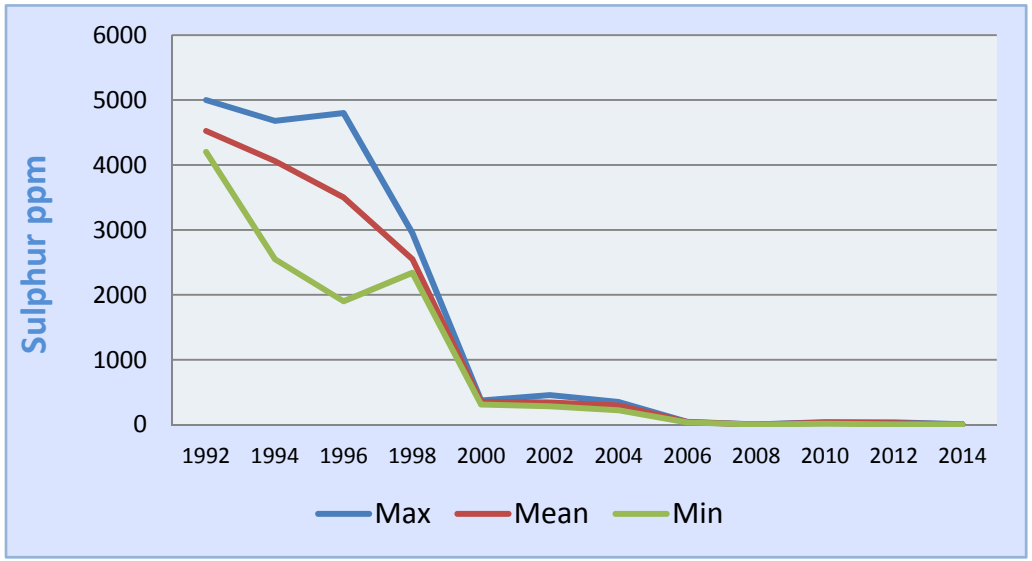
Singapore

Asia Pacific









South Korea

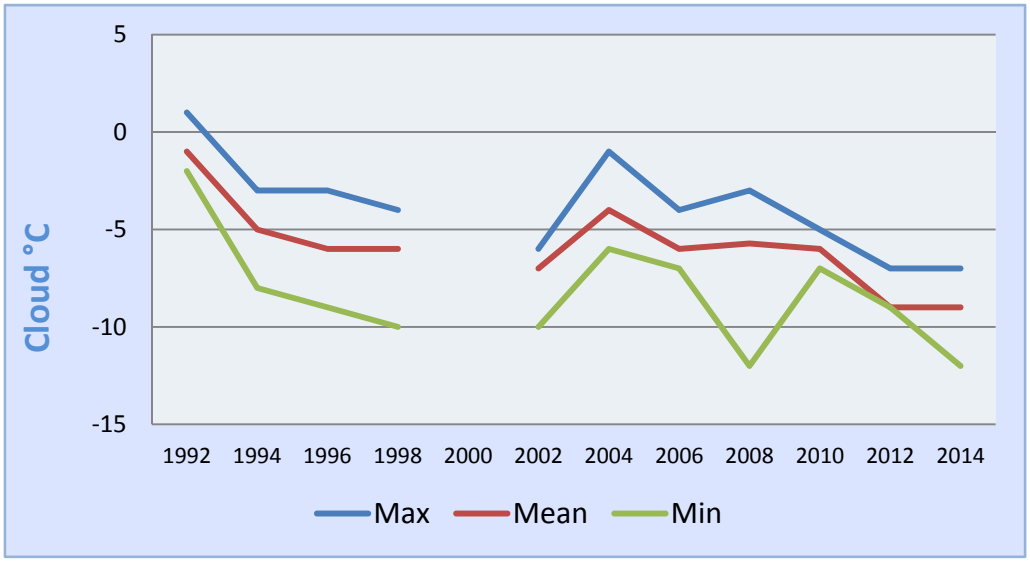
Asia Pacific

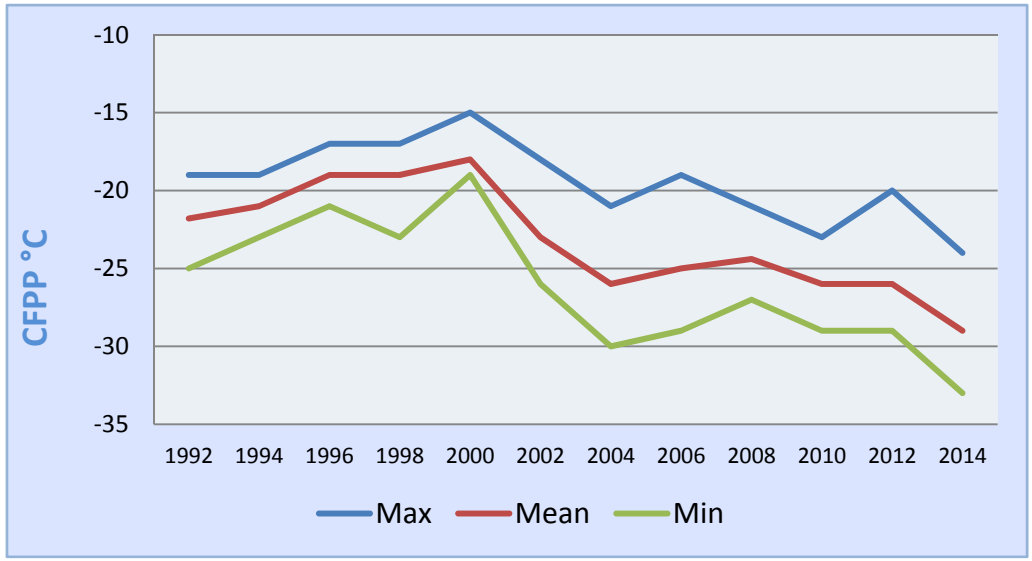
National standards and physical inspection data

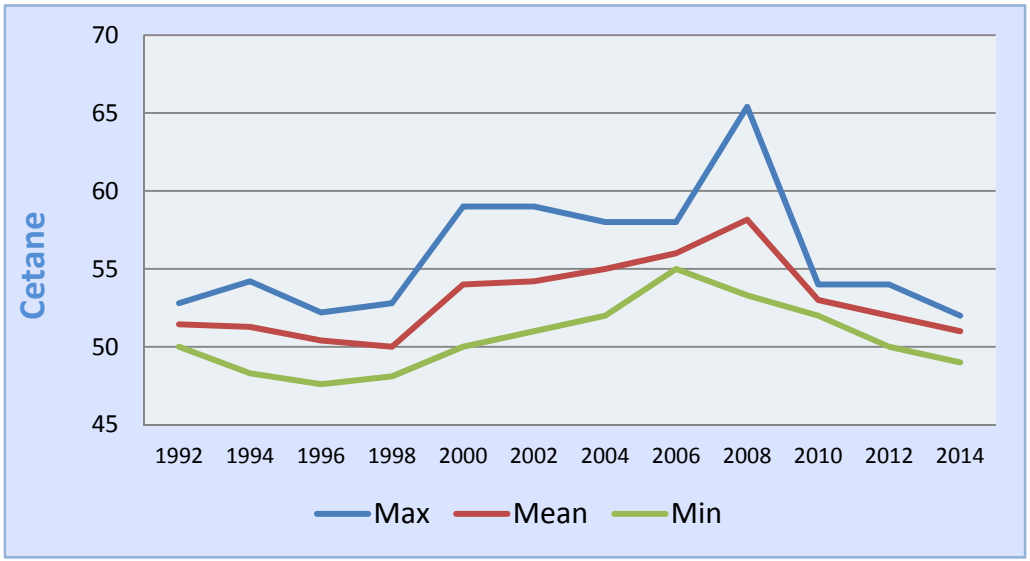
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400139	DIES 1400141	DIES 1400143	DIES 1400144	DIES 1400145	DIES 1401412
Cloud Point, °C		-7	-9	-12	-7	-9	-10	-12	-9	-7
CFPP, °C		-24	-29	-33	-30	-28	-24	-33	-30	-27
Pour Point, °C	-17.5 (max)	-30	-33	-39	-30	-39	-39	-33	-30	-30
HFRR, µm	400 (max)	368	328	281	351	281	317	357	291	368
Wax Content @ 10°C Below Cloud, wt%		2.3	1.6	0.8	1.4	2.3	2.1	0.8	1.6	1.4
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	6	5	3	5	4	4	3	5	6
Density @15°C, kg/m^3	815 - 835	830	823	820	830	821	821	820	823	823
Viscosity @ 40°C, cSt	1.9 - 5.5	3.94	2.61	2.30	2.45	3.94	2.31	2.35	2.33	2.30
Cetane Index $_{2\ Variable}$		57	56	55	55	56	55	57	56	56
Cetane Index $_{4\ Variable}$	52 (min)	56	55	53	53	56	55	56	54	55
Cetane Number	52 (min)	52	51	49	49	52	52	51	50	52
Distillation, °C IBP		161	149	134	147	161	161	145	144	134
T_{10}		191	181	173	175	191	191	173	179	177
T_{20}		209	201	193	195	209	208	193	200	201
T_{50}		271	264	259	271	261	259	266	264	263
T_{90}	360 (max)	350	339	329	345	332	329	350	341	335
T_{95}		374	356	342	363	342	346	374	361	354
FBP		378	365	356	370	357	356	378	368	364
% FAME	5 (max)	2	2	2	2	2	2	2	2	2

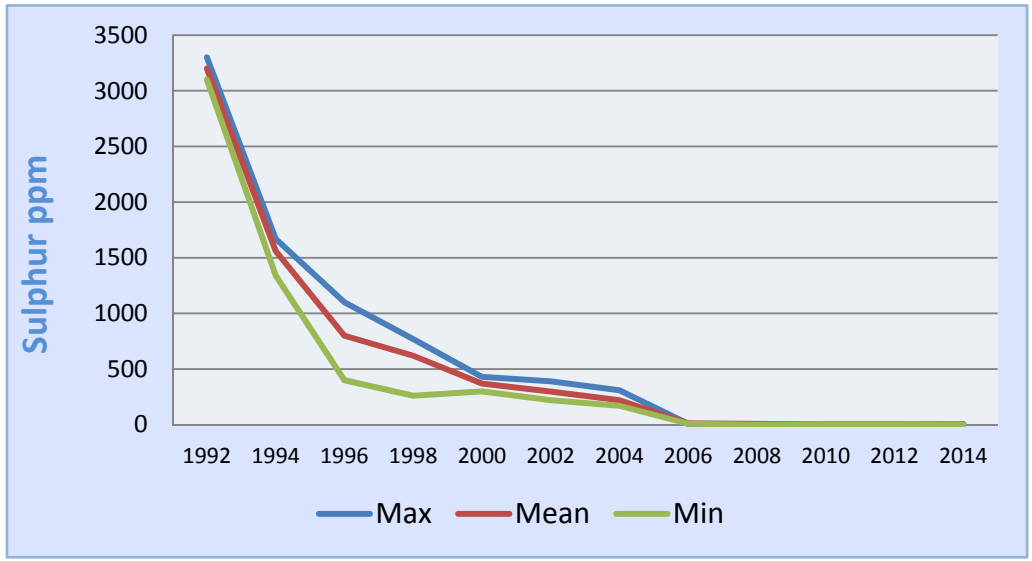
South Korea

Asia Pacific









Thailand

Asia Pacific

National standards and physical inspection data

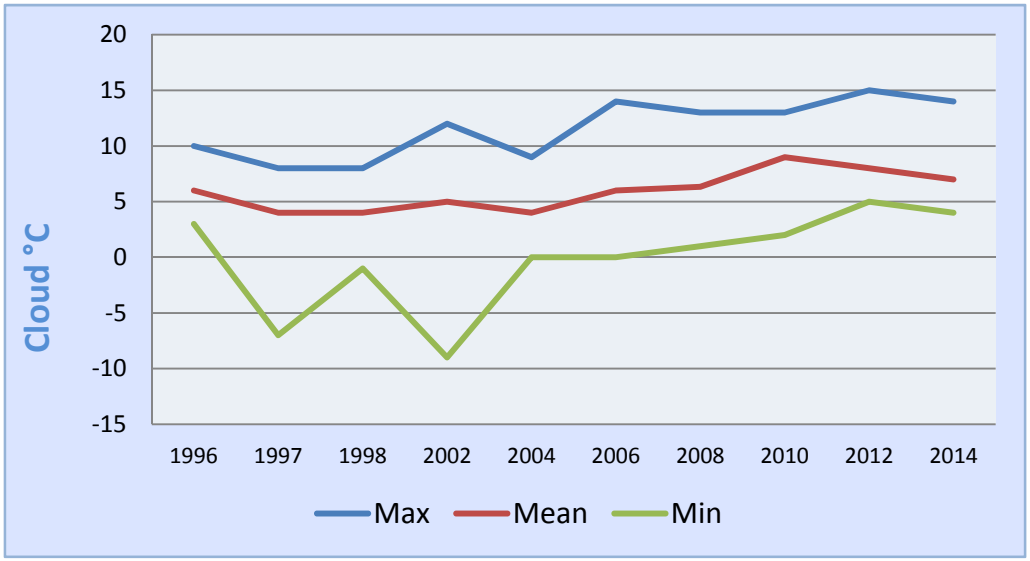
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400269	DIES 1400270	DIES 1400271	DIES 1400273	DIES 1400274	DIES 1400275	DIES 1400276
Cloud Point, °C		14	7	4	6	14	6	6	4	4	6
CFPP, °C		10	3	0	1	10	3	6	2	0	0
Pour Point, °C	10 (max)	3	-2	-6	-3	3	0	0	-3	-6	-3
HFRR, µm	460 (max)	203	185	168	187	183	168	175	180	203	197
Wax Content @ 10°C Below Cloud, wt%		4.5	2.2	0.9	2.1	4.5	2.0	2.3	2.1	1.8	0.9
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	50 (max)	40	27	14	27	40	30	29	27	25	14
Density @15°C, kg/m^3	810 - 870	844	835	827	838	844	833	833	833	835	827
Viscosity @ 40°C, cSt	1.8 - 4.1	3.73	3.32	3.04	3.31	3.73	3.32	3.33	3.30	3.21	3.04
Cetane Index $_{2\ Variable}$		57	56	54	55	54	57	57	57	56	57
Cetane Index $_{4\ Variable}$	50 (min)*	58	57	55	55	55	58	58	58	56	58
Cetane Number	50 (min)*	61	59	58	60	59	58	58	58	61	59
Distillation, °C IBP		182	172	162	176	182	168	162	165	170	179
T_{10}		235	220	214	221	235	219	218	218	216	214
T_{20}		256	243	231	242	256	244	244	244	239	231
T_{50}		293	288	278	286	293	290	291	290	286	278
T_{90}	357 (max)	352	350	348	351	352	350	350	350	349	348
T_{95}		371	368	366	370	371	367	366	368	367	367
FBP		380	376	372	380	380	372	375	374	373	378
% FAME	4.5 - 5	7	7	7	7	7	7	7	7	7	7

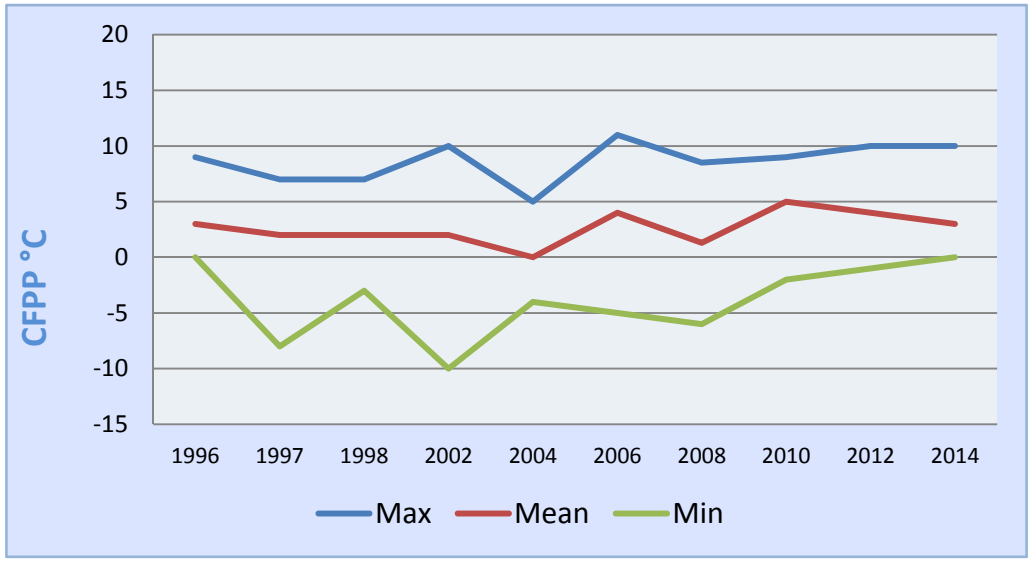
Specification shown is HSD grade

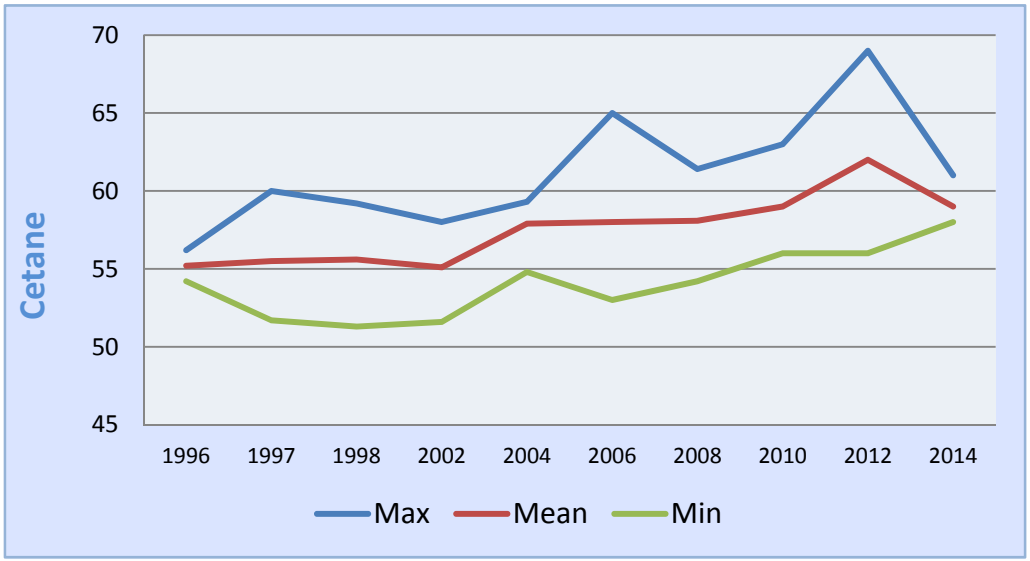
*Cetane number or cetane index may be used

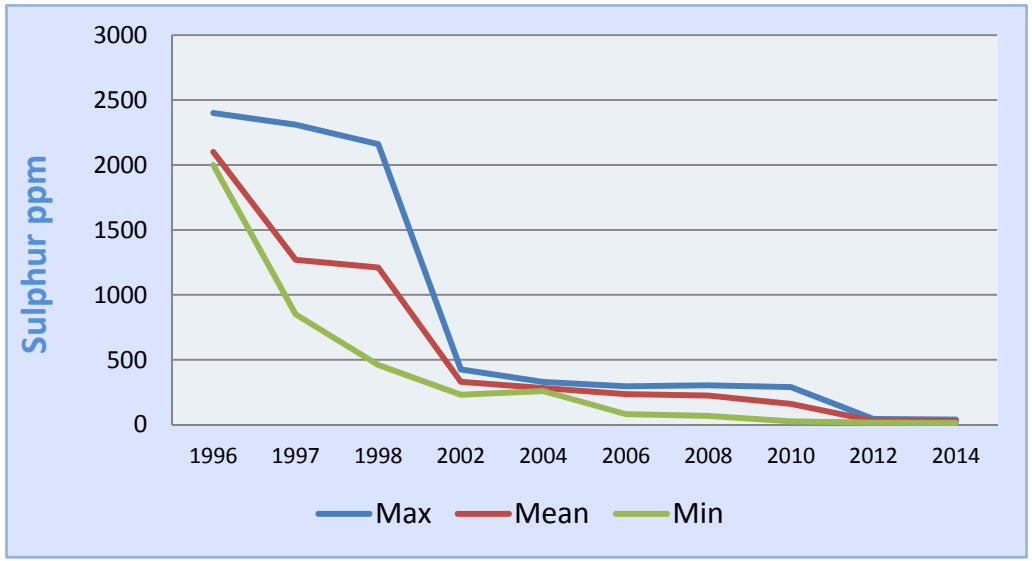
Thailand

Asia Pacific









Worldwide Survey – The Americas

126 Argentina
129 Brazil
131 Canada
134 Chile
136 Colombia
138 Peru
140 United States of America (East Coast)
143 United States of America (Midwest)
149 United States of America (West Coast)

Argentina

The Americas

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1305085	DIES 1305086	DIES 1305087	DIES 1305088	DIES 1305387	DIES 1305388	DIES 1305389
Cloud Point, °C		1	-4	-13	-13	0	-9	0	-10	0	1
CFPP, °C		-13	-16	-27	-22	-16	-14	-14	-27	-13	-13
Pour Point, °C		-12	-17	-27	-27	-15	-18	-15	-27	-15	-12
HFRR, µm		191	182	162	191	186	189	191	182	162	178
Wax Content @ 10°C Below Cloud, wt%		2.6	1.9	1.3	1.3	2.2	2.6	2.2	1.3	2.6	2.1
Rancimat, hrs		>40	>30	18	18	>40	21	>40	>40	>40	>40
Sulphur, ppm	**1500 (max)**	1400	437	5	5	21	6	35	136	1400	1090
Density @15°C, kg/m^3		852	845	834	841	848	834	849	839	850	848
Viscosity @ 40°C, cSt	**2.0 - 4.5**	3.34	2.97	2.41	2.77	3.34	2.41	3.12	2.46	2.86	3.28
Cetane Index $_{2\ Variable}$		53	51	49	52	52	52	51	49	51	53
Cetane Index $_{4\ Variable}$	**46 (min)**	52	50	48	52	52	52	50	48	48	50
Cetane Number	**49 (min)**	54	51	49	51	51	54	50	50	49	49
Distillation, °C IBP		183	162	132	171	183	170	170	162	132	134
T_{10}		222	208	195	211	222	200	210	198	195	200
T_{20}		244	230	214	229	244	215	231	214	226	233
T_{50}	**310 (max)**	291	281	257	277	291	264	286	257	284	291
T_{90}	**360 (max)**	357	343	329	337	349	329	348	332	346	357
T_{95}		381	361	343	350	368	343	372	347	364	381
FBP		384	366	347	355	374	347	375	355	370	384
% FAME	**7 (min)**	11	8	6	8	7	8	7	6	8	8

Specification shown for Grade 2 fuels (in cities with more than 50,000 inhabitants sulphur level is 150ppm)

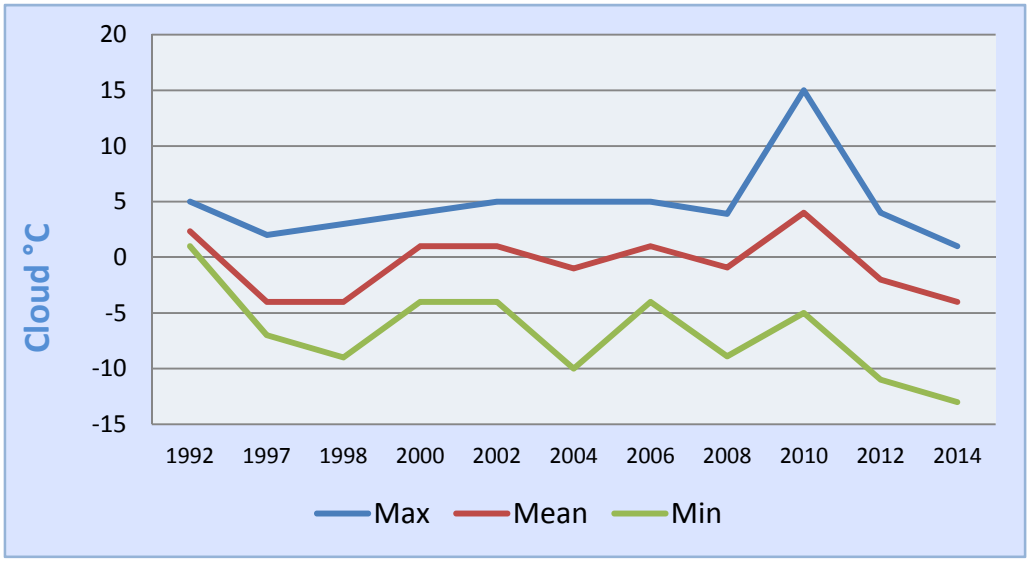
Argentina (continued)

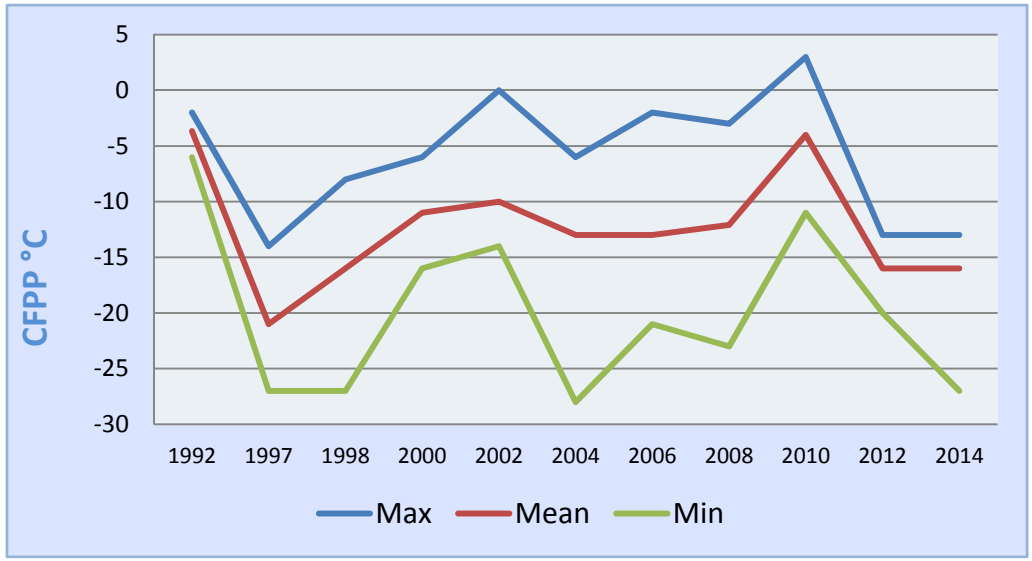
National standards and physical inspection data

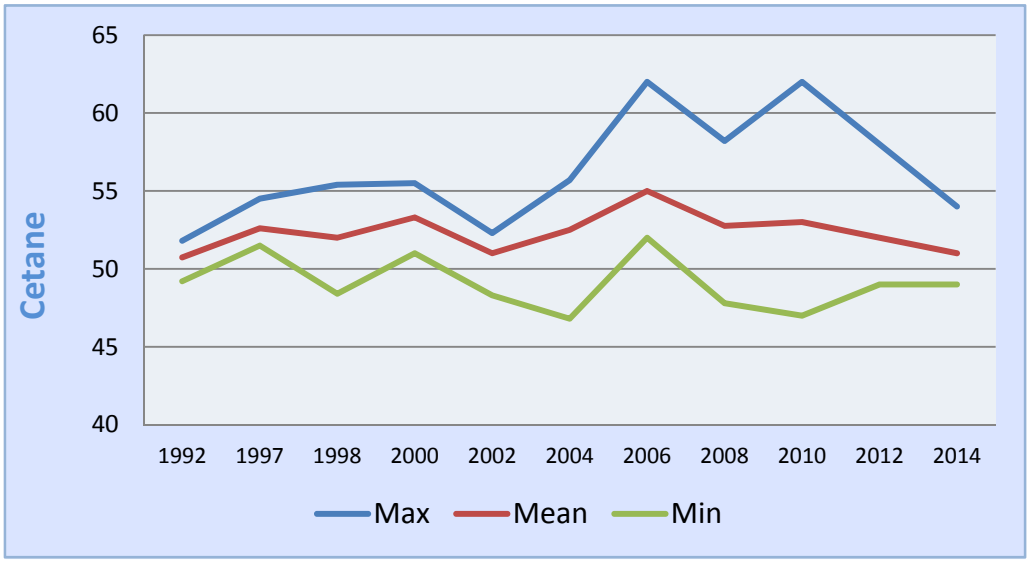
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1305391	DIES 1305392
Cloud Point, °C		1	-4	-13	-1	-1
CFPP, °C		-13	-16	-27	-14	-13
Pour Point, °C		-12	-17	-27	-15	-12
HFRR, µm		191	182	162	172	188
Wax Content @ 10°C Below Cloud, wt%		2.6	1.9	1.3	1.5	1.3
Rancimat, hrs		>40	>30	18	>40	>40
Sulphur, ppm	**1500 (max)**	1400	437	5	464	780
Density @15°C, kg/m^3		852	845	834	847	852
Viscosity @ 40°C, cSt	**2.0 - 4.5**	3.34	2.97	2.41	3.30	3.19
Cetane Index 2 Variable		53	51	49	52	51
Cetane Index 4 Variable	**46 (min)**	52	50	48	52	49
Cetane Number	**49 (min)**	54	51	49	53	50
Distillation, °C IBP		183	162	132	169	165
T_{10}		222	208	195	217	214
T_{20}		244	230	214	240	237
T_{50}	**310 (max)**	291	281	257	288	288
T_{90}	**360 (max)**	357	343	329	343	345
T_{95}		381	361	343	360	362
FBP		384	366	347	365	368
% FAME	**7 (min)**	11	8	6	8	11

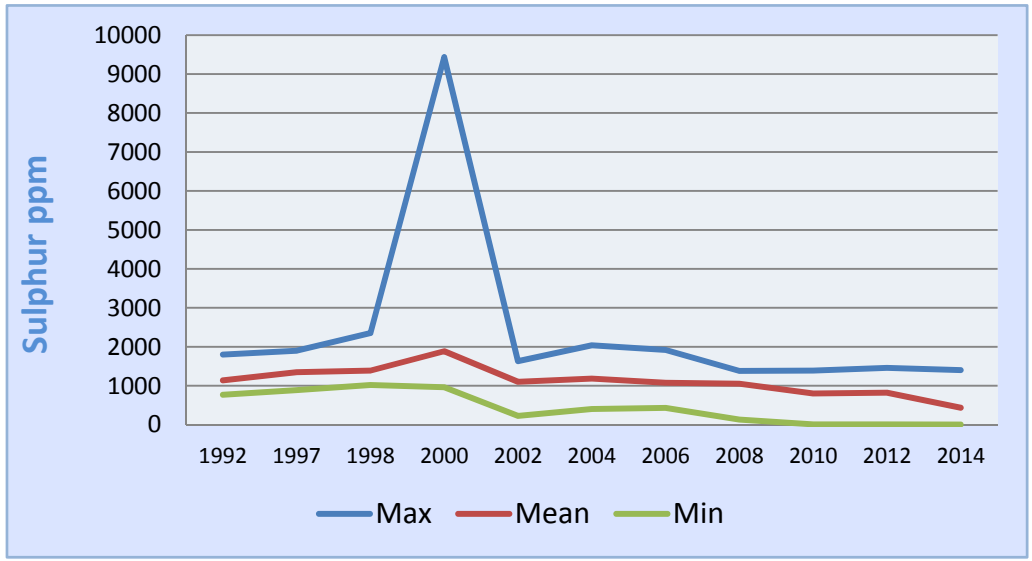
Specification shown for Grade 2 fuels (in cities with more than 50,000 inhabitants sulphur level is 150ppm)

Argentina







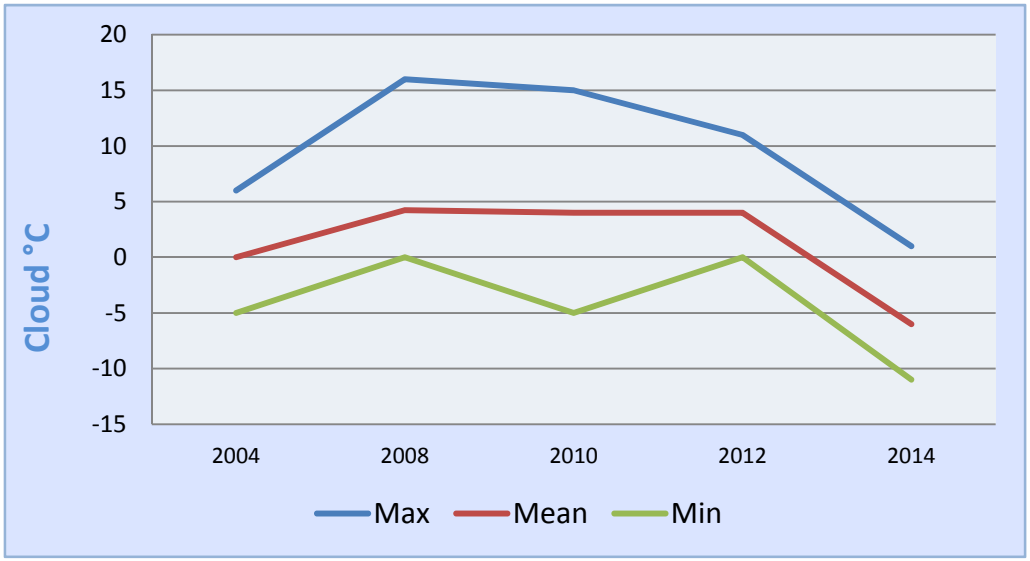


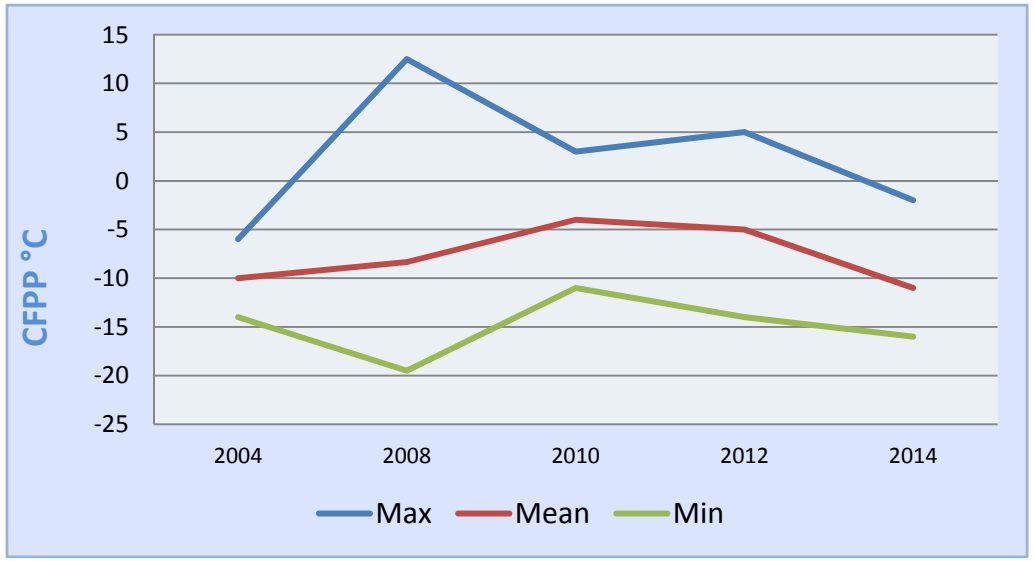
Brazil

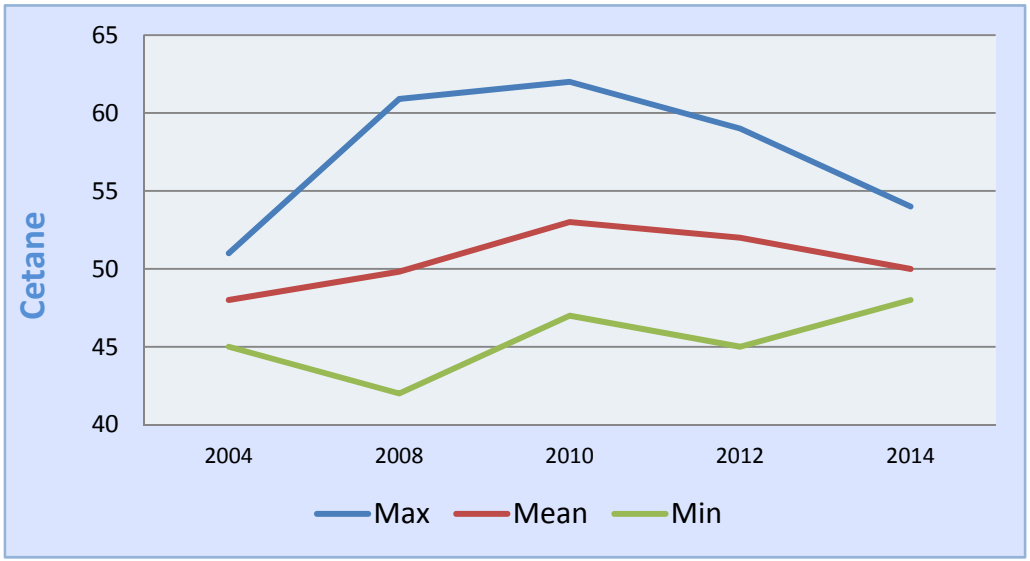
National standards and physical inspection data

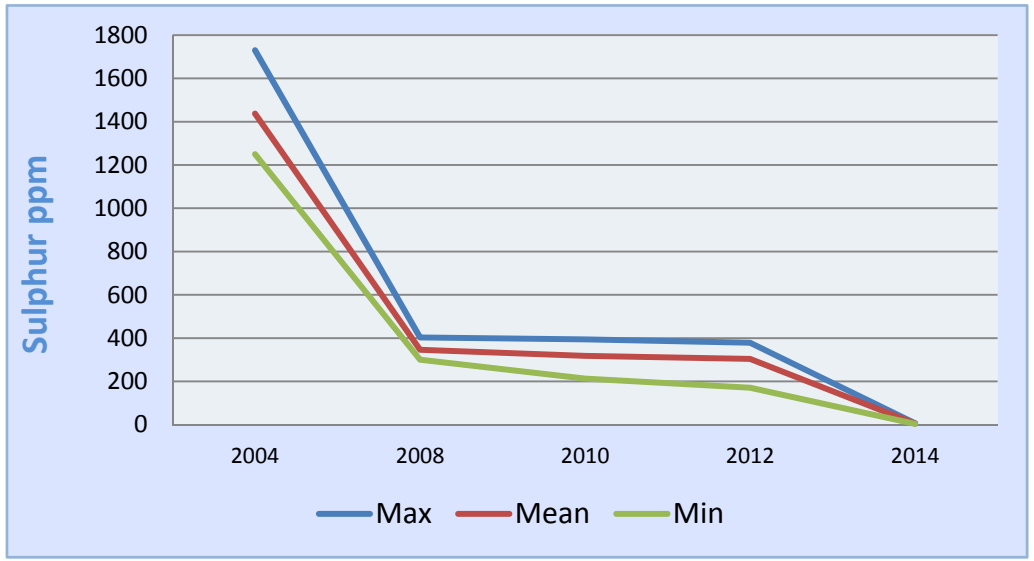
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1305297	DIES 1305298	DIES 1305299	DIES 1305300	DIES 1305301
Cloud Point, °C		1	-6	-11	-11	1	-7	-11	-4
CFPP, °C		-2	-11	-16	-15	-2	-9	-16	-12
Pour Point, °C		-9	-17	-30	-15	-9	-18	-30	-12
HFRR, µm	460 (max)	213	198	191	192	196	213	191	198
Wax Content @ 10°C Below Cloud, wt%		2.0	1.6	1.0	2.0	1.0	1.2	1.9	1.7
Rancimat, hrs		>40	>25	8	8	>40	22	35	34
Sulphur, ppm	10 (max)	7	5	4	5	4	7	5	4
Density @15°C, kg/m^3	820 - 865	863	847	839	846	839	845	843	863
Viscosity @ 40°C, cSt	2.0 – 4.5	3.01	2.80	2.49	3.01	2.49	2.86	2.70	2.95
Cetane Index $_{2\ Variable}$		51	49	45	50	50	50	51	45
Cetane Index $_{4\ Variable}$	48 (min)	50	48	44	50	48	49	50	44
Cetane Number	48 (min)	54	50	48	50	48	50	50	54
Distillation, °C IBP		176	165	142	171	142	163	173	176
T_{10}		221	208	182	221	182	208	209	220
T_{20}		239	227	206	239	206	226	228	238
T_{50}	245 - 295	279	272	262	274	262	271	273	279
T_{90}		346	338	331	331	346	340	335	340
T_{95}	370 (max)	369	356	347	347	369	357	350	358
FBP		376	363	355	356	376	364	355	366
% FAME	5 (min)	5	5	5	5	5	5	5	5

Brazil









Canada

The Americas

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400414	DIES 1400415	DIES 1400416	DIES 1400417	DIES 1400418	DIES 1400420	DIES 1400421
Cloud Point, °C		-27	-36	-53	-43	-37	-53	-32	-40	-27	-29
CFPP, °C		-27	-37	-51	-44	-40	-51	-36	-45	-27	-30
LTFT, °C		-24	-32	-46	-40	-34	-46	-28	-36	-24	-26
Pour Point, °C		-30	-43	-69	-51	-69	-60	-33	-39	-30	-33
HFRR, µm	460 (max)	639	468	393	393	573	454	471	486	452	479
Wax Content @ 10°C Below Cloud, wt%		2.3	1.2	0.4	0.7	0.4	0.5	1.2	1.1	1.6	1.5
Rancimat, hrs		>40	>30	12.3	20	>40	22	27	>40	>40	24
**Sulphur, ppm	15 (max)	8	6	<3	4	4	<3	6	8	6	6
Density @15°C, kg/m^3		854	837	809	851	835	849	818	809	844	841
Viscosity @ 40°C, cSt	1.7 - 4.1*	2.53	2.10	1.54	2.07	2.07	2.32	1.75	1.54	2.48	2.43
Cetane Index $_{2\ Variable}$		49	45	41	42	45	43	48	47	47	47
Cetane Index $_{4\ Variable}$		49	45	40	41	45	42	49	48	47	47
Cetane Number	40 (min)	47	44	41	43	42	42	45	46	46	47
Distillation, °C IBP		173	160	145	147	168	168	160	155	162	165
T_{10}		214	193	171	188	191	197	184	185	205	203
T_{20}		232	206	182	204	202	212	194	189	221	218
T_{50}		262	242	215	249	238	249	227	215	258	254
T_{90}	360 (max)	316	300	275	308	305	302	291	275	313	316
T_{95}		333	316	293	322	322	317	310	293	330	333
FBP		345	328	309	332	332	328	327	309	341	345
% FAME		0	0	0	0	0	0	0	0	0	0

Specification shown is for Type-B diesel.
*For operating temperatures of below -20°C the minimum KV is 1.3cSt

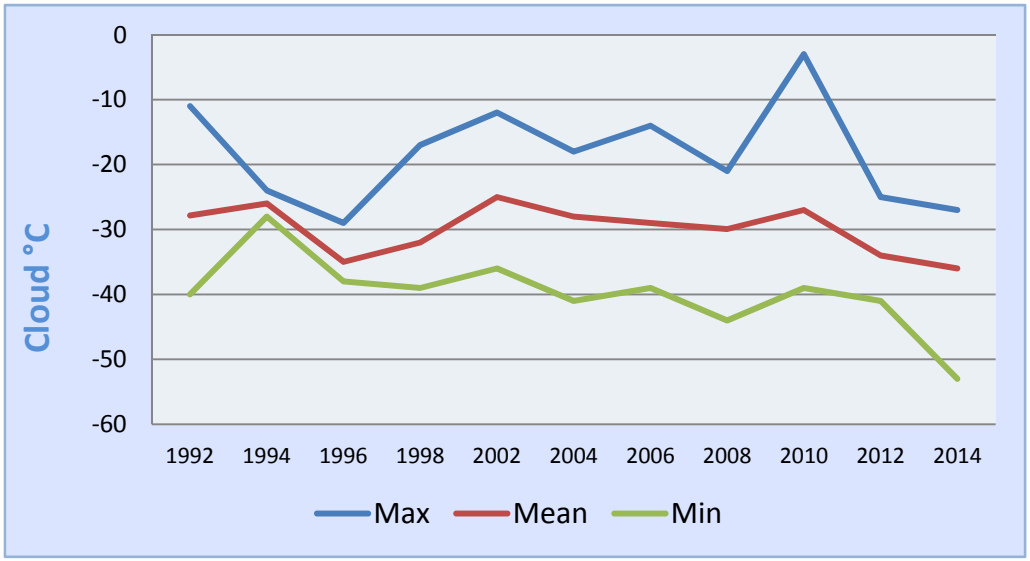
Canada (continued)

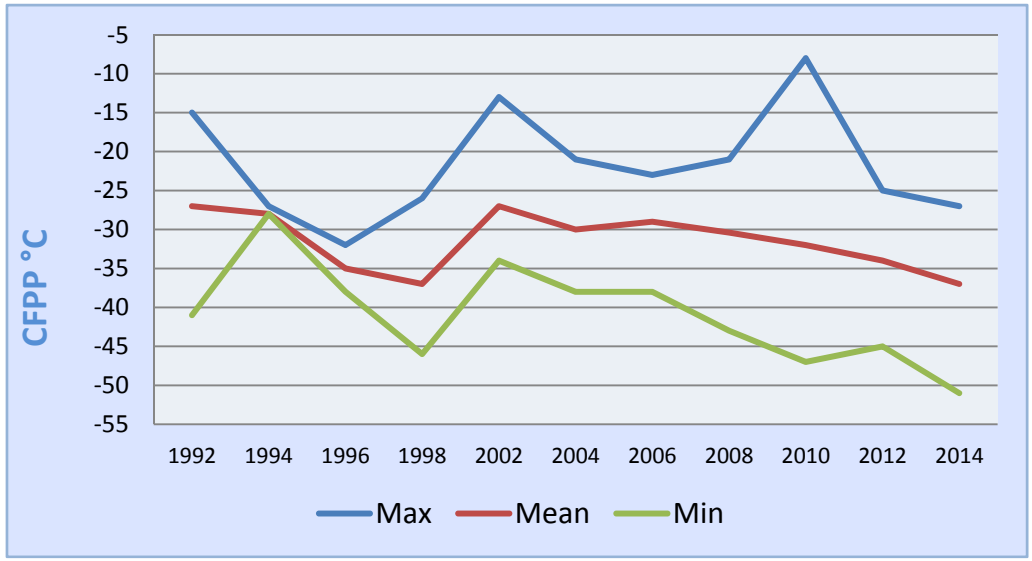
National standards and physical inspection data

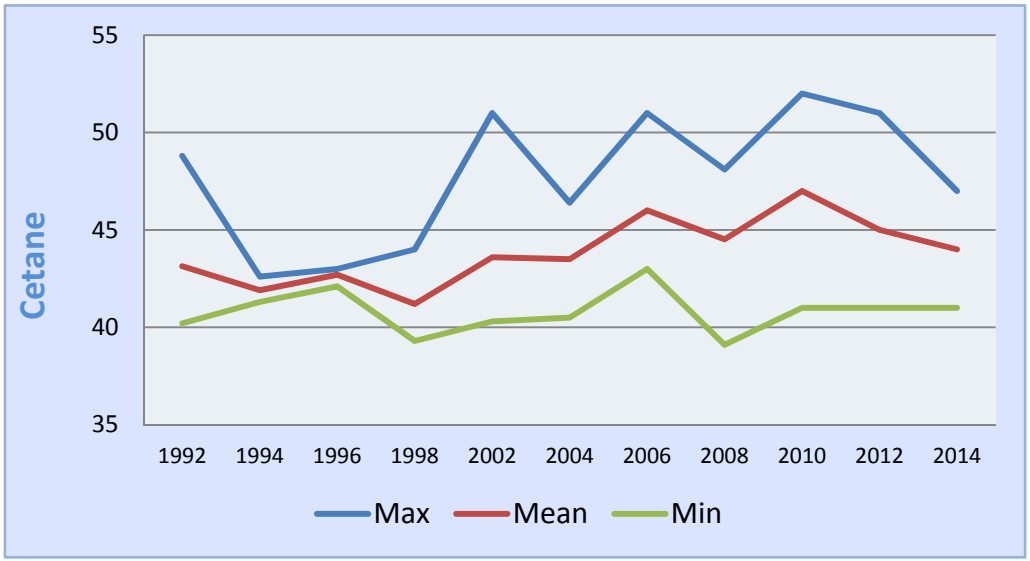
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400422	DIES 1400423	DIES 1400424	DIES 1400425	DIES 1400427	DIES 1400428
Cloud Point, °C		-27	-36	-53	-31	-28	-30	-30	-50	-43
CFPP, °C		-27	-37	-51	-30	-27	-29	-30	-49	-44
LTFT, °C		-24	-32	-46	-26	-24	-26	-26	-46	-38
Pour Point, °C		-30	-43	-69	-33	-36	-36	-30	-60	-54
HFRR, µm	460 (max)	639	468	393	405	398	434	444	453	639
Wax Content @ 10°C Below Cloud, wt%		2.3	1.2	0.4	2.1	1.2	1.2	2.3	0.6	1.0
Rancimat, hrs		>40	>30	12.3	>40	>40	>40	>40	>40	12
**Sulphur, ppm	15 (max)	8	6	<3	6	7	6	<3	<3	<3
Density @15°C, kg/m^3		854	837	809	852	823	823	829	847	854
Viscosity @ 40°C, cSt	1.7 - 4.1*	2.53	2.10	1.54	2.53	1.80	1.67	2.07	2.30	2.24
Cetane Index $_{2\ Variable}$		49	45	41	45	47	45	49	43	41
Cetane Index $_{4\ Variable}$		49	45	40	44	47	46	49	43	40
Cetane Number	40 (min)	47	44	41	43	44	41	45	42	45
Distillation, °C IBP		173	160	145	165	147	145	162	170	173
T_{10}		214	193	171	214	175	171	192	198	211
T_{20}		232	206	182	232	188	182	206	212	221
T_{50}		262	242	215	262	232	225	246	248	246
T_{90}	360 (max)	316	300	275	309	299	292	305	301	290
T_{95}		333	316	293	324	314	307	321	315	301
FBP		345	328	309	336	325	318	334	326	311
% FAME		0	0	0	0	0	0	0	0	0

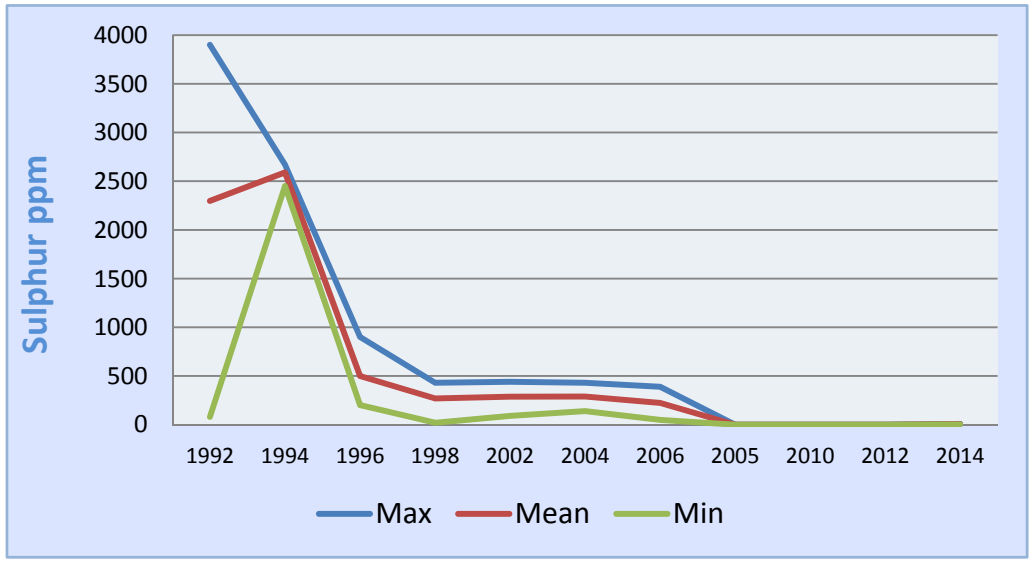
Specification shown is for Type-B diesel.
*For operating temperatures of below -20°C the minimum KV is 1.3cSt

Canada







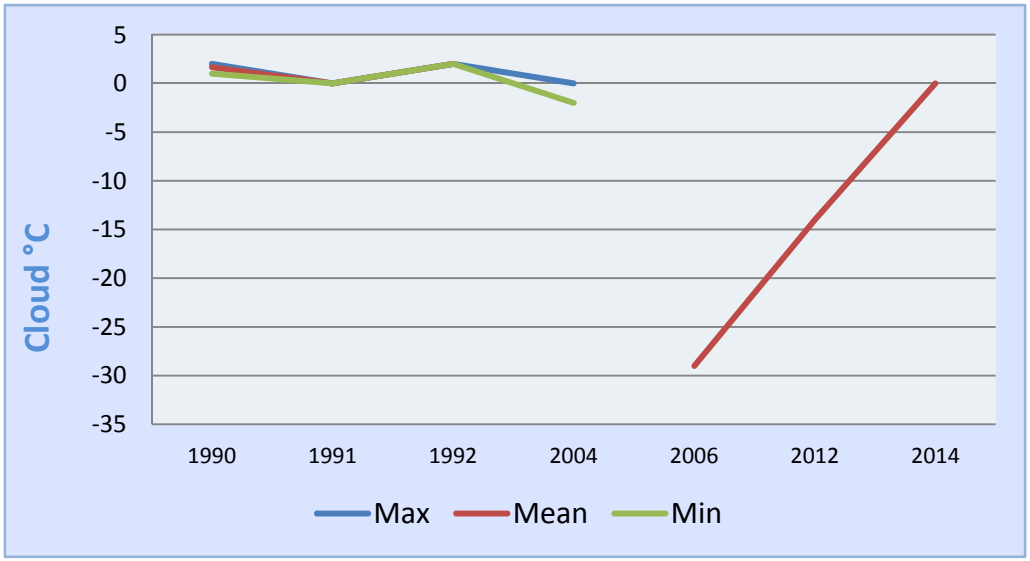


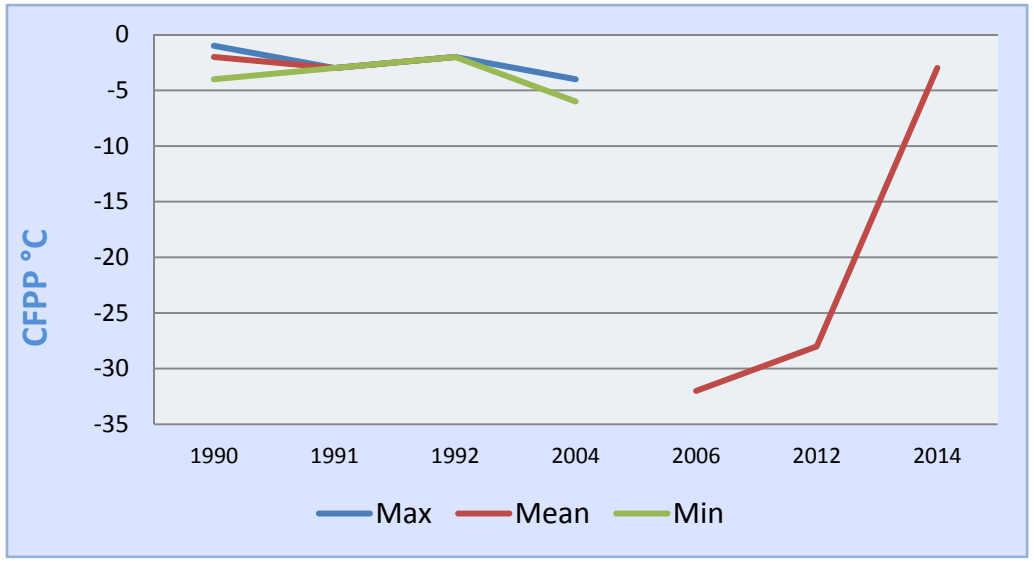
Chile

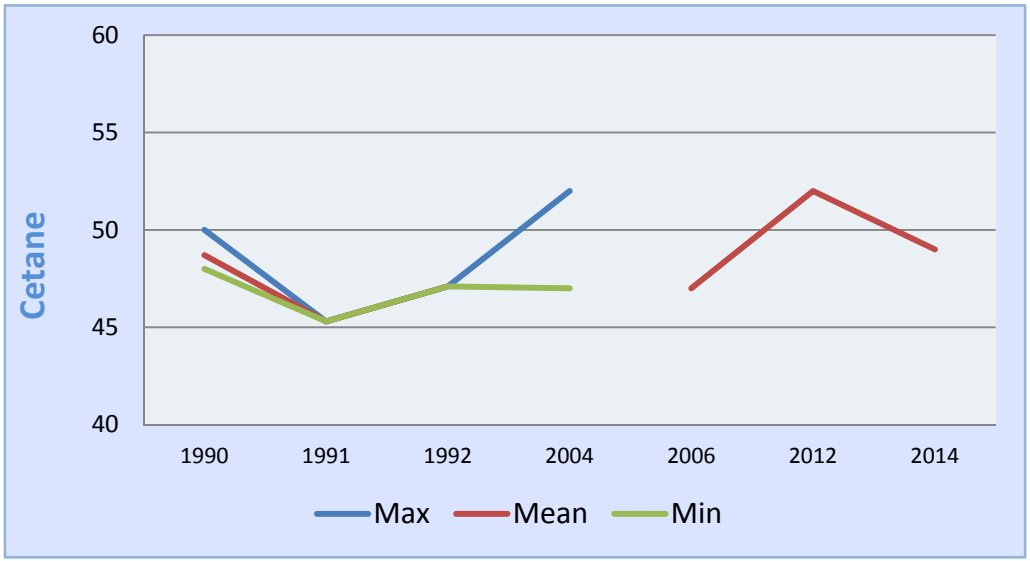
National standards and physical inspection data

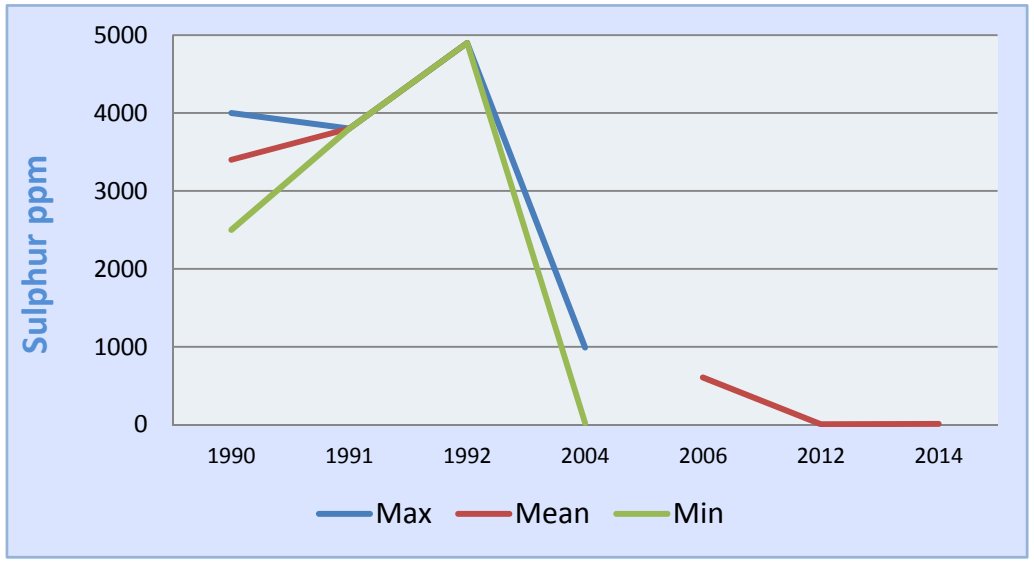
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1310586
Cloud Point, °C			0		0
CFPP, °C			-3		-3
Pour Point, °C			-6		-6
HFRR, µm	460 (max)		394		394
Wax Content @ 10°C Below Cloud, wt%			2.1		2.1
Rancimat, hrs			>40		>40
Sulphur, ppm	15 (max)		10		10
Density @15°C, kg/m^3	820 - 850		847		847
Viscosity @ 40°C, cSt	1.9 – 4.1		3.31		3.31
Cetane Index $_{2\ Variable}$			51		51
Cetane Index $_{4\ Variable}$			51		51
Cetane Number	50 (min)		49		49
Distillation, °C IBP			146		146
T_{10}			218		218
T_{20}			242		242
T_{50}			282		282
T_{90}	282 - 350		347		347
T_{95}			365		365
FBP			370		370
% FAME			0		0

Chile









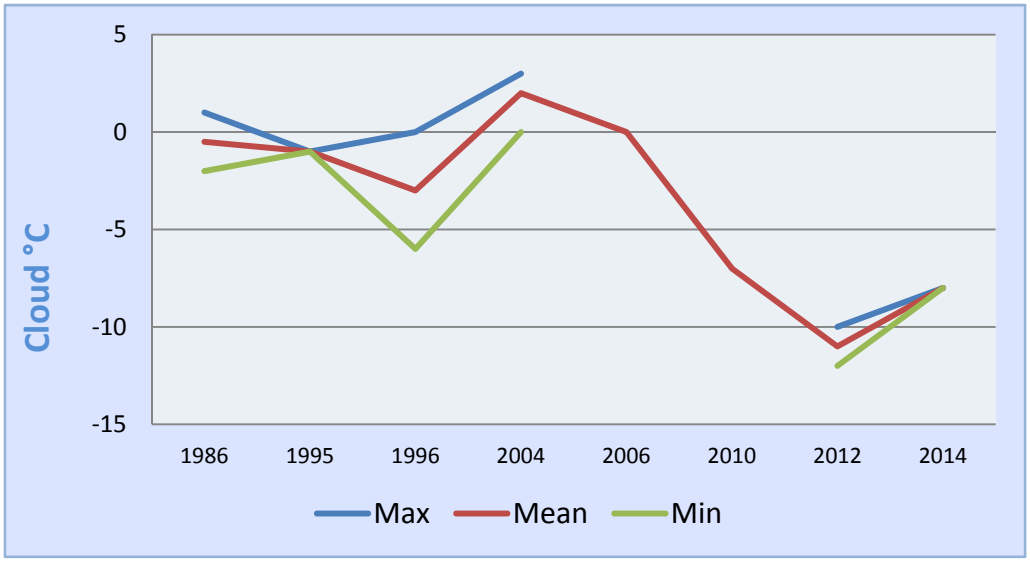
Colombia

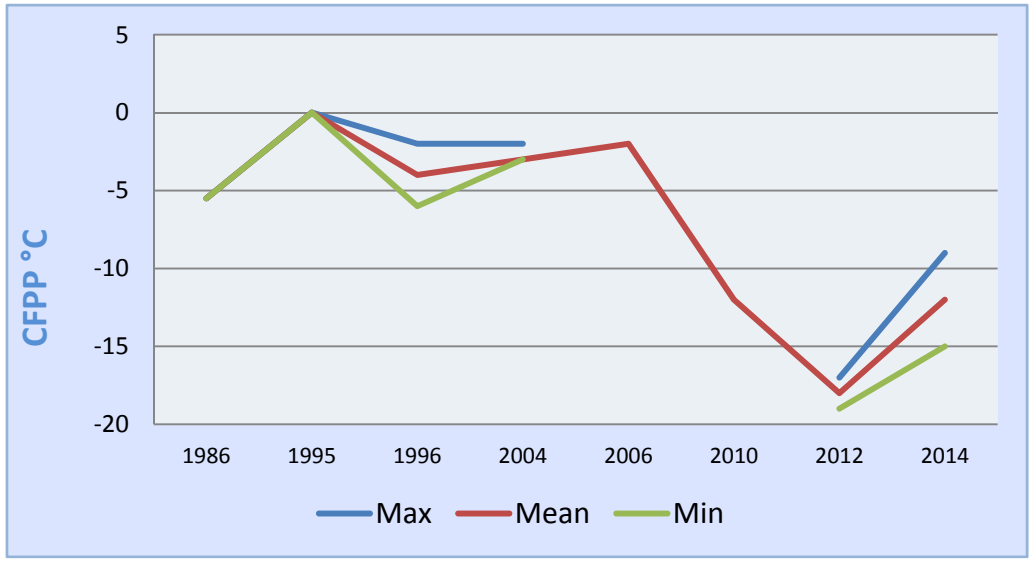
National standards and physical inspection data

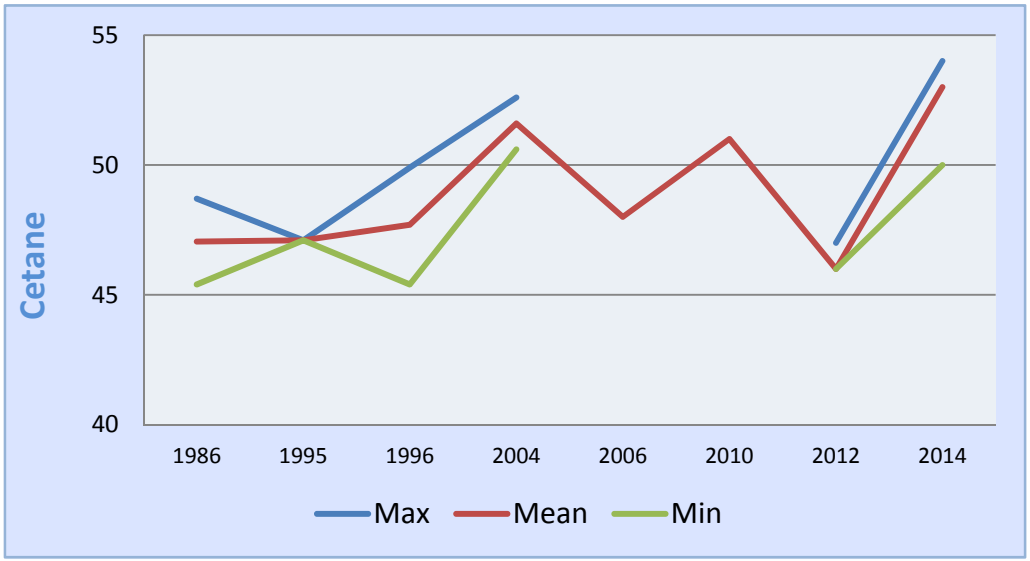
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1311250	DIES 1311251	DIES 1311252	DIES 1311253
Cloud Point, °C		-8	-8	-8	-8	-8	-8	-8
CFPP, °C		-9	-12	-15	-13	-9	-15	-10
Pour Point, °C		-12	-12	-12	-12	-12	-12	-12
HFRR, µm	450 (min)	205	193	184	205	184	190	192
Wax Content @ 10°C Below Cloud, wt%		3.5	3.2	3.0	3.0	3.3	3.5	3.1
Rancimat, hrs		23	21	18	21	18	20	23
Sulphur, ppm	50 (max)	19	16	13	13	15	19	17
Density @15°C, kg/m^3		839	838	837	837	839	839	839
Viscosity @ 40°C, cSt	1.9 - 5.0	2.96	2.89	2.84	2.87	2.96	2.84	2.91
Cetane Index 2 Variable		54	54	54	54	54	54	54
Cetane Index 4 Variable	45 (min)	54	53	53	53	54	54	53
Cetane Number	43 (min)	54	53	50	50	53	54	53
Distillation, °C IBP		180	172	165	165	180	178	165
T_{10}		212	210	207	207	211	212	209
T_{20}		234	231	226	226	233	234	231
T_{50}		283	281	277	277	283	283	281
T_{90}		335	334	334	334	335	335	334
T_{95}	360 (max)	348	347	346	348	348	346	346
FBP	390 (max)	354	353	352	354	354	353	352
% FAME	10*	10	10	9	10	10	10	9

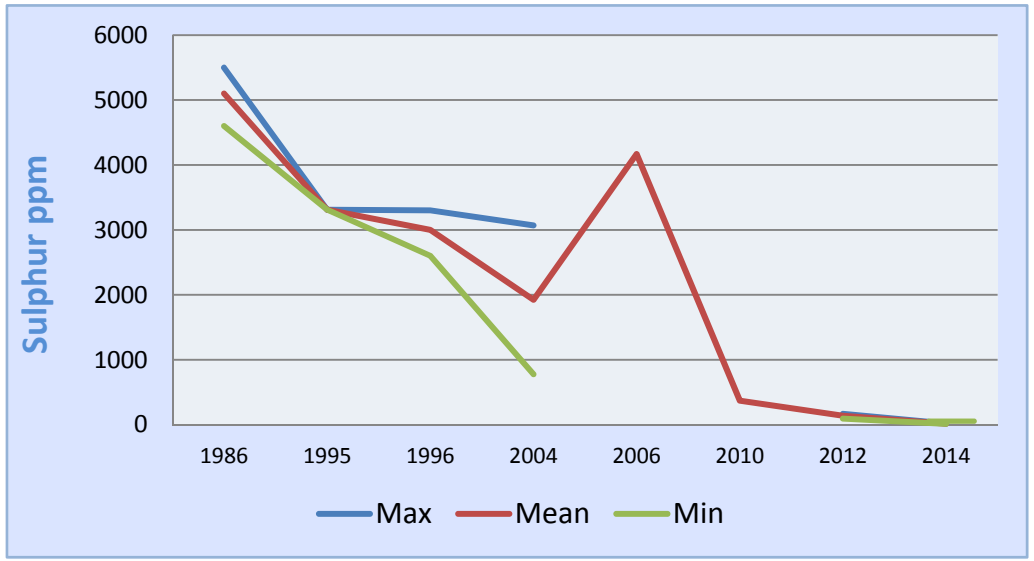
Specification shown is for standard grade diesel
*As of Nov.1 2011 B10 is required in the country

Colombia









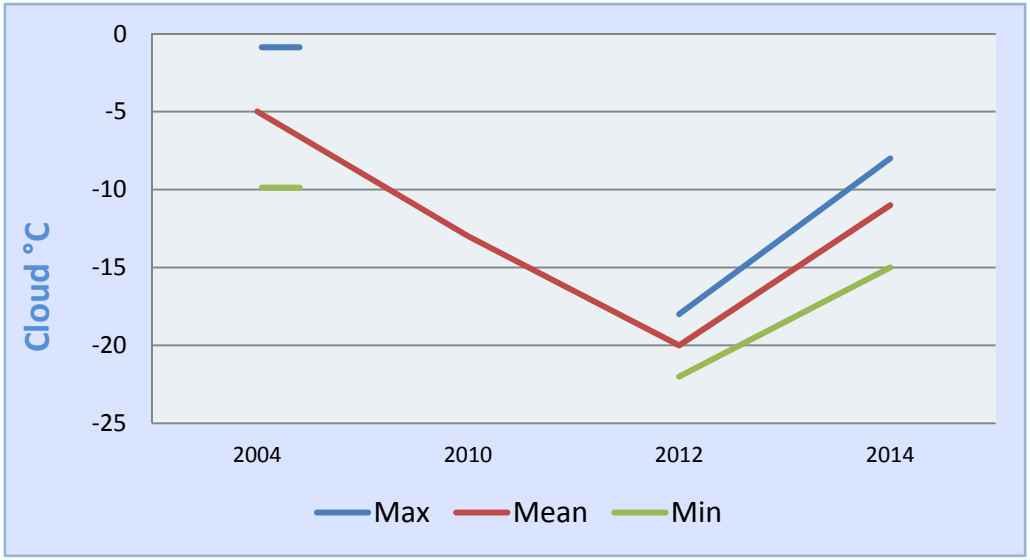
Peru

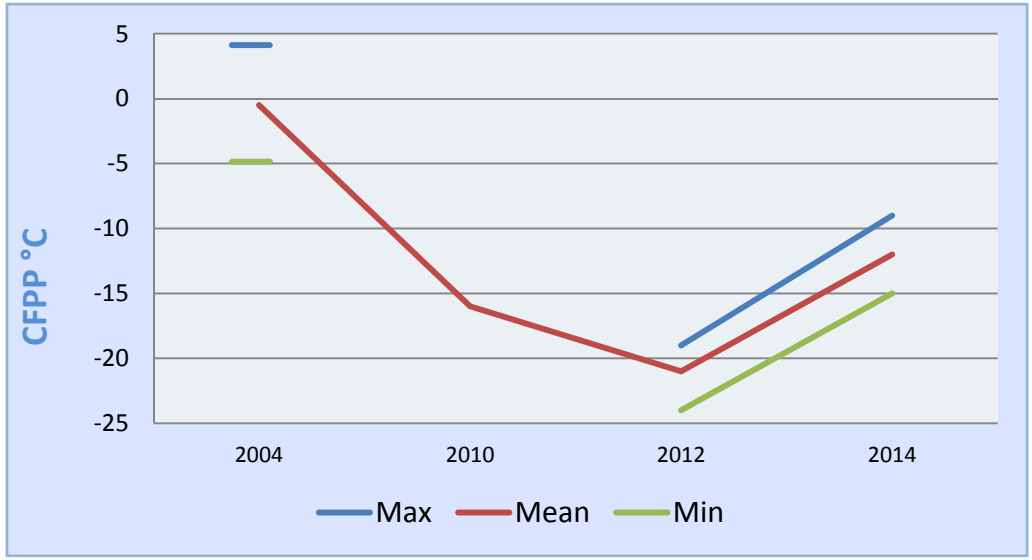
National standards and physical inspection data

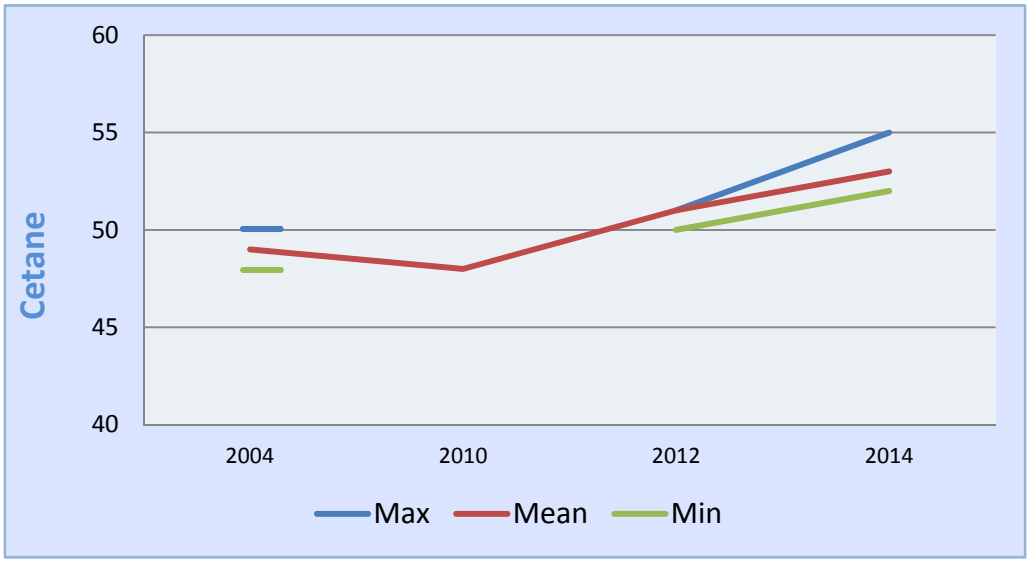
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1305802	DIES 1305803	DIES 1305804
Cloud Point, °C		-8	-11	-15	-15	-12	-8
CFPP, °C	-8 (max)	-9	-12	-15	-15	-12	-9
Pour Point, °C	4 (max)	-12	-17	-21	-21	-18	-12
HFRR, µm	520 (max)	208	197	191	208	192	191
Wax Content @ 10°C Below Cloud, wt%		2.9	2.2	1.6	1.6	2.0	2.9
Rancimat, hrs		>40	>35	32	32	39	>40
Sulphur, ppm	50 (max)	29	18	9	29	18	9
Density @15°C, kg/m^3		838	825	814	814	823	838
Viscosity @ 40°C, cSt	1.9 - 4.1	3.02	2.40	1.96	1.96	2.22	3.02
Cetane Index $_{2\ Variable}$		53	53	52	52	53	53
Cetane Index $_{4\ Variable}$	40 (min)	54	53	52	52	53	54
Cetane Number	40 (min)	55	53	52	52	52	55
Distillation, °C IBP		176	165	159	159	159	176
T_{10}		219	196	182	182	187	219
T_{20}		236	210	193	193	202	236
T_{50}		278	256	236	236	253	278
T_{90}	282 - 360	331	326	322	322	326	331
T_{95}		344	340	337	337	340	344
FBP		352	347	343	343	346	352
% FAME	5 (max)	5	5	5	5	5	5

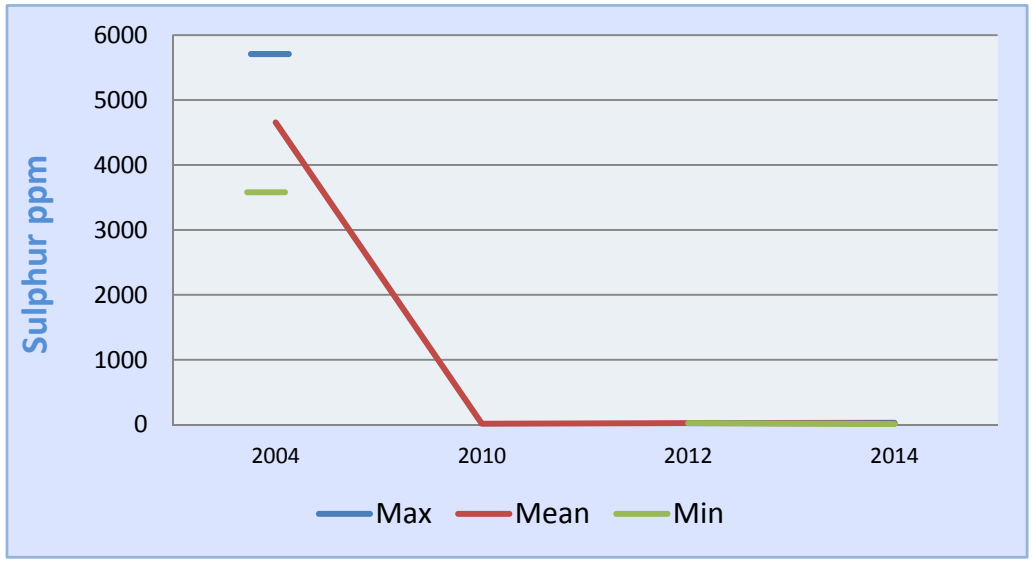
Specification shown for S-50 grade diesel

Peru









USA – East Coast

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400344	DIES 1400346	DIES 1400349	DIES 1400350	DIES 1400361	DIES 1400362	DIES 1400364
Cloud Point, °C		-12	-13	-16	-12	-14	-14	-16	-13	-13	-14
CFPP, °C		-13	-20	-32	-28	-32	-32	-16	-13	-17	-14
LTFT, °C		-11	-12	-13	-11	-13	-13	-11	-11	-11	-13
Pour Point, °C		-21	-27	-45	-33	-33	-45	-21	-21	-24	-24
HFRR, µm	520 (max)	432	325	186	207	309	186	414	402	338	279
Wax Content @ 10°C Below Cloud, wt%		1.7	1.5	1.3	1.4	1.3	1.3	1.6	1.5	1.6	1.6
Rancimat, hrs		>40	>30	10	>40	10	23	>40	>40	>40	>40
Sulphur, ppm	15 (max)	8	7	6	7	7	7	6	8	8	7
Density @15°C, kg/m^3		858	848	842	844	843	843	845	842	857	842
Viscosity @ 40°C, cSt	1.9 - 4.1	2.67	2.55	2.42	2.61	2.60	2.54	2.67	2.42	2.56	2.60
Cetane Index $_{2\ Variable}$		49	47	45	48	48	49	48	48	45	49
Cetane Index $_{4\ Variable}$	40 (min)	48	46	43	48	47	48	47	47	43	48
Cetane Number	40 (min)	48	44	39	45	47	48	45	44	40	46
Distillation, °C IBP		167	163	157	167	163	162	165	167	157	165
T_{10}		205	201	198	203	201	203	205	201	198	202
T_{20}		224	220	217	219	217	220	224	217	220	220
T_{50}		268	264	257	264	261	265	265	257	267	262
T_{90}	282 - 338	330	326	322	330	327	329	325	327	322	327
T_{95}		344	342	338	344	342	344	341	344	338	342
FBP		354	352	350	354	352	352	352	353	350	351
% FAME	5 (max)	5	2	0	5	2	5	0	0	0	3

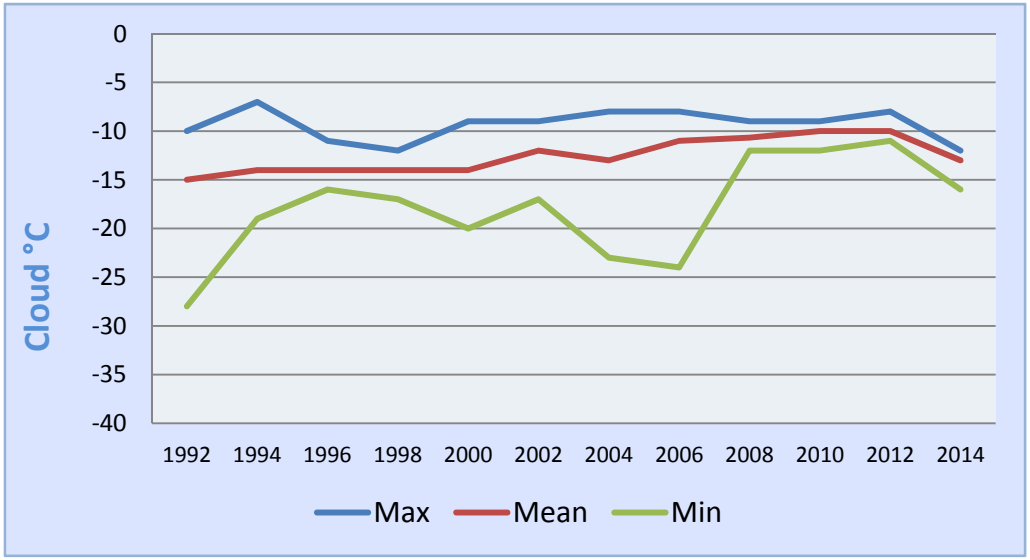
USA – East Coast (continued)

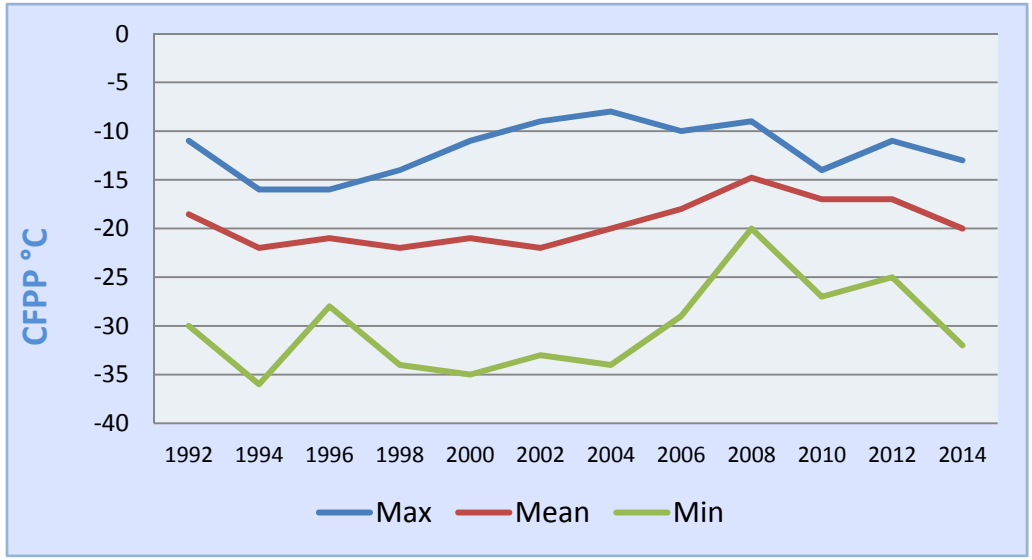
National standards and physical inspection data

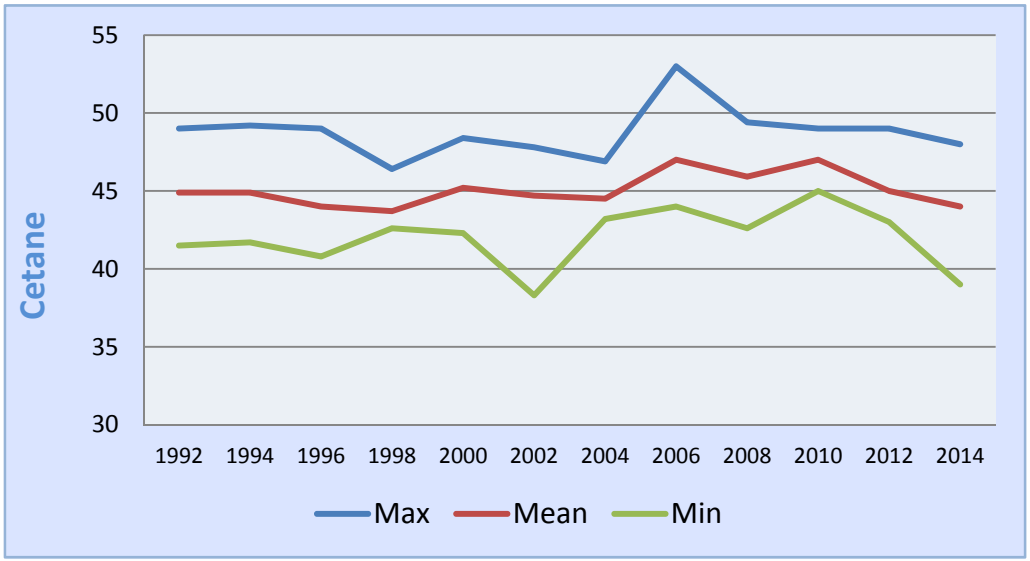
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400365	DIES 1400366
Cloud Point, °C		-12	-13	-16	-13	-12
CFPP, °C		-13	-20	-32	-16	-16
LTFT, °C		-11	-12	-13	-11	-11
Pour Point, °C		-21	-27	-45	-21	-21
HFRR, µm	520 (max)	432	325	186	355	432
Wax Content @ 10°C Below Cloud, wt%		1.7	1.5	1.3	1.7	1.5
Rancimat, hrs		>40	>30	10	>40	>40
Sulphur, ppm	15 (max)	8	7	6	8	8
Density @15°C, kg/m^3		858	848	842	858	857
Viscosity @ 40°C, cSt	1.9 - 4.1	2.67	2.55	2.42	2.45	2.46
Cetane Index $_{2\ Variable}$		49	47	45	45	45
Cetane Index $_{4\ Variable}$	40 (min)	48	46	43	43	43
Cetane Number	40 (min)	48	44	39	39	39
Distillation, °C IBP		167	163	157	160	161
T_{10}		205	201	198	200	199
T_{20}		224	220	217	221	221
T_{50}		268	264	257	268	268
T_{90}	282 - 338	330	326	322	323	324
T_{95}		344	342	338	339	341
FBP		354	352	350	351	352
% FAME	5 (max)	5	2	0	0	0

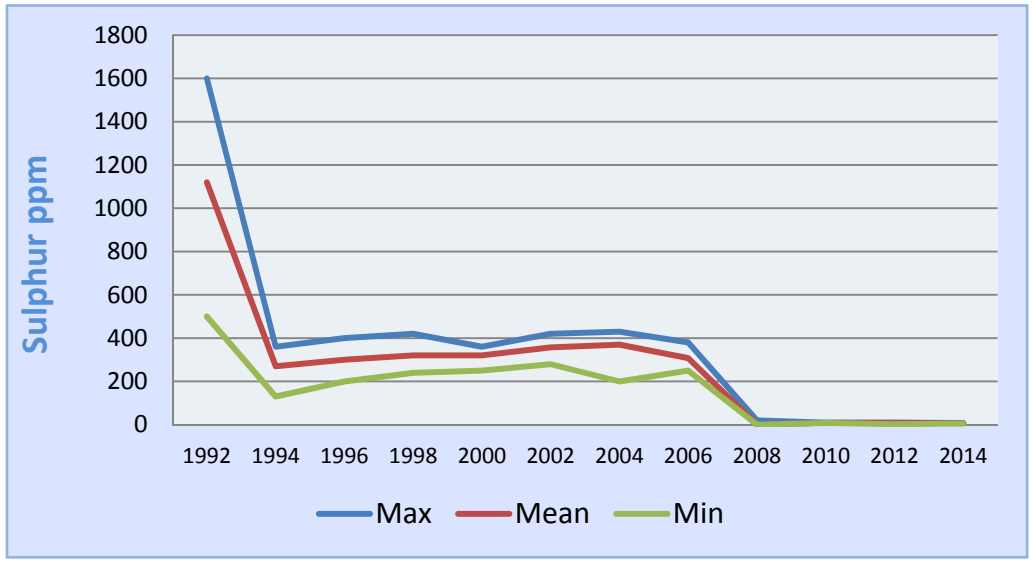
Infineum

USA – East Coast









USA – Midwest

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400298	DIES 1400299	DIES 1400301	DIES 1400302	DIES 1400303	DIES 1400307	DIES 1400309
Cloud Point, °C		-9	-17	-27	-20	-20	-17	-18	-18	-20	-20
CFPP, °C		-10	-23	-41	-35	-20	-24	-30	-34	-32	-32
LTFT, °C		-7	-17	-29	-21	-19	-17	-19	-19	-23	-25
Pour Point, °C		-15	-32	-57	-57	-36	-30	-39	-39	-33	-45
HFRR, µm	520 (max)	561	378	176	186	429	176	176	515	200	369
Wax Content @ 10°C Below Cloud, wt%		2.4	1.5	0.0	1.3	1.3	1.7	1.7	1.3	1.4	1.3
Rancimat, hrs		>40	>30	4	31	>40	4	>40	35	25	>40
Sulphur, ppm	15 (max)	9	6	4	8	8	6	7	6	9	5
Density @15°C, kg/m^3		859	844	826	855	859	857	826	842	855	831
Viscosity @ 40°C, cSt	1.9 - 4.1	3.20	2.62	2.06	2.82	2.75	2.84	2.94	2.50	2.79	2.19
Cetane Index $_{2\ Variable}$		57	48	42	47	44	47	57	48	47	49
Cetane Index $_{4\ Variable}$	40 (min)	59	48	41	46	43	46	59	48	46	49
Cetane Number	40 (min)	54	45	40	43	41	43	42	43	43	54
Distillation, °C IBP		194	170	158	169	174	176	173	167	165	159
T_{10}		227	209	191	215	215	218	220	210	215	197
T_{20}		241	225	201	232	230	233	237	223	232	212
T_{50}		277	263	237	273	265	275	276	258	273	248
T_{90}	282 - 338	334	322	303	331	322	332	331	318	331	316
T_{95}		355	338	321	341	338	342	342	336	341	331
FBP		367	348	331	348	350	353	349	347	348	343
% FAME	5 (max)	11	3	0	11	0	11	9	0	11	4

USA – Midwest (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400310	DIES 1400318	DIES 1400320	DIES 1400322	DIES 1400324	DIES 1400326	DIES 1400328
Cloud Point, °C		-9	-17	-27	-14	-18	-11	-14	-13	-9	-14
CFPP, °C		-10	-23	-41	-30	-41	-14	-14	-13	-10	-13
LTFT, °C		-7	-17	-29	-13	-21	-9	-13	-11	-7	-13
Pour Point, °C		-15	-32	-57	-36	-48	-39	-21	-21	-15	-24
HFRR, µm	520 (max)	561	378	176	531	418	424	435	410	399	479
Wax Content @ 10°C Below Cloud, wt%		2.4	1.5	0.0	1.3	0.8	2.0	2.1	2.1	2.0	2.0
Rancimat, hrs		>40	>30	4	>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	15 (max)	9	6	4	6	7	7	5	4	7	6
Density @15°C, kg/m^3		859	844	826	838	829	842	840	840	839	838
Viscosity @ 40°C, cSt	1.9 - 4.1	3.20	2.62	2.06	2.39	2.06	3.20	2.59	2.63	3.08	2.58
Cetane Index $_{2\ Variable}$		57	48	42	48	46	52	50	50	53	50
Cetane Index $_{4\ Variable}$	40 (min)	59	48	41	48	47	53	50	50	53	50
Cetane Number	40 (min)	54	45	40	46	47	50	46	47	50	48
Distillation, °C IBP		194	170	158	168	167	194	159	159	179	166
T_{10}		227	209	191	200	191	227	200	203	220	205
T_{20}		241	225	201	213	201	241	222	224	236	223
T_{50}		277	263	237	254	237	277	266	267	277	264
T_{90}	282 - 338	334	322	303	324	316	330	326	325	334	324
T_{95}		355	338	321	342	336	341	344	343	349	343
FBP		367	348	331	352	347	347	356	355	355	353
% FAME	5 (max)	11	3	0	0	0	0	0	0	0	0

USA – Midwest (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400351	DIES 1400352	DIES 1400353	DIES 1400355	DIES 1400356	DIES 1400357	DIES 1400358
Cloud Point, °C		-9	-17	-27	-25	-24	-25	-23	-19	-27	-20
CFPP, °C		-10	-23	-41	-21	-24	-26	-27	-25	-27	-37
LTFT, °C		-7	-17	-29	-23	-23	-23	-23	-19	-23	-29
Pour Point, °C		-15	-32	-57	-33	-33	-33	-45	-45	-33	-33
HFRR, µm	520 (max)	561	378	176	461	458	434	500	419	444	176
Wax Content @ 10°C Below Cloud, wt%		2.4	1.5	0.0	0.0	1.0	0.8	1.4	1.3	1.2	1.3
Rancimat, hrs		>40	>30	4	>40	>40	>40	>40	>40	>40	30
Sulphur, ppm	15 (max)	9	6	4	4	4	4	5	5	7	6
Density @15°C, kg/m^3		859	844	826	851	845	853	843	848	857	858
Viscosity @ 40°C, cSt	1.9 - 4.1	3.20	2.62	2.06	2.59	2.56	2.67	2.37	2.63	2.36	3.09
Cetane Index $_{2\ Variable}$		57	48	42	45	47	45	46	47	42	47
Cetane Index $_{4\ Variable}$	40 (min)	59	48	41	44	46	44	46	46	41	46
Cetane Number	40 (min)	54	45	40	41	43	40	45	43	40	41
Distillation, °C IBP		194	170	158	170	165	176	163	166	164	188
T_{10}		227	209	191	212	210	215	206	207	210	225
T_{20}		241	225	201	225	224	228	220	225	224	240
T_{50}		277	263	237	258	257	259	254	263	254	276
T_{90}	282 - 338	334	322	303	310	312	313	309	322	303	328
T_{95}		355	338	321	326	329	330	322	338	321	340
FBP		367	348	331	339	340	341	336	351	334	349
% FAME	5 (max)	11	3	0	0	0	0	0	0	0	5

USA – Midwest (continued)

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400359	DIES 1400360	DIES 1400368	DIES 1400369	DIES 1400370	DIES 1400371	DIES 1400372
Cloud Point, °C		-9	-17	-27	-23	-22	-14	-12	-19	-9	-18
CFPP, °C		-10	-23	-41	-40	-38	-22	-15	-19	-12	-18
LTFT, °C		-7	-17	-29	-19	-25	-15	-11	-17	-9	-17
Pour Point, °C		-15	-32	-57	-42	-51	-30	-18	-24	-18	-21
HFRR, µm	520 (max)	561	378	176	283	195	227	450	561	537	498
Wax Content @ 10°C Below Cloud, wt%		2.4	1.5	0.0	1.1	1.3	1.8	1.6	2.4	1.6	2.2
Rancimat, hrs		>40	>30	4	23	>40	35	32	29	>40	27
Sulphur, ppm	15 (max)	9	6	4	6	6	7	5	6	7	5
Density @15°C, kg/m^3		859	844	826	854	857	839	834	828	837	829
Viscosity @ 40°C, cSt	1.9 - 4.1	3.20	2.62	2.06	2.80	3.09	2.47	2.34	2.26	2.59	2.27
Cetane Index $_{2\ Variable}$		57	48	42	46	47	50	50	51	51	51
Cetane Index $_{4\ Variable}$	40 (min)	59	48	41	45	46	49	50	52	51	51
Cetane Number	40 (min)	54	45	40	43	44	47	46	47	46	48
Distillation, °C IBP		194	170	158	181	180	172	165	169	167	166
T_{10}		227	209	191	214	224	203	201	203	201	204
T_{20}		241	225	201	230	240	217	215	216	219	216
T_{50}		277	263	237	269	277	261	254	252	265	252
T_{90}	282 - 338	334	322	303	326	327	326	323	307	334	308
T_{95}		355	338	321	341	340	340	341	321	355	323
FBP		367	348	331	350	348	350	350	331	367	335
% FAME	5 (max)	11	3	0	4	5	5	0	0	0	0

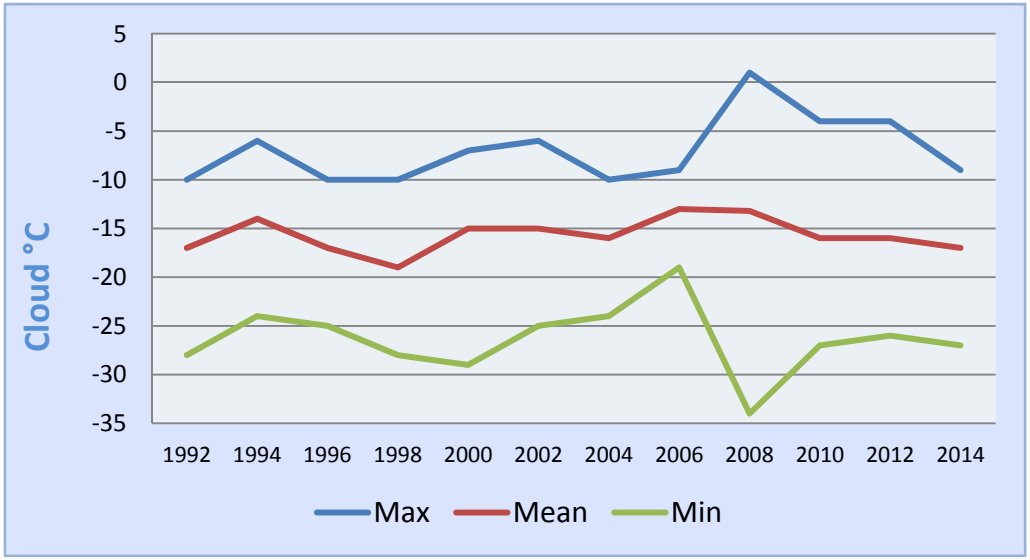
USA – Midwest (continued)

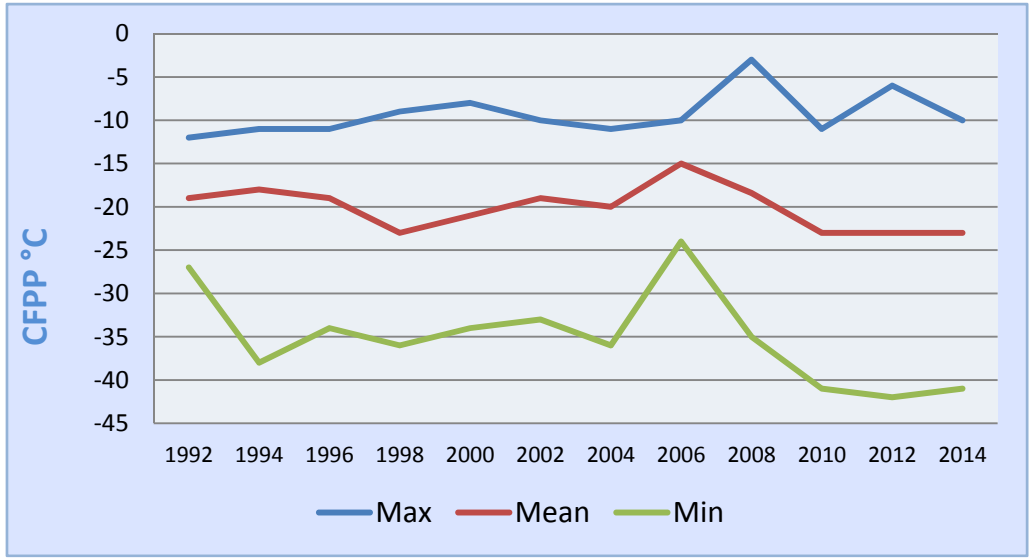
National standards and physical inspection data

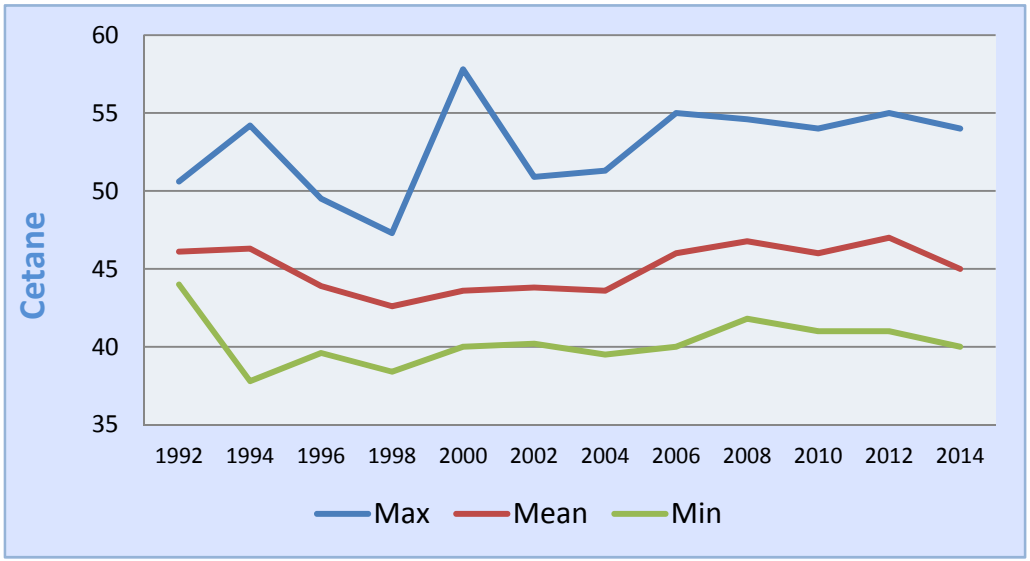
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400373	DIES 1400374	DIES 1400375	DIES 1400376
Cloud Point, °C		-9	-17	-27	-14	-10	-13	-15
CFPP, °C		-10	-23	-41	-17	-14	-13	-15
LTFT, °C		-7	-17	-29	-11	-9	-13	-11
Pour Point, °C		-15	-32	-57	-21	-21	-21	-24
HFRR, µm	520 (max)	561	378	176	214	327	558	223
Wax Content @ 10°C Below Cloud, wt%		2.4	1.5	0.0	1.3	1.7	1.6	1.3
Rancimat, hrs		>40	>30	4	30	20	>40	>40
Sulphur, ppm	15 (max)	9	6	4	5	7	4	6
Density @15°C, kg/m^3		859	844	826	856	842	837	853
Viscosity @ 40°C, cSt	1.9 - 4.1	3.20	2.62	2.06	3.17	2.26	2.29	2.71
Cetane Index $_{2\ Variable}$		57	48	42	47	46	48	47
Cetane Index $_{4\ Variable}$	40 (min)	59	48	41	47	45	48	46
Cetane Number	40 (min)	54	45	40	48	45	45	42
Distillation, °C IBP		194	170	158	175	158	167	160
T_{10}		227	209	191	226	192	202	209
T_{20}		241	225	201	241	206	217	228
T_{50}		277	263	237	273	249	251	270
T_{90}	282 - 338	334	322	303	330	330	320	330
T_{95}		355	338	321	344	343	339	344
FBP		367	348	331	352	353	350	354
% FAME	5 (max)	11	3	0	5	5	0	5

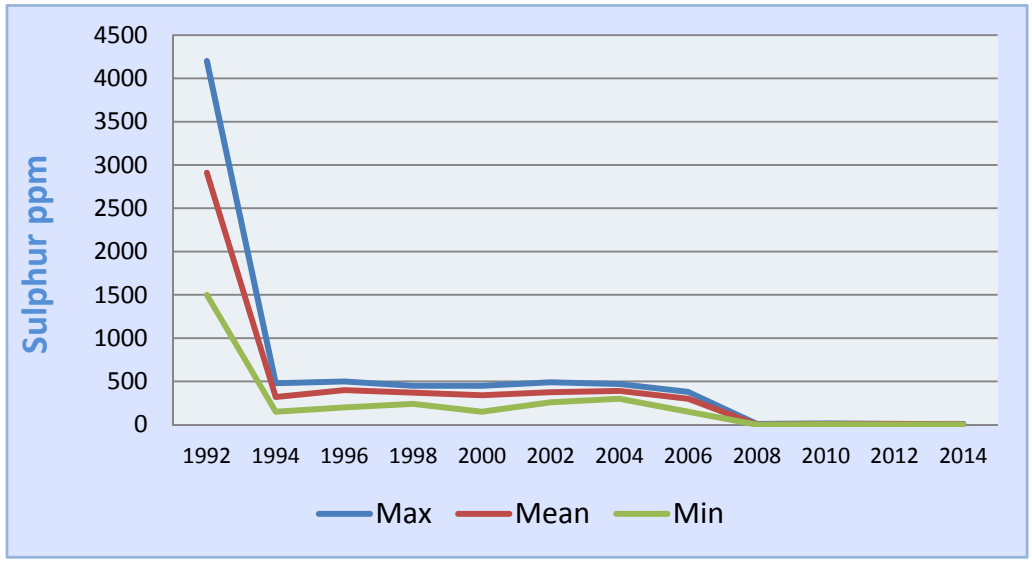
Infineum

USA – Midwest









USA – West Coast

National standards and physical inspection data

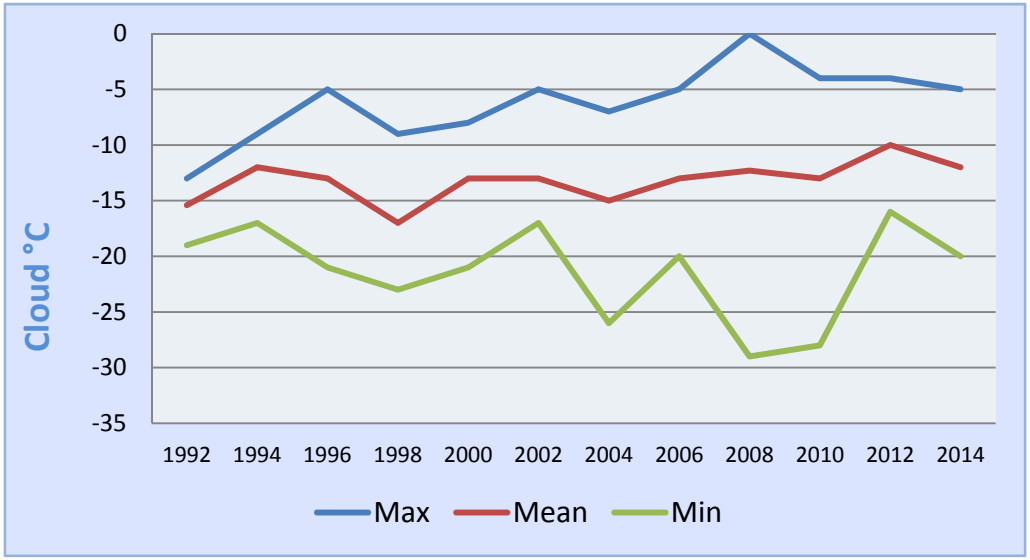
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400286	DIES 1400287	DIES 1400289	DIES 1400290	DIES 1400291	DIES 1400293	DIES 1400294
Cloud Point, °C		-5	-12	-20	-5	-16	-7	-10	-11	-6	-9
CFPP, °C		-6	-13	-20	-6	-16	-8	-10	-15	-10	-14
LTFT, °C		-3	-10	-17	-5	-15	-5	-9	-9	-3	-7
Pour Point, °C		-9	-19	-33	-12	-21	-9	-12	-15	-18	-15
HFRR, µm	520 (max)	554	456	340	547	399	406	433	458	554	522
Wax Content @ 10°C Below Cloud, wt%		3.8	1.8	0.6	1.8	1.9	3.8	3.1	0.9	0.6	1.0
Rancimat, hrs		>40	>35	29	>40	>40	>40	>40	>40	>40	29
Sulphur, ppm	15 (max)	8	6	4	8	6	7	6	4	4	<3
Density @15°C, kg/m^3		847	836	826	835	844	834	831	828	826	835
Viscosity @ 40°C, cSt	1.9 - 4.1	3.29	2.70	2.31	2.58	2.97	3.29	2.81	2.32	2.31	3.13
Cetane Index $_{2\ Variable}$		57	51	46	52	50	57	55	51	50	53
Cetane Index $_{4\ Variable}$	40 (min)	58	51	45	51	50	58	56	51	51	54
Cetane Number	40 (min)	54	50	41	54	50	53	54	52	52	51
Distillation, °C IBP		180	170	158	163	171	171	167	172	166	177
T_{10}		226	209	195	200	216	226	210	197	195	223
T_{20}		247	225	208	217	233	247	230	210	208	237
T_{50}		289	265	246	265	273	289	274	250	246	271
T_{90}	282 - 338	336	327	318	336	323	335	329	324	326	331
T_{95}		353	344	334	353	336	347	342	344	348	351
FBP		365	355	344	361	344	355	350	358	365	362
% FAME	5 (max)	2	0	0	0	2	0	0	0	0	0

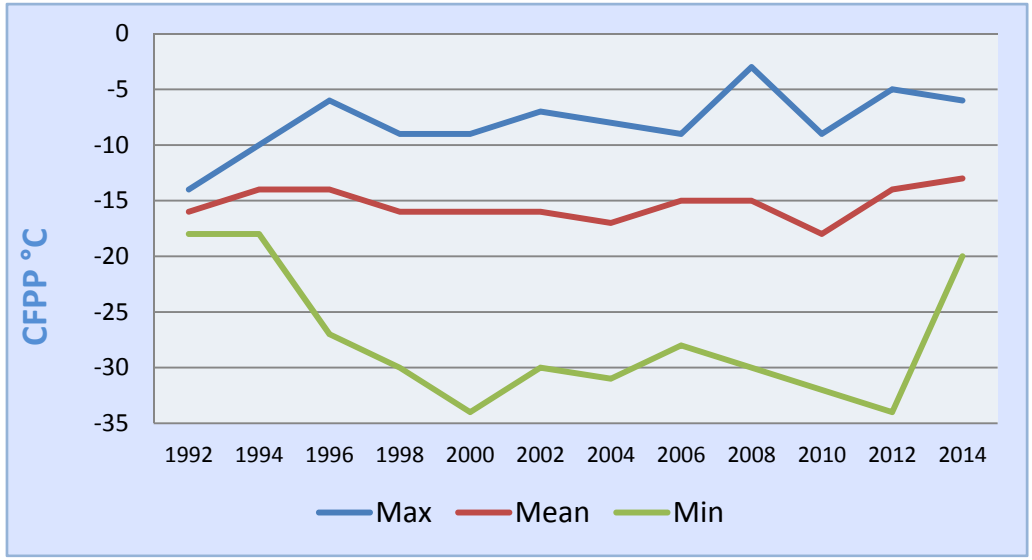
USA – West Coast (continued)

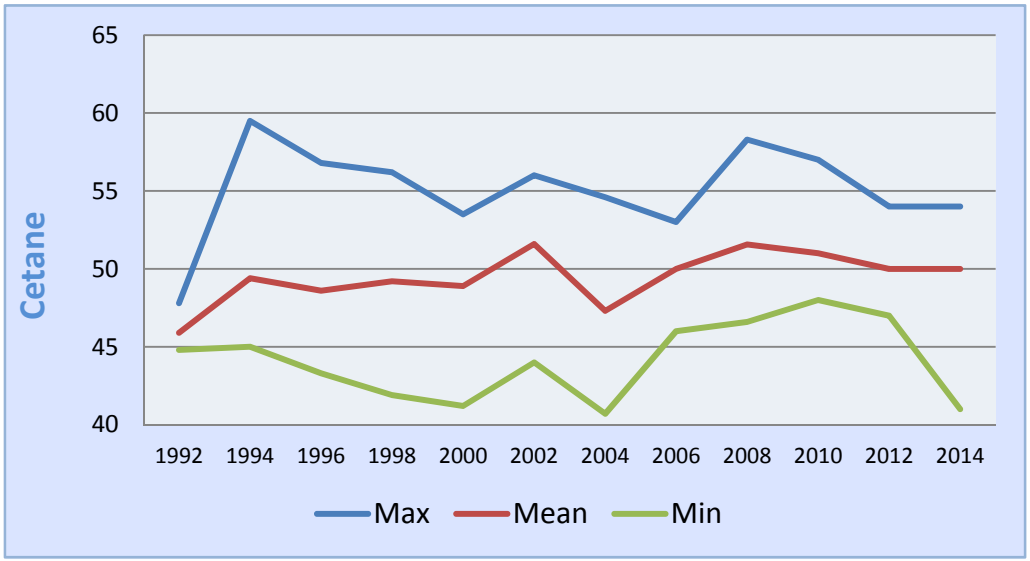
National standards and physical inspection data

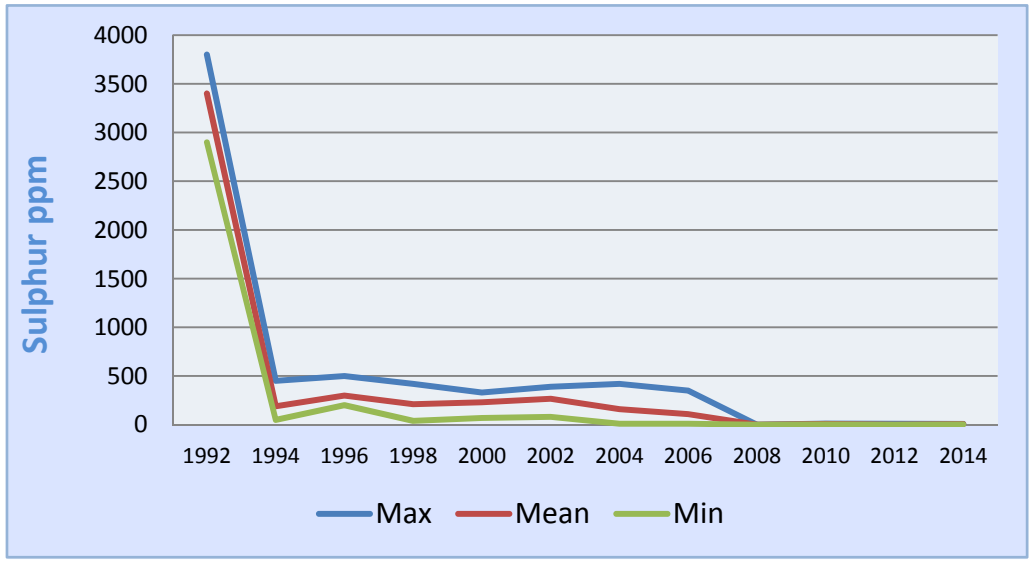
	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1400295	DIES 1400296	DIES 1400367
Cloud Point, °C		-5	-12	-20	-15	-17	-20
CFPP, °C		-6	-13	-20	-19	-17	-20
LTFT, °C		-3	-10	-17	-13	-17	-17
Pour Point, °C		-9	-19	-33	-33	-24	-30
HFRR, µm	520 (max)	554	456	340	340	470	426
Wax Content @ 10°C Below Cloud, wt%		3.8	1.8	0.6	1.8	2.0	1.2
Rancimat, hrs		>40	>35	29	>40	>40	>40
Sulphur, ppm	15 (max)	8	6	4	7	6	6
Density @15°C, kg/m^3		847	836	826	847	837	847
Viscosity @ 40°C, cSt	1.9 - 4.1	3.29	2.70	2.31	2.79	2.46	2.38
Cetane Index $_{2\ Variable}$		57	51	46	48	50	46
Cetane Index $_{4\ Variable}$	40 (min)	58	51	45	48	50	45
Cetane Number	40 (min)	54	50	41	44	45	41
Distillation, °C IBP		180	170	158	175	180	158
T_{10}		226	209	195	214	209	200
T_{20}		247	225	208	229	223	215
T_{50}		289	265	246	269	259	257
T_{90}	282 - 338	336	327	318	326	318	325
T_{95}		353	344	334	341	334	343
FBP		365	355	344	350	349	356
% FAME	5 (max)	2	0	0	1	1	0

USA – West Coast









Worldwide Survey – Middle East and Africa

153 Bahrain
155 Israel
157 Kuwait
159 Oman
161 Qatar
163 Saudi Arabia
165 United Arab Emirates
167 South Africa

Bahrain

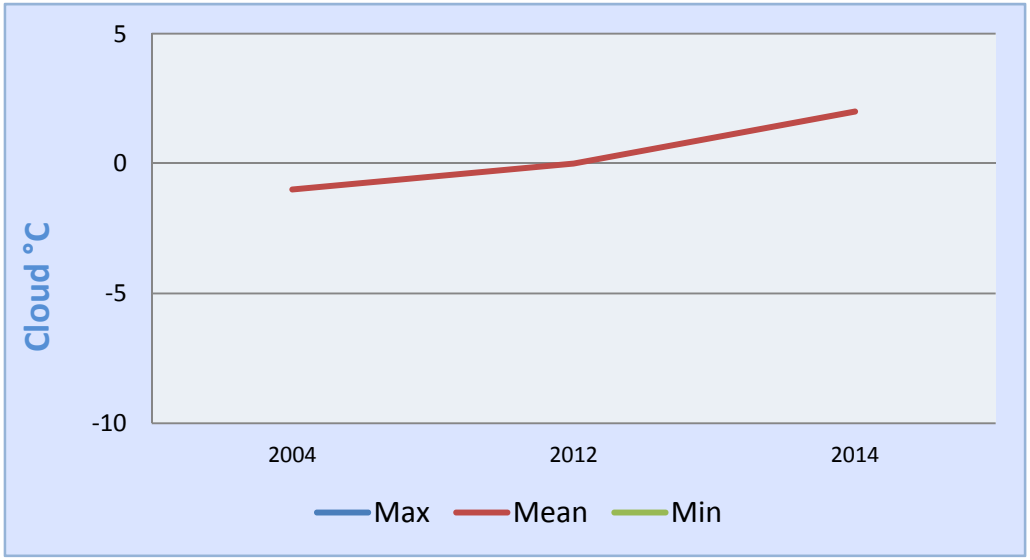
Middle East and Africa

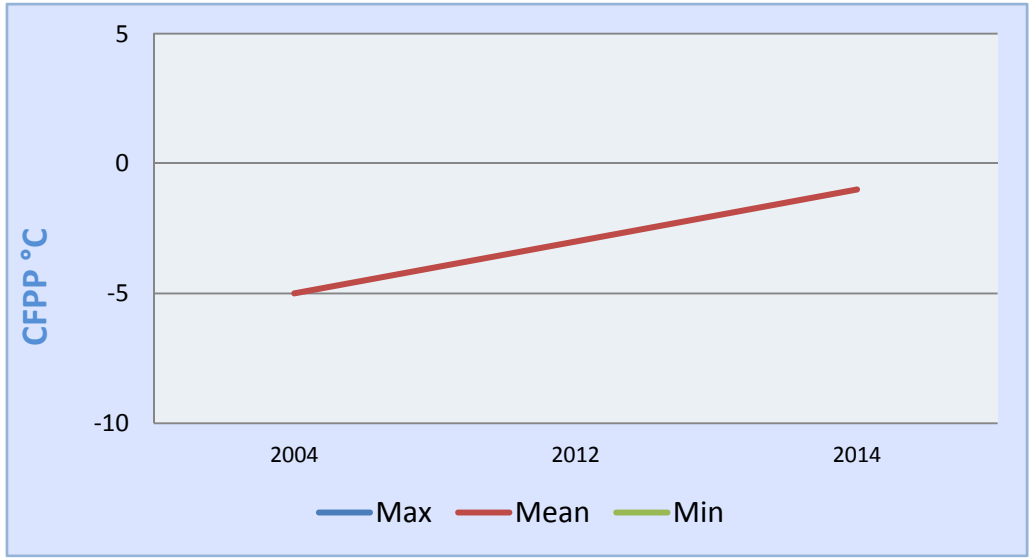
National standards and physical inspection data

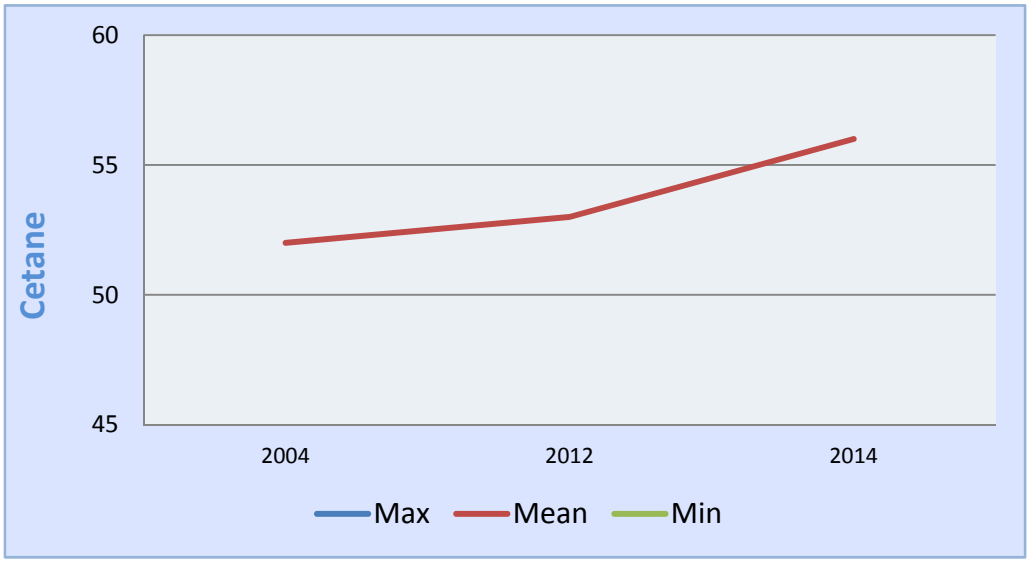
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400547
Cloud Point, °C			2		2
CFPP, °C	0 (max)		-1		-1
Pour Point, °C			-3		-3
HFRR, µm	460 (max)		441		441
Wax Content @ 10°C Below Cloud, wt%			3.1		3.1
Rancimat, hrs			>40		>40
Sulphur, ppm	500 (max)		468		468
Density @15°C, kg/m^3	820 - 845		840		840
Viscosity @ 40°C, cSt	2.0 - 4.5		3.98		3.98
Cetane Index $_{2\ Variable}$	46 (min)		57		57
Cetane Index $_{4\ Variable}$			59		59
Cetane Number			56		56
Distillation, °C IBP			139		139
T_{10}			241		241
T_{20}			265		265
T_{50}			301		301
T_{90}	357 (max)		352		352
T_{95}			364		364
FBP	385 (max)		369		369
% FAME			0		0

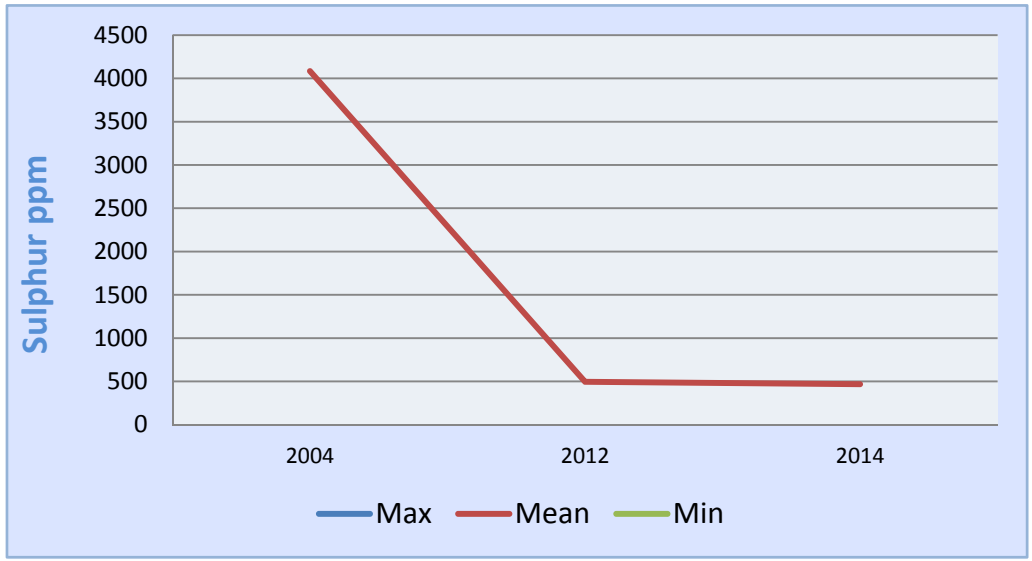
Bahrain

Middle East and Africa









Israel

Middle East and Africa

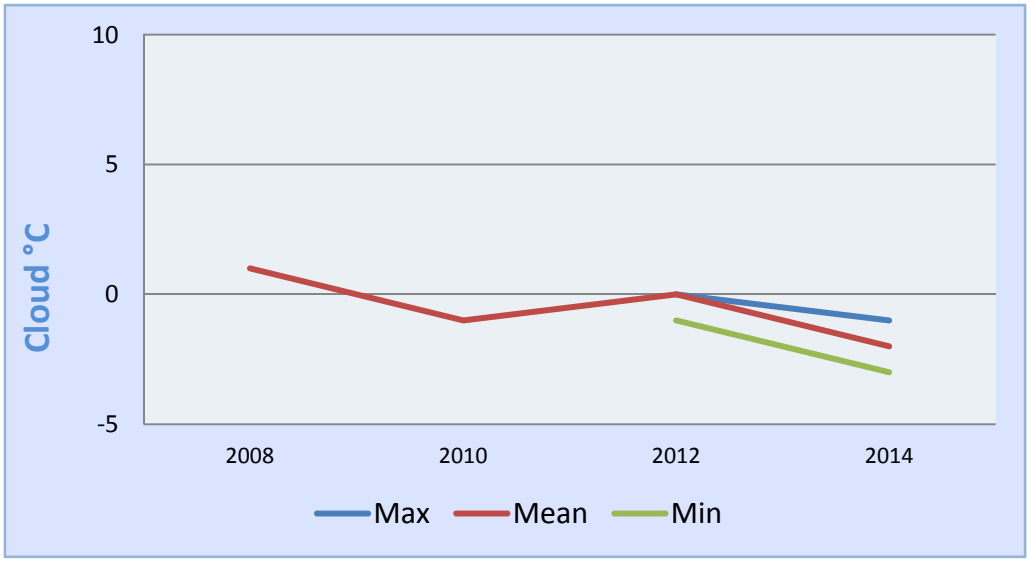
National standards and physical inspection data

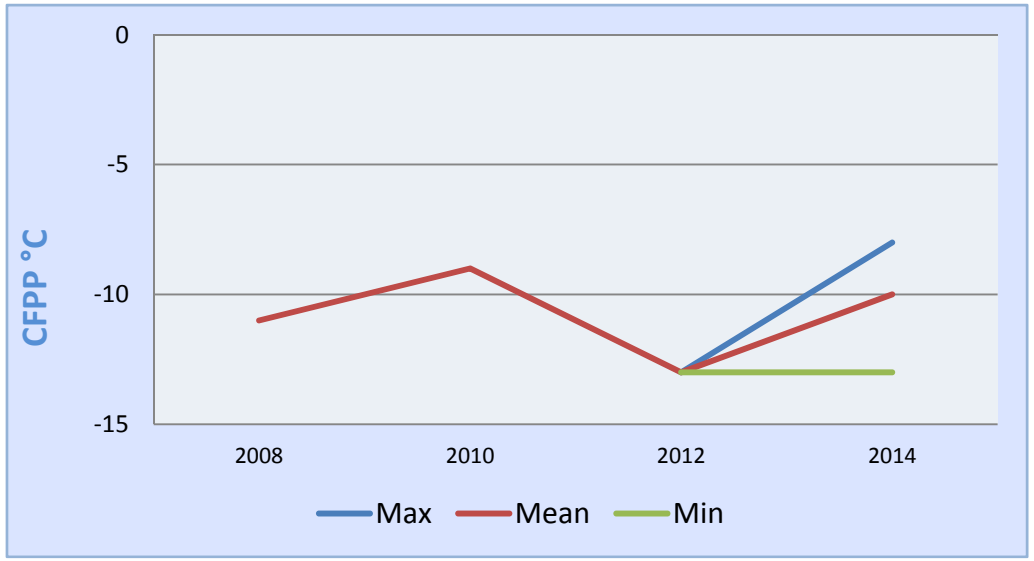
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400548	DIES 1400549
Cloud Point, °C		-1	-2	-3	-1	-3
CFPP, °C	-5 (max)	-8	-10	-13	-13	-8
Pour Point, °C		-21	-23	-24	-21	-24
HFRR, µm	460 (max)	424	412	399	424	399
Wax Content @ 10°C Below Cloud, wt%		2.8	2.4	2.0	2.8	2.0
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	10 (max)	6	<5	<3	6	<3
Density @15°C, kg/m^3	820 - 845	838	830	823	838	823
Viscosity @ 40°C, cSt	2.0 - 4.5	3.48	3.28	3.09	3.48	3.09
Cetane Index 2 Variable		60	57	55	55	60
Cetane Index 4 Variable	46 (min)	60	58	56	56	60
Cetane Number	51 (min)	56	55	55	55	56
Distillation, °C IBP		192	186	181	192	181
T_{10}		227	217	208	227	208
T_{20}		246	236	227	246	227
T_{50}		286	284	282	286	282
T_{90}		345	344	343	343	345
T_{95}	360 (max)	357	357	357	357	357
FBP		364	363	363	364	363
% FAME	5 (max)	0	0	0	0	0

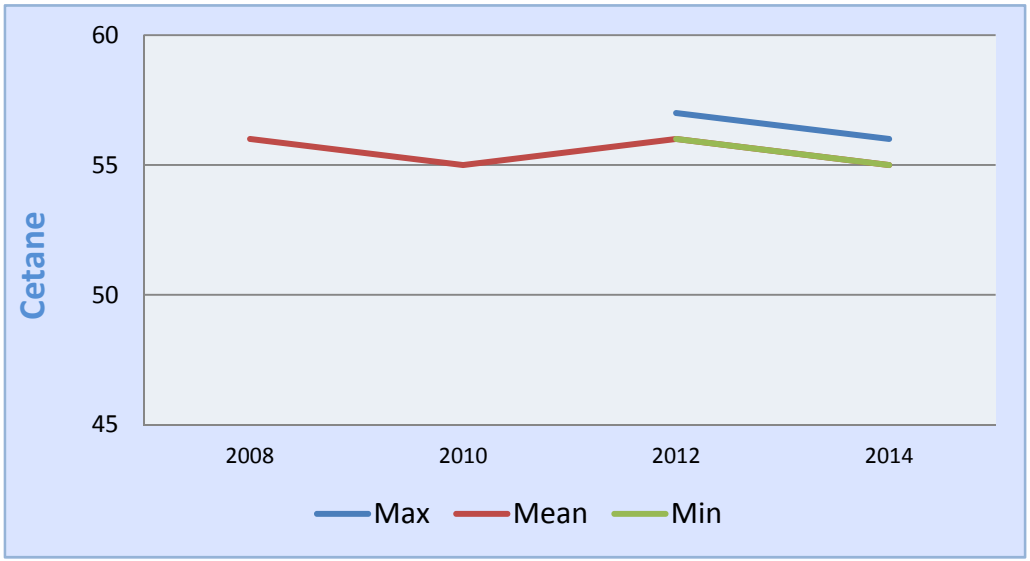
Infineum

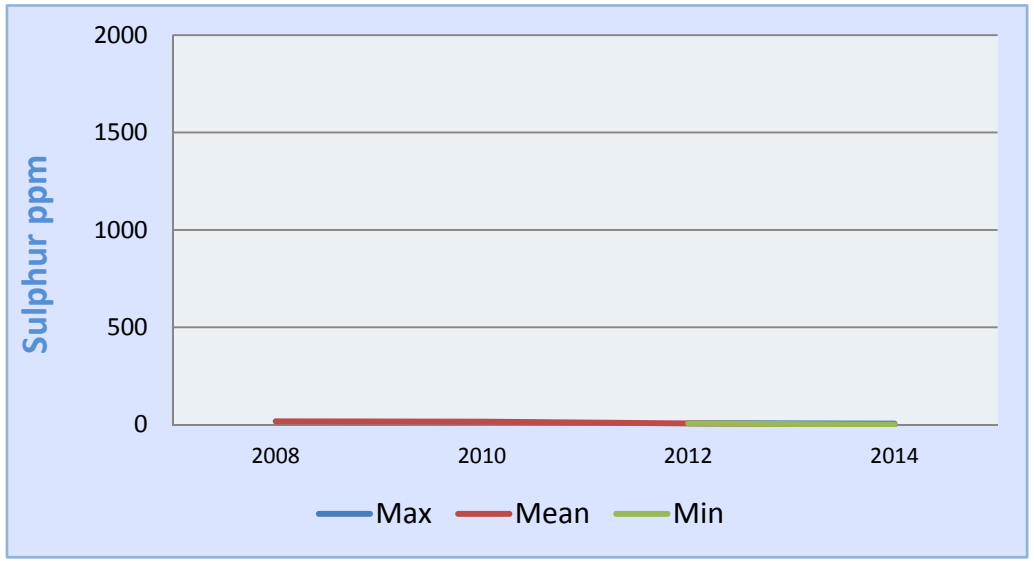
Israel

Middle East and Africa









Kuwait

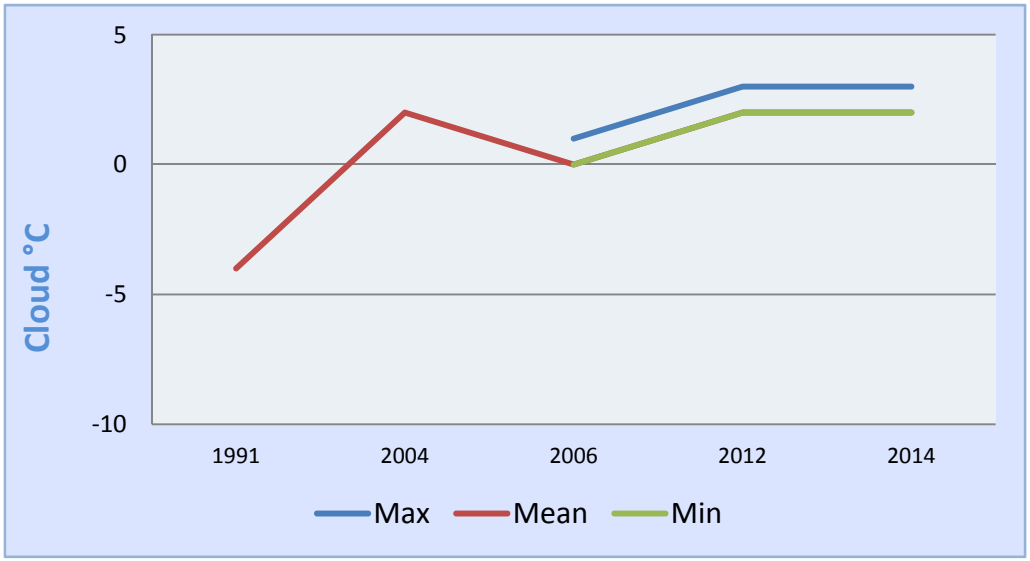
Middle East and Africa

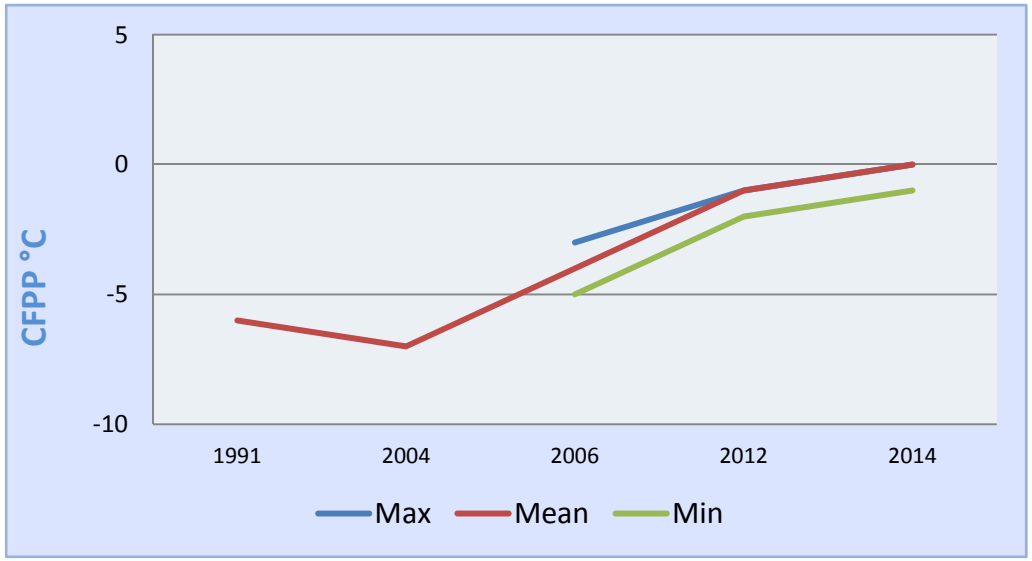
National standards and physical inspection data

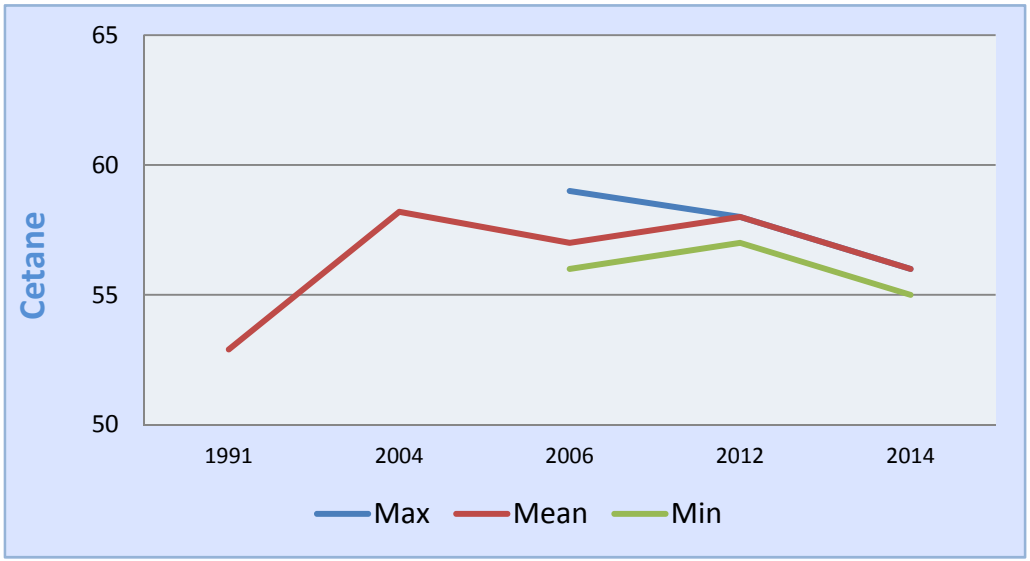
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400550	DIES 1400551
Cloud Point, °C	4 (max)	3	2	2	3	2
CFPP, °C		0	0	-1	0	-1
Pour Point, °C	0 (max)	-3	-3	-3	-3	-3
HFRR, µm		464	456	447	447	464
Wax Content @ 10°C Below Cloud, wt%		3.6	3.4	3.2	3.6	3.2
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	2000 (max)	1360	1350	1340	1360	1340
Density @15°C, kg/m^3	820 - 870	842	842	841	842	841
Viscosity @ 40°C, cSt	1.6 - 5.5	4.72	4.56	4.40	4.72	4.40
Cetane Index 2 Variable		57	57	57	57	57
Cetane Index 4 Variable	48 (min)	62	61	60	62	60
Cetane Number		56	56	55	56	55
Distillation, °C IBP		203	199	195	203	195
T_{10}		259	255	252	259	252
T_{20}		277	274	270	277	270
T_{50}		310	308	305	310	305
T_{90}	357 (max)	356	356	355	356	355
T_{95}		371	370	369	371	369
FBP		376	376	376	376	376
% FAME		1	0	0	0	1

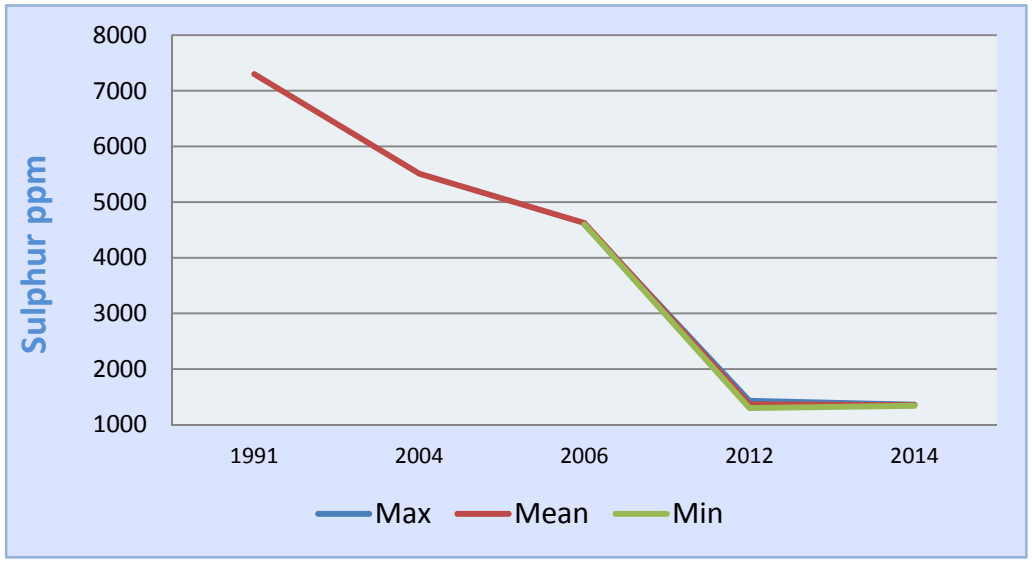
Kuwait

Middle East and Africa









Oman

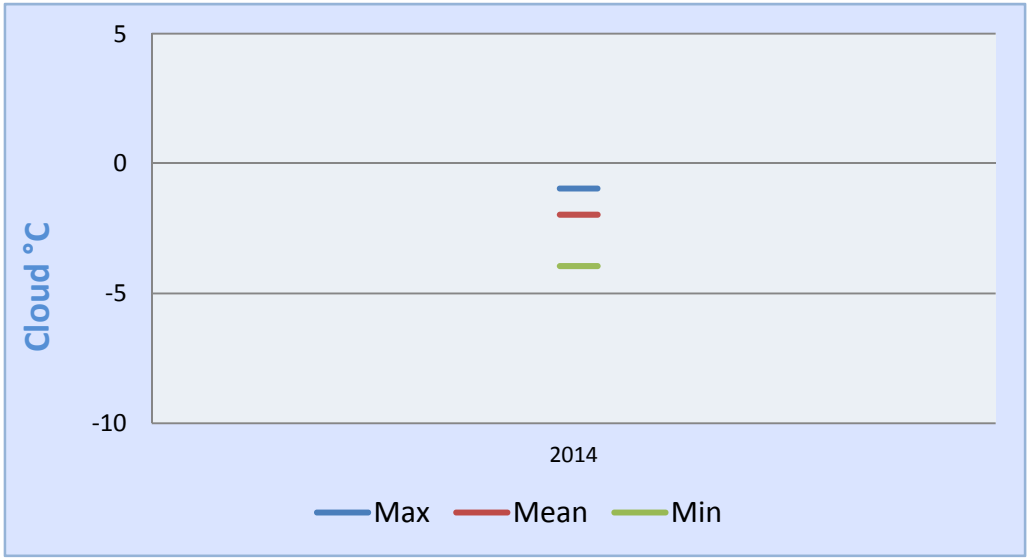
Middle East and Africa

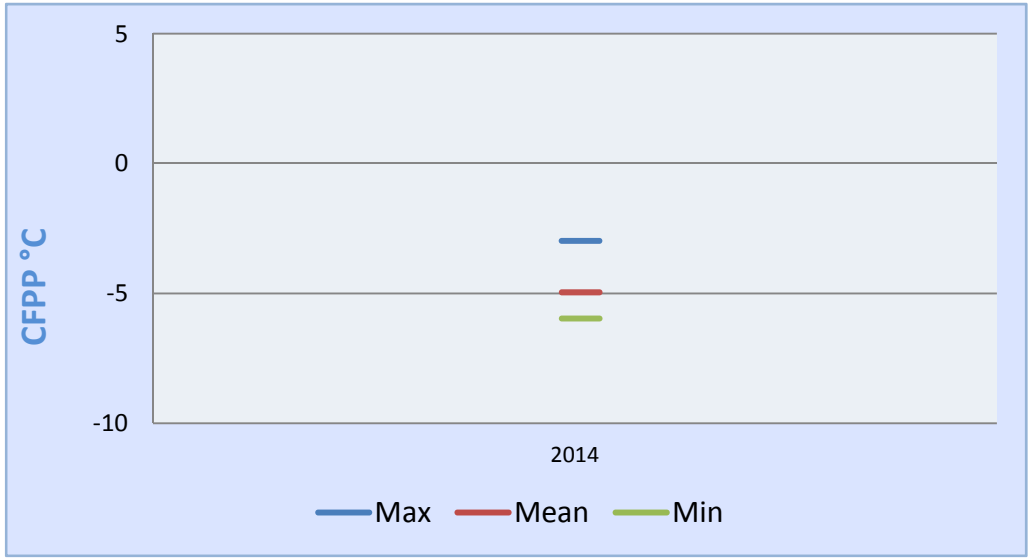
National standards and physical inspection data

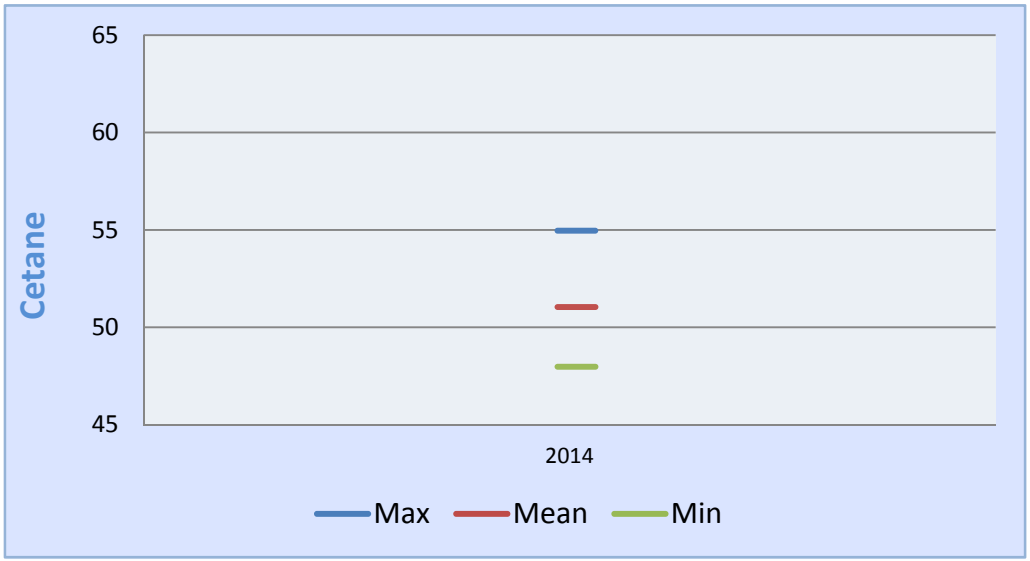
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400559	DIES 1400581
Cloud Point, °C		-1	-2	-4	-1	-4
CFPP, °C		-3	-5	-6	-3	-6
Pour Point, °C	0 (max)	-6	-9	-12	-6	-12
HFRR, µm	460 (max)	411	367	323	411	323
Wax Content @ 10°C Below Cloud, wt%		1.6	1.5	1.4	1.4	1.6
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	500 (max)	6070	3122	173	6070	173
Density @15°C, kg/m^3	820 - 870	848	846	845	845	848
Viscosity @ 40°C, cSt	1.6 - 5.3	4.46	3.92	3.38	4.46	3.38
Cetane Index 2 Variable	48 (min)	55	53	50	55	50
Cetane Index 4 Variable		58	54	51	58	51
Cetane Number		55	51	48	55	48
Distillation, °C IBP		182	179	176	182	176
T_{10}		250	239	228	250	228
T_{20}		266	255	244	266	244
T_{50}		299	289	280	299	280
T_{90}		367	357	348	367	348
T_{95}		386	376	366	386	366
FBP		388	381	373	388	373
% FAME		0	0	0	0	0

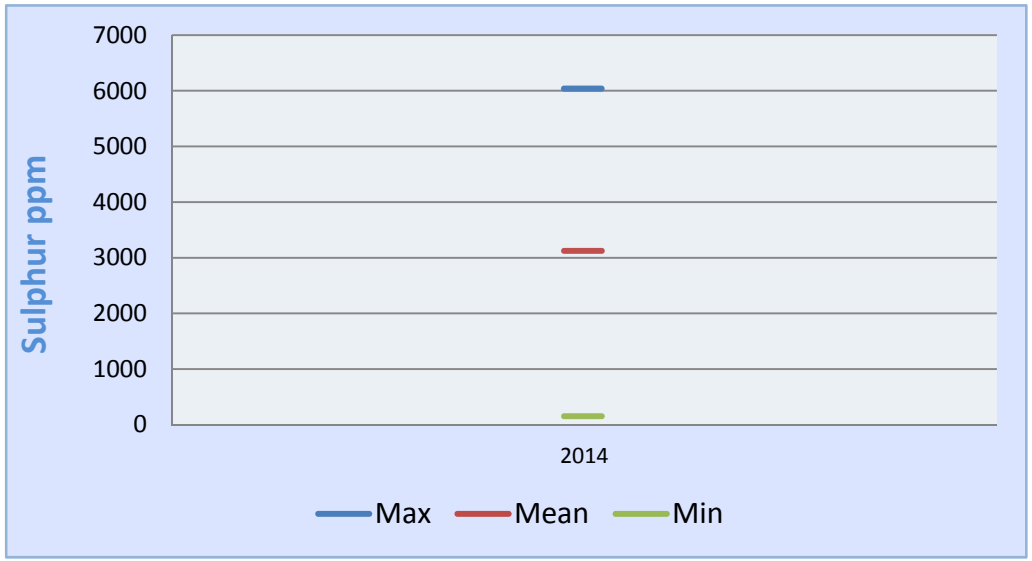
Oman

Middle East and Africa









Qatar

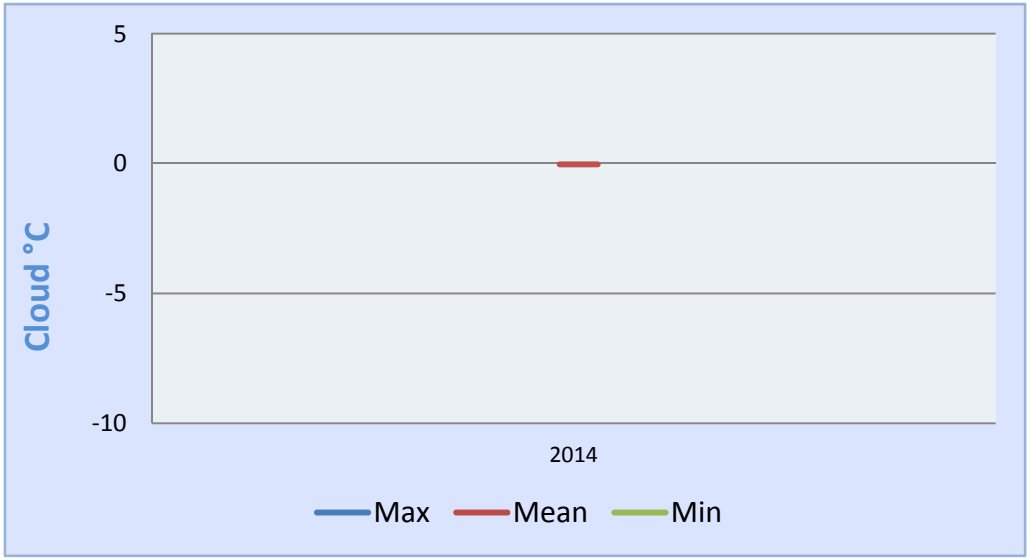
Middle East and Africa

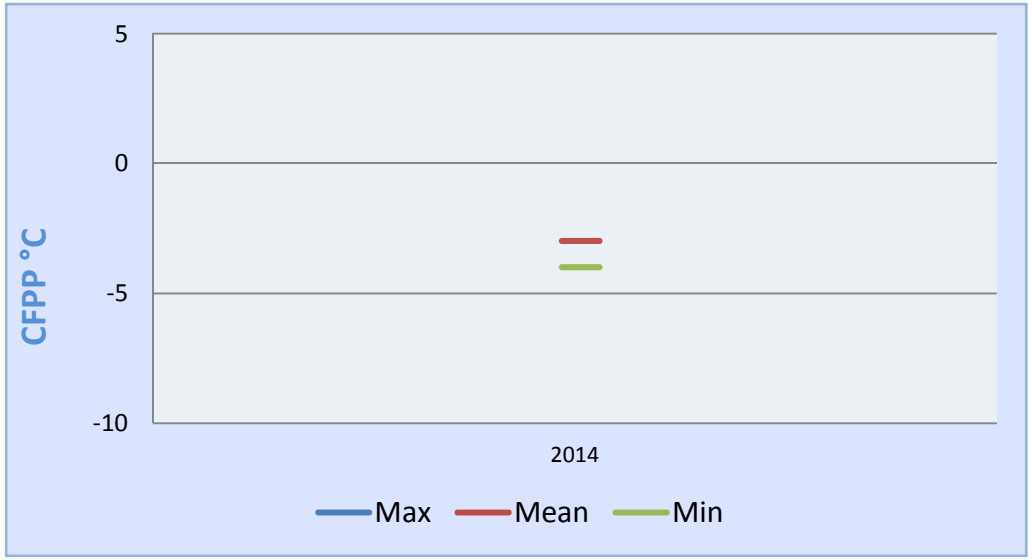
National standards and physical inspection data

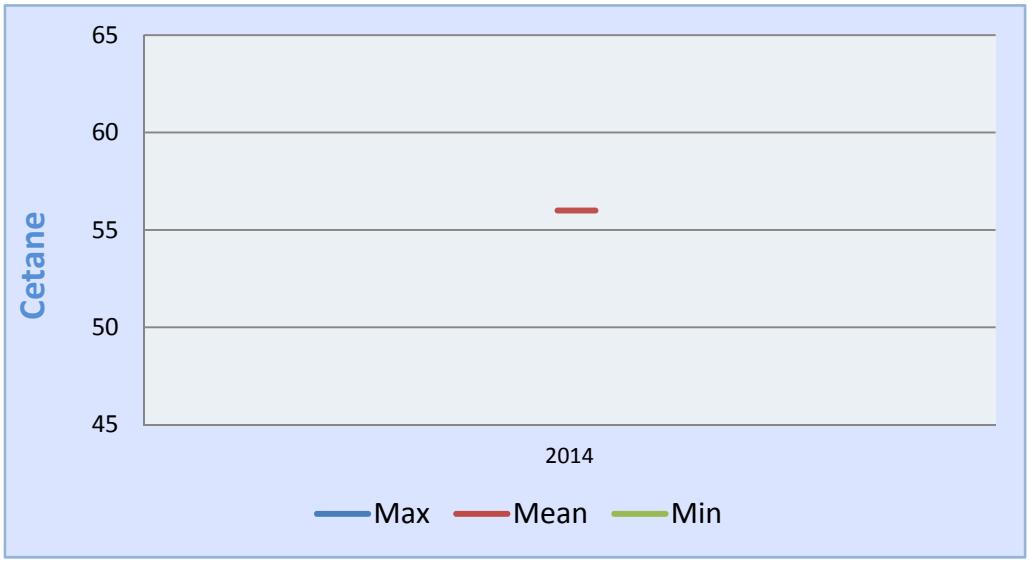
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400555	DIES 1400558
Cloud Point, °C	0 (max)	0	0	0	0	0
CFPP, °C		-3	-3	-4	-4	-3
Pour Point, °C	-3 (max)	-6	-6	-6	-6	-6
HFRR, µm		524	518	511	524	511
Wax Content @ 10°C Below Cloud, wt%		2.2	2.2	2.2	2.2	2.2
Rancimat, hrs		>40	>40	>40	>40	>40
Sulphur, ppm	500 (max)	1110	1090	1070	1070	1110
Density @15°C, kg/m^3	820 - 850	838	838	837	838	837
Viscosity @ 40°C, cSt	1.6 – 6.0	3.35	3.34	3.33	3.35	3.33
Cetane Index 2 Variable	48 (min)	54	54	54	54	54
Cetane Index 4 Variable		57	57	57	57	57
Cetane Number		56	56	56	56	56
Distillation, °C IBP		196	194	192	196	192
T_{10}		241	240	239	241	239
T_{20}		254	253	253	254	253
T_{50}		280	280	280	280	280
T_{90}	338 (max)	346	345	344	346	344
T_{95}		366	365	365	366	365
FBP		377	375	374	377	374
% FAME		0	0	0	0	0

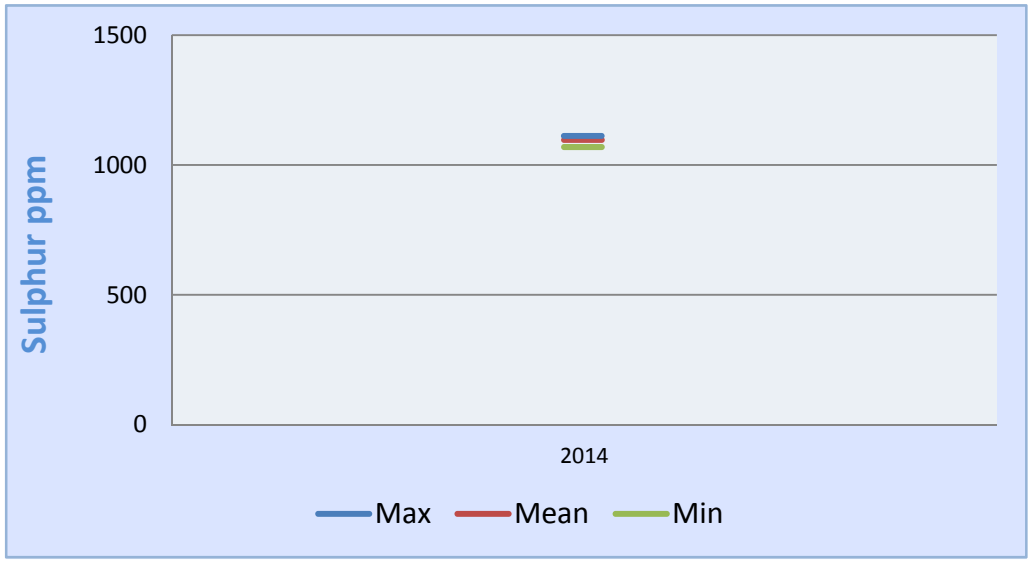
Qatar

Middle East and Africa









Saudi Arabia

Middle East and Africa

National standards and physical inspection data

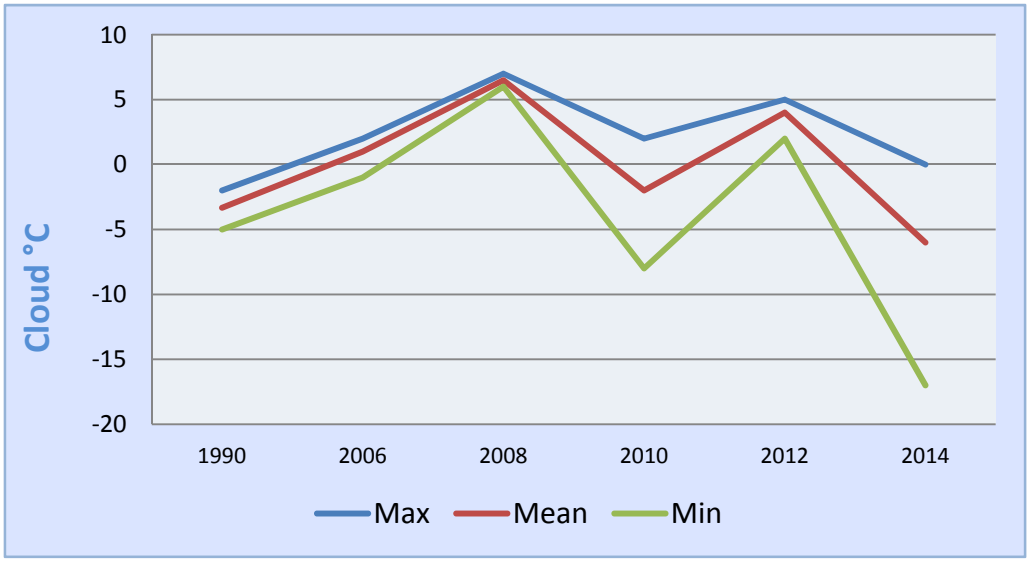
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400280	DIES 1400281	DIES 1400282	DIES 1400283
Cloud Point, °C	2 (max) *	0	-6	-17	0	-3	-17	-4
CFPP, °C	-4 (max) *	-3	-9	-16	-3	-13	-16	-6
Pour Point, °C		-6	-12	-18	-6	-18	-18	-6
HFRR, µm		605	536	411	605	411	596	533
Wax Content @ 10°C Below Cloud, wt%		3.6	2.5	1.5	1.5	2.0	3.6	2.7
Rancimat, hrs		>40	>40	>40	>40	>40	>40	>40
Sulphur, ppm	500 (max)	387	347	278	363	278	361	387
Density @15°C, kg/m^3		853	845	842	853	844	842	842
Viscosity @ 40°C, cSt	1.9 - 4.1	3.11	2.86	2.48	2.75	3.11	2.48	3.11
Cetane Index $_{2\ Variable}$	45 (min)	53	50	47	47	52	50	53
Cetane Index $_{4\ Variable}$		54	50	46	46	51	50	54
Cetane Number		53	50	47	53	50	47	51
Distillation, °C IBP		184	177	170	176	170	180	184
T_{10}		226	216	209	209	216	215	226
T_{20}		243	232	222	222	235	230	243
T_{50}		282	274	266	268	280	266	282
T_{90}		353	338	314	353	345	314	341
T_{95}		374	355	326	374	361	326	357
FBP		382	364	334	382	371	334	367
% FAME		0	0	0	0	0	0	0

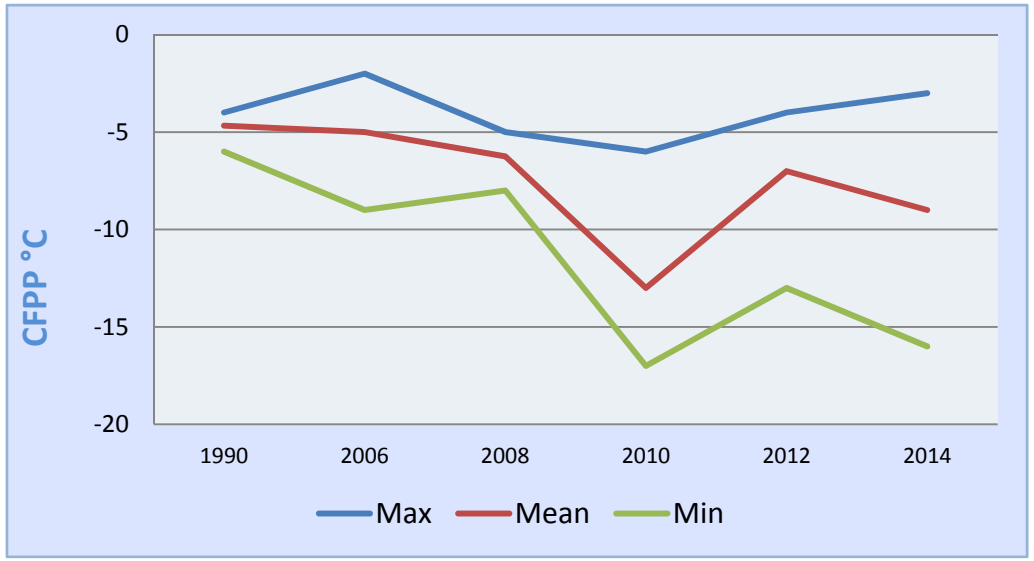
Specification shown for 0.05% Sulphur grade

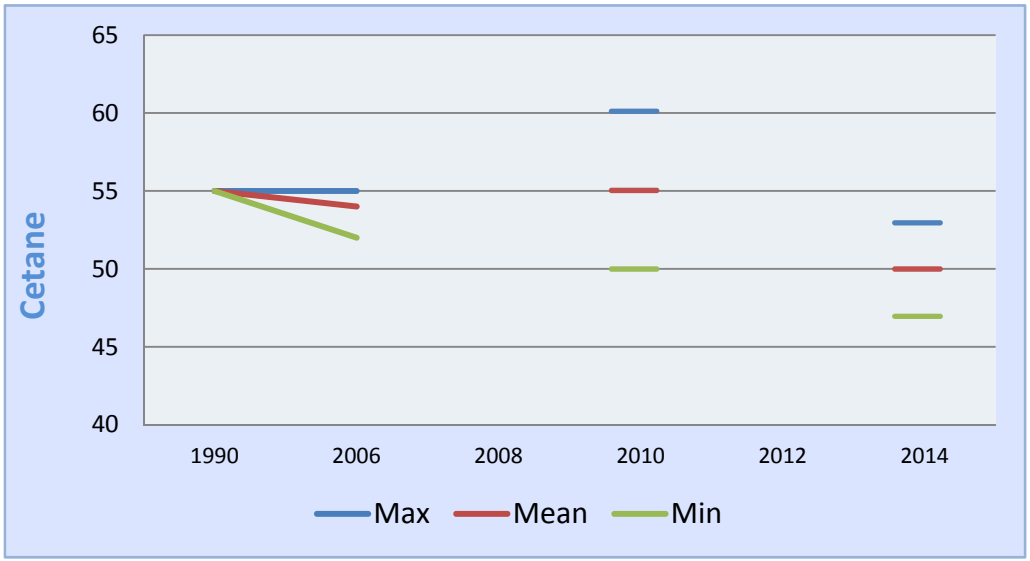
* Cloud point and CFPP are alternative winter specifications. When CFPP is used the difference between cloud point and CFPP must not exceed 10°C

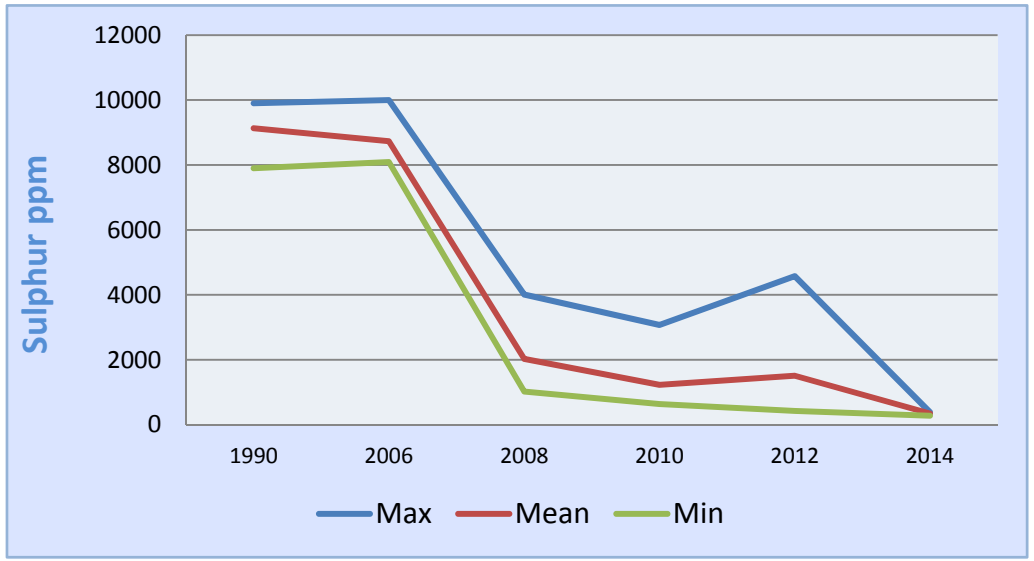
Saudi Arabia

Middle East and Africa









United Arab Emirates

Middle East and Africa

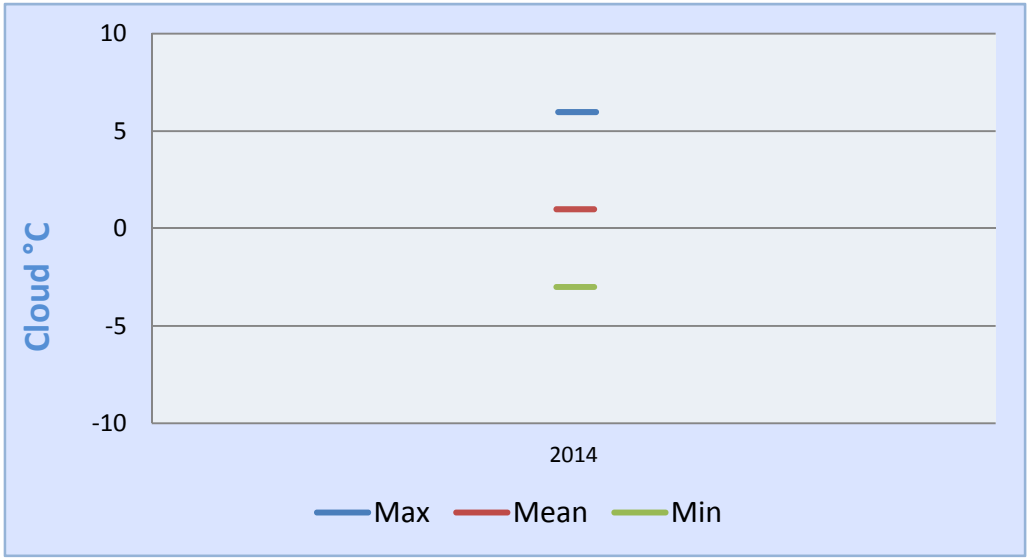
National standards and physical inspection data

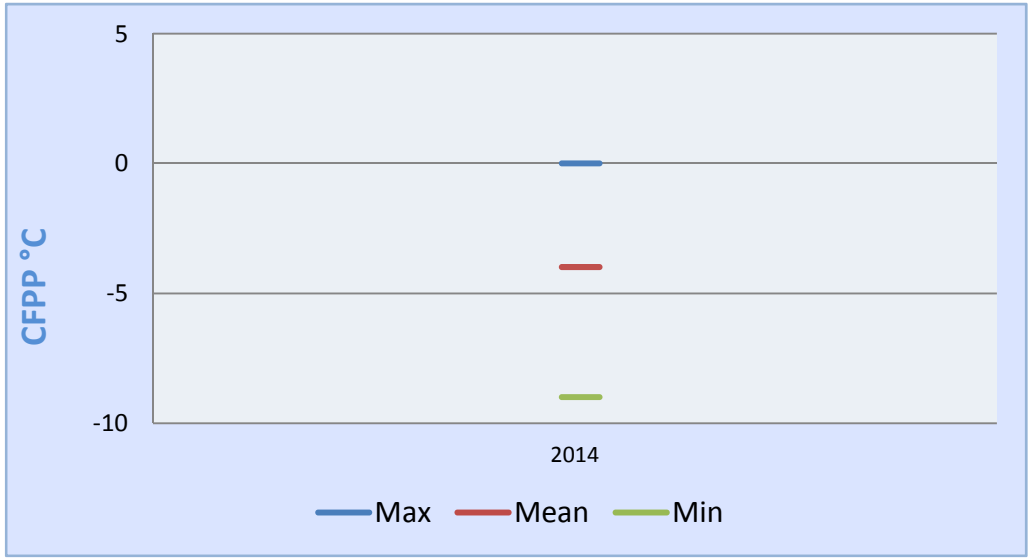
	National Standard	Maximum Observed	Mean	Minimum Obseved	DIES 1400552	DIES 1400553	DIES 1400554
Cloud Point, °C	15 (max)	6	1	-3	6	0	-3
CFPP, °C		0	-4	-9	0	-3	-9
Pour Point, °C		-1	-4	-7	-1	-5	-7
HFRR, µm	460 (max)	436	416	397	415	436	397
Wax Content @ 10°C Below Cloud, wt%		3.7	2.8	2.1	3.7	2.7	2.1
Rancimat, hrs		>40	>40	>40	>40	>40	>40
Sulphur, ppm	500 (max)	486	435	405	486	413	405
Density @15°C, kg/m^3	820 - 845	837	831	828	837	828	828
Viscosity @ 40°C, cSt	2.0 - 4.5	4.10	3.73	3.50	4.10	3.60	3.50
Cetane Index 2 Variable	52 (min)	59	59	57	57	59	59
Cetane Index 4 Variable		63	62	62	62	63	62
Cetane Number		59	58	58	58	59	58
Distillation, °C IBP		201	173	157	201	157	162
T_{10}		256	244	235	256	241	235
T_{20}		269	262	257	269	260	257
T_{50}		297	293	290	297	292	290
T_{90}	357 (max)	354	350	346	354	349	346
T_{95}		370	366	361	370	367	361
FBP		377	374	370	377	374	370
% FAME		0	0	0	0	0	0

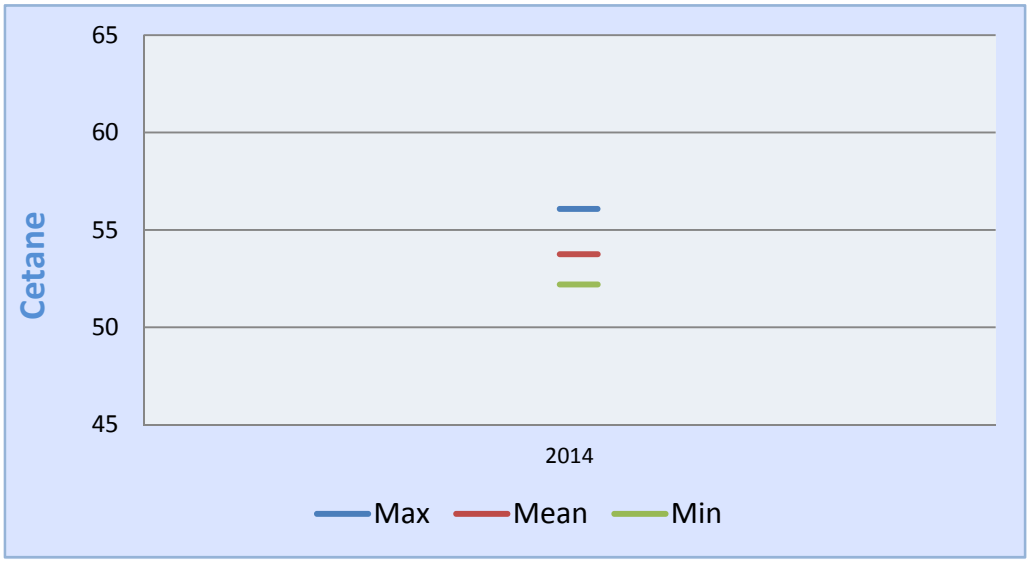
Infineum

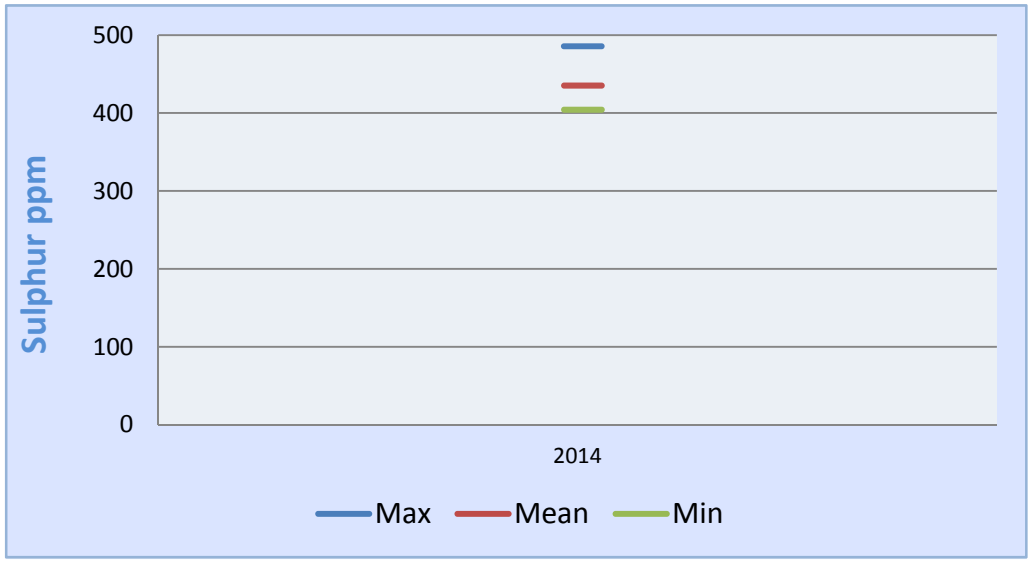
United Arab Emirates

Middle East and Africa









South Africa

Middle East and Africa

National standards and physical inspection data

	National Standard	Maximum Observed	Mean	Minimum Observed	DIES 1305811	DIES 1305812	DIES 1305813	DIES 1305815	DIES 1305816	DIES 1305839
Cloud Point, °C		0	-8	-22	0	-2	-22	-5	-16	-1
CFPP, °C	-4 (max)	-6	-12	-26	-6	-10	-26	-10	-18	-6
Pour Point, °C		-9	-18	-21	-21	-9	-21	-15	-18	-21
HFRR, µm	460 (max)	444	390	320	444	391	320	353	434	400
Wax Content @ 10°C Below Cloud, wt%		8.3	2.5	0.3	0.3	1.2	8.3	1.1	3.7	0.4
Rancimat, hrs		>40	>35	30	>40	>40	30	>40	>40	>40
Sulphur, ppm	500 (max)	56	26	>3	31	18	19	56	8	>3
Density @15°C, kg/m^3	800 (min)	842	833	822	832	842	840	838	822	825
Viscosity @ 40°C, cSt	2.2 - 5.3	2.88	2.67	2.51	2.70	2.88	2.56	2.77	2.51	2.61
Cetane Index 2 Variable		59	52	50	50	50	50	51	59	50
Cetane Index 4 Variable		62	52	50	52	50	51	50	62	50
Cetane Number	45 (min)	63	54	49	53	56	49	53	63	49
Distillation, °C IBP		212	182	166	212	175	196	166	178	168
T_{10}		237	216	195	225	210	237	203	225	195
T_{20}		247	229	206	230	227	247	220	246	206
T_{50}		278	261	242	252	269	263	264	278	242
T_{90}	362 (max)	342	330	285	341	341	285	339	330	342
T_{95}		376	352	291	375	363	291	358	347	376
FBP		384	359	298	384	370	298	366	353	384
% FAME	5 (max)	0	0	0	0	0	0	0	0	0

South Africa