



**BASE OILS
& PROCESS
OILS**

The image shows a single, perfectly spherical drop of golden oil suspended in the air above a larger pool of oil. The drop is highly reflective, showing highlights and shadows. Below it, a larger drop is captured in the process of hitting the surface, creating a crown-like splash with concentric ripples. The background is a soft, out-of-focus gradient of yellow and gold, suggesting a bright, warm light source.

We are a global energy company integrating with each stage of the hydrocarbon value chain, and manufacturing products from plant-based raw materials and with a presence in the renewable energy sector.

Our 90 years of experience have made us a leader in the Spanish energy sector and allow us to operate in over 20 countries through the business areas Exploration and Production, Refining, Chemicals, Marketing and Distribution, Gas and Electricity, and Trading. Our technical excellence and capacity to adapt drives us to bring the best of energy to every reality.

Close to 10,000 experts from across the world make it possible relying on our values of safety, sustainability, continuous improvement, leadership, and solidarity.

This makes us a robust company, and we act in an efficient way in an ever-changing environment. Our activities allow us a daily presence, from the electricity and transport we use, to the heating or detergent we use in our homes.

SUSTAINABILITY

We invest in **sustainability**, which is why at our plants we study the potential impacts, carbon footprints, etc. that our products may leave both during the manufacturing process and when in use. This is how we ensure action is taken on our priority of maximum environmental protection.

ETHICS

We have a strong commitment to **ethical** behaviour and integrity in everything we do. As a result, we have a professional ethics management model that we put into practice each day. Our Auditing, Compliance and Ethics Committee leads and controls compliance with all our values, principles and rules in everything we do.



OUR BASE AND PROCESS OILS ARE ALSO LEADING THE WAY

Within the Cepsa group, the Lubricants Area is dedicated to manufacturing this type of product, as well as the production, formulation and manufacturing of base and process oils.

What sets these products apart is that the quality in their manufacturing process is constant as only one type of crude oil is used: Arabian Light.



In Spain, we have a high refining capacity with our two refineries: in Gibraltar-San Roque and la Rábida. The Gibraltar-San Roque refinery, a strategic location given its proximity to Algeciras, the Strait of Gibraltar and Africa, is where our base and process oils are made. They are all distributed by boat, cistern tank, ISO tank or flexitank. With the single goal of exporting our products across the globe by optimising the loading times and transport costs, we have made a significant investment in the construction of a fully automated flexitank loading platform.

In order to significantly streamline our delivery times to the national market, we have a tank in the area of Catalonia, from where we distribute cistern tanks and ISO tanks to our customers.



BASE OILS

Base oils from distillation and other refining techniques are used primarily as a raw material for manufacturing lubricants. They are paraffin-based.

CHARACTERISTIC	UNITS	METHOD	LIMIT	BASE 150	BASE 600	BASE BS
Density at 15°C	Kg/l	ASTM D 4052	Typical	0.8721	0.8905	0.9065
Appearance	-	VISUAL	Typical	Clear and shiny	Clear and shiny	Clear and shiny
Viscosity at 40°C	cSt	ASTM D 445	Minimum-Maximum	28-32	109-125	Typical 490.43
Viscosity at 100°C	cSt	ASTM D 445	Minimum-Maximum	Typical 5.27	Typical 11.99	30-33
Viscosity index	-	ASTM D 2270	Minimum	102	95	95
Freezing point index	°C	ASTM D 5949/5950	Maximum	-15	-6	-6
V/A flash point	°C	ASTM D 92	Minimum	210	265	282
ASTM colour	-	ASTM D 1500	Maximum	1	2	5
Micro carbon residue	% weight	ASTM D 4530	Maximum	0.05	0.15	0.8
Sulphur	% weight	ASTM D 4294	Typical	0.76	1.14	1.45
Volatility (Noack) at 250°C	(m/m)	CEC L-40-A-93	Maximum	14	-	-
Acid number	(mg. KOH/g.)	ASTM D 664	Minimum-Maximum	Max 0.05	Max 0.05	Typical 0.04
Humidity from crepitation	-	CEPSA	Typical	No crepitation	No crepitation	No crepitation
Water content (Karl-Fischer)	ppm	ASTM D 6304	Typical	104	120	96





PROCESS OILS

Process oils are oils derived from petroleum that can be applied in a wide variety of chemical and technical industries, either as raw materials or in order to optimise tyre manufacturing, technical

rubbers and polymers. In addition, these oils can be used in the manufacturing of asphaltic sheets, inks, paints, cable products, etc. Our portfolio includes process oils with paraffin or aromatic origin.

Process oils - Paraffinic oils

CHARACTERISTIC	UNITS (%)	METHOD	LIMIT	PROCESS 150	PROCESS 600	PROCESS 900	
Type	-	-	-	Paraffinic	Paraffinic	Paraffinic	
Density at 15°C	Kg/l	ASTM D 4052	Typical	0.8743	0.8910	0.9062	
Appearance	-	VISUAL	Typical	Clear and bright	Clear and bright	Clear and bright	
Viscosity at 40°C	cSt	ASTM D 445	Minimum-Maximum	28-32	109-125	Typical 492	
Viscosity at 100°C	cSt	ASTM D 445	Typical	5.23	12.08	Min-Max 30-33	
Viscosity index	-	ASTM D 2270	Minimum	102	95	Typical 95	
Freezing point index	°C	ASTM D 5949/5950	Maximum	-15	-6	-6	
V/A flash point	°C	ASTM D 92	Minimum	210	265	282	
ASTM colour	-	ASTM D 1500	Maximum	1	2	5	
Micro carbon residue	% weight	ASTM D 4530	Maximum	0.05	0.15	0.8	
Sulphur	% weight	ASTM D 4294	Typical	0.72	1.07	1.42	
Acid number	(mg. KOH/g.)	ASTM D 664	Maximum	0.05	0.05	0.04	
Humidity from crepitation	-	CEPSA	Typical	No crepitation	No crepitation	No crepitation	
Water content (Karl-Fischer)	ppm	ASTM D 6304	Typical	100	118	94	
*Carbon distribution	% Paraffinic C	-	IR BRANDES	Typical	62.8	65.2	68.9
	% Naphthenic C	-	IR BRANDES	Typical	33.2	30	24.4
	% Aromatic C	-	IR BRANDES	Typical	4	4.8	6.7

Process oils - Aromatic oils

CHARACTERISTIC	UNITS (%)	METHOD	LIMIT	PROCESS 2500 (Residual Aromatic Extract)
Type	-	-	-	Aromatic
Density at 15°C	Kg/l	ASTM D 4052	Minimum-Maximum	0.96 -1.01
Viscosity at 100°C	cSt	ASTM D 445	Minimum-Maximum	45- 70
Freezing point	°C	ASTM D 5949/5950	Typical	20
V/A flash point	°C	ASTM D 92	Minimum	220
Refractive index 67°C	-	ASTM D1218	Typical	1.5235
Water content (Karl-Fischer)	Ppm (m/m)	ASTM D1218	Maximum	0.1
Aniline point	°C	ASTM D 611	Typical	65
Sulphur	%	STM D 1552	Typical	4
C Composition: C/A (non S-corr.)	%	ASTM D 2140	Typical	34
C Composition: C/N (non S-corr.)	%	ASTM D 2140	Typical	24
C Composition: C/P (non S-corr.)	%	ASTM D 2140	Typical	42
Viscosity-gravity constant	-	ASTM D 2501	Typical	0.907
C Composition: C/A (S-corr.)	%	ASTM D 2140	Typical	30
C Composition: C/N (S-corr.)	%	ASTM D 2140	Typical	10
C Composition: C/P (S-corr.)	-	ASTM D 2140	Typical	60
Benzo(a)pyrene content	mg/kg	-	Maximum	1
Sua 8 PAH	mg/kg	-	Maximum	10



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