



Eni Clematis RL, classified as RAE LA (Residual Aromatic Extract Low Aromatic), is a safe oil, not carcinogenic, with a low content of polycyclic aromatic hydrocarbons (PAHs) and a low value of mutagenicity index (MI). The product is obtained from de-asphalted vacuum residues by solvent extraction and has a high viscosity and a dark green colour.

Eni Clematis RL has a high performance coming from excellent chemical-physical characteristics in terms of high stability, low volatility, excellent plastic behavior, adequate viscosity and remarkable chemical compatibility both with rubber and rubber blend.

PROPERTIES

Properties	Unit	Values		Typical	Method
		Min	Max		
Colour	-			D8	ASTM D 1500; ASTM D 6045
Density at 15°C	kg/m ³	970	1005	973	ASTM D 1298; ASTM D 4052
Viscosity at 100°C	mm ² /s	50	75	69	ASTM D 445
Flash point COC	°C	230			ASTM D 92
Flash point PM	°C	220			ASTM D 93
Pour point	°C		20		ASTM D 97; ASTM D 6892; ASTM D 7346; ISO 3016
Aniline point	°C	45	75	59	ASTM D 611
VGC (calculated with viscosity at 100 °C)	-	0.87	0.94		ASTM D 2501
Ca/Cn/Cp (calculated with VCG ASTM D2501 at 100°C)	% m/m			27/10/63	ASTM D 2140
Ca/Cn/Cp (calculated with VCG ASTM D2501 at 100°C no sulfur correction):	% m/m			32/27/41	ASTM D 2140
- Ca	% m/m	28	36		ASTM D 2140
- Cn	% m/m	20	30		ASTM D 2140
- Cp	% m/m	35	50		ASTM D 2140
Glass transition temperature DSC	°C		-32	- 35	ASTM E 1356; ISO 28343





Properties	Unit	Min	Max	Typical	Method
Refractive index at 20°C	-	1.5350	1.5600		ASTM D 1218
Class of hydrocarbons by Clay gel chromatography:	% m/m				ASTM D 2007
- Saturates	% m/m			10	
- Polars	% m/m			15	
- Aromatics	% m/m			75	
- Asphaltenes	% m/m			Nil	
Sulphur	% m/m		6		ASTM D 1552; ASTM D 4294; ASTM D 2622
Water content	% v		0.5		ASTM D 95, ASTM D 6304
Ash content	% m/m		0.5	0.01	ASTM D 482
Distillation at 760 mmHg:	°C				EN 15199-2
- 5% volume	°C			435	
- 10% volume	°C			460	
- 20% volume	°C			500	
- 50% volume	°C			540	
Polycyclic aromatic hydrocarbons (PAHs):	mg/kg				EN 16143
- Benzo(a)pyrene (BaP)	-		<1		
Total sum of the following PAHs:	-		<10		
- Benzo(a)pyrene (BaP)	-			-	
- Benzo(e)pyrene (BeP)	-			-	
- Benzo(a)anthracene (BaA)	-			-	
- Chrysene (CHR)	-			-	
- Benzo(b)fluoranthene (BbFA)	-			-	
- Benzo(j)fluoranthene (BjFA)	-			-	
- Benzo(k)fluoranthene (BkFA)	-			-	





Properties	Unit	Min	Max	Typical	Method
- Dibenzo(a,h)antracene (DBAhA)	-			-	
Mutagenicity Index (mod. Ames test)	-		<0.4		ASTM E 1687

PHAs Legal limits – Reg. REACH, Annex XVII, Point 50 regarding the extender oils used for the production of tyres or part of tyres. It does not apply to other uses.

Mutagenicity Index - Limit value correlated with lack of classification as carcinogenic – see REACH Registration dossier.

ASTM D 6304: the results have been reported, in compliance with test method, in mg/kg.

APPLICATIONS

- **Eni Clematis RL** is used as process and extender oil in the production of rubbers, in the manufacturing of tyres and other rubber goods. Moreover, given his chemical and physical characteristics is used in the bitumen sector as viscosity modifier and binder.

