



**PETROCHEM
CARLESS**

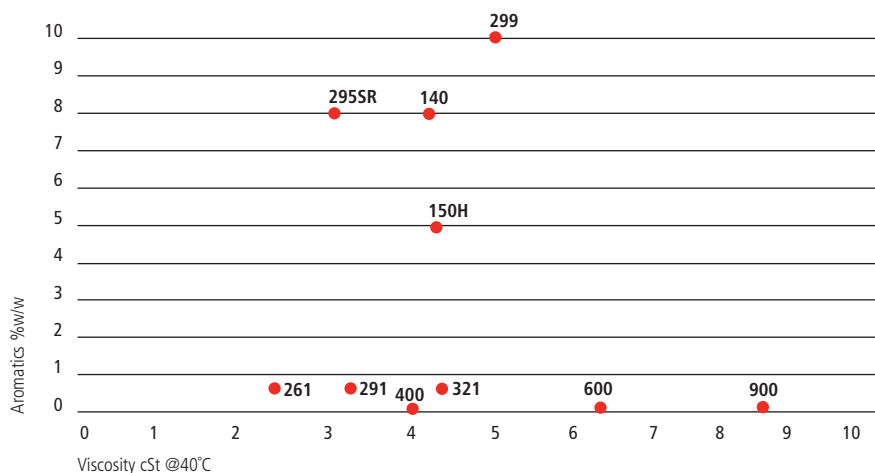
Speciality Base Oils



PILLOT™

Pilot[™] speciality base oils are narrow cut, 'low' viscosity oils, used within industry to produce a wide variety of specialist products ranging from lubricants and performance fluids to process applications and metalworking. Each oil in the **Pilot** range is produced from specifically selected feedstocks and refining processes, providing the customer with the right combination of characteristics for a particular application.

Comparison of Viscosity versus Aromatic content



Petrochem Carless is one of the market leaders in the development of speciality base oils with specific performance characteristics.

Characteristics

Selecting a **Pilot** oil for a particular application involves 'cross-matching' key parameters such as viscosity, aromatics, pour points and boiling ranges to deliver the exacting performance demands. The chart opposite illustrates one example, Viscosity v Aromatic content.

Critical performance characteristics include:

Viscosity

Key to most lubricant applications, **Pilot** oil viscosities range from ~2.3cSt to 8.6cSt at 40°C. These are considered as low viscosity, requiring speciality oil feedstocks outside the standard base oil range.

Aromatics

Some applications require low or zero aromatic content for environmental,

occupational health or compatibility reasons. Others need the solvency power of aromatics to enable the addition of key performance additives. **Pilot** oils range from 0.2 – 8.0% aromatic content to meet with these diverse demands.

Pour Point

With the speciality formulator in mind, the **Pilot** oils range includes grades with very low pour points. **Pilot** 400, 600 & 900 have pour points of -35° to -40°C for applications where extreme cold temperature conditions are to be experienced.

Boiling Range

Some so-called low viscosity oils are often simply heavier oils 'cut back' with a light fraction. **Pilot** oils are all straight run products giving optimised volatility characteristics rather than the classic 'dumbbell' distillation curve and its inherent problems.

Every Petrochem Carless **Pilot** oil reflects the results of years of experience and continual research in matching oil formulations to industry applications.

Petrochem Carless **Pilot** oils can provide options to meet most industrial criteria either due to occupational and environmental considerations, high solvency power, extreme temperature performance or to low viscosity requirements and excellent boiling range distribution associated with straight run oil fractions. Dedicated technical and refinery resources provide the best possible support to our customers' individual requirements and continued development.

Typical properties of Pilot speciality base oils

	ASTM	140	295SR	299	150H	261	291	321	400	600	900
Viscosity @40°C	D445	4.2	3.1	5.0	4.2	2.35	3.2	4.3	4.0	6.3	8.6
Density @15°C	D1298	0.819	0.816	0.833	0.818	0.815	0.818	0.818	0.828	0.846	0.860
Aromatics %w/w	HPLC	8	8	10	5	0.6	0.6	0.6	0.2	0.2	0.2
Colour Saybolt	D156	+20	+25	+20	+20	+30	+30	+30	+30	+30	+30
Pour Point °C	D97	-15	-33	-23	-18	-25	-25	-20	-35	-35	-40
Flash Point °C	D93	135	120	115	142	103	120	142	122	140	160
Boiling Range °C	D86	280-320	256-296	256-296	260-320	236-272	256-305	275-320	260-305	280-320	310-340
Aniline Point °C	D611	89.5	82.5	74	89	84	88	88	85	86	86
Sulphur ppm	IP373	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
FDA 178.3620	FDA 178.3620	C	C	C	C	C	C	C	B	B	B

Applications

ROLLING OILS

PILOT 261, 291, 400

These low viscosity, low or zero aromatics products provide the ideal base for metal rolling oils, particularly aluminium.

- Ultra low sulphur content delivers excellent non-staining properties.
- Low pour points mean no cloudy films at low temperatures.

SEALANTS

PILOT 261, 291, 400, 600, 900

Good volatility, zero aromatics and a narrow boiling range make the Pilot oil range ideal for use as an extender oil in polymers and sealants.

- Highly cost effective alternative to more expensive synthetic oils.

INDUSTRIAL LUBRICANTS

ALL PILOT GRADES

Low viscosities and low pour points mean Pilot oils provide an excellent base for blending hydraulic and gear oils.

- Excellent compatibility with key performance additive packages.

METALWORKING

PILOT 140, 150H, 261

The wide viscosity range plus excellent solvency power make these Pilot products ideal bases for blending metalworking oils.

- Higher aromatic content delivers high solvency power
- Especially suited to high-speed, heavy duty lubricants requiring high additive loading.

TEXTILE LUBRICANTS

PILOT 291, 321, 400, 900

Non staining properties and zero aromatics make these Pilot oils safe for use in textile manufacturing machinery.

- Low odour and high product purity assist with occupational hygiene conditions.

SHOCK ABSORBER FLUIDS

PILOT 295SR, 400, 600, 900

These oils offer the low pour points, seal compatibility and viscosity characteristics essential for formulating vehicle shock absorber oils.

EDM / SPARK EROSION FLUIDS.

PILOT 140, 261, 291, 400

Pilot oils provide high purity and straight run benefits to greatly assist conductivity potential and total life expectancy of the fluid. Tool life and cutting precision both benefit from the performance of these oils.

ROAD SURFACING

PILOT 299, 140

These oils are widely used in cold set road surface dressings.

- High aromatics and solvency power assists with polymer dispersal.
- Excellent temperature stability and optimised volatility control provide unique plasticising properties.

Product Range

Alcohols
Aliphatic Solvents
Amines
Aromatics
Automotive Products

Blends
Burning Oils
Chlorinated Solvents
Custom Processing
Drilling Mud Fluids

Esters
Glycols
Glycol Ethers/Esters
Ketones
Heat Transfer Fluids

Performance Fuels
Plasticisers
Printing Ink Distillates
Process Oils
Refinery Naphthas

Special Kerosines
Speciality Base Oils
White Oils
Other products

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