LUBRITEC
ADDITIVES TECHNOLOGY

PCMO ADDITIVE PACKAGE

SN LT 67001



API CASCADE PACKAGE SUMMARY

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- Advantages
- Program Status
- Final Formulations
- Chemical Properties

POSITIONING AND MAIN ADVANTAGES (1/2)

- LUBRITEC SN LT 67001+ booster LUBRITEC SN LT 67001 for current API categories API SM & API SN
  - A low cost API SM & API SN solution
  - 7.6% total additive treat rate
  - Low GP II content required
- Developed for the high end licensable API categories at very low treat rates
  - Licensable API SL/CF @ 7% in GP I stocks
  - Licensable API SJ/CF @ 5.8% in GP I stocks
  - Low dosage & finished oil formulation cost

  API SN was introduced in 2010, it provides
  - improved high temperature deposits control for pistons
  - more demanding sludge control
  - improved seals compatibility versus the older API categories

POSITIONING AND MAIN ADVANTAGES (2/2)

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Optimised Supply Chain

- LUBRITEC SN LT 67001 covers all the API PCMO claims from API SB to API SN
- No booster required for API SB/CB to API SL/CF-4
- Optimized API SN/SM booster for the highest tiers

The solution to :

- reduce overall complexity
- enhance supply chain management in a lubricant market
- moving towards higher quality products for modern passenger cars

TREAT RATES FOR HIGHER TIERS

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Viscosity grades :

- 10W-30, 15W-40 and 20W50 for API SL/CF and API SJ/CF
- 10W-40, 5W-30 and 5W20 for API SN/SM/CF

Lubritec Cascade - higher tiers	
API CLAIM	LUBRITEC LT 67001 wt%
API SN/SM/CF	7.6
ACEA A2/B2*	7.8
API SL/CF - 4*	7.03
API SL/CF	6.5
API SJ/CF	5.8

API CF-4 & ACEA A2/B2 Performance level

LUBRITEC SN LT 67001 @ 11.2wt%

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Lubritec SN LT 67001 Treat Rates For Obsolete API Categories

API Category	Mono - grades	Multi - grades
	wt%	wt%
SG/CF	5.22	5.22
SF/CF	5.19	5.19
SF/CD, SF/CC	4.26	4.58
SE/CD	4.16	4.58
SE/CC	3.43	3.77
SC/CC	3.18	3.5
SC/CB, SB/CB	1.98	2.18

LUBRITEC SN LT 67001 @ 11.2wt%



- **LUBRITEC SN LT 67001 @ 7.6% SN/SM**

  SAE Grades covered

  - 10W-40 in Lubritec GP I stocks + 15% GP II
  - 15W-40 and 20W-50 in Lubritec GP I stocks + 10% GP II

  Candidate Data Package available for API SM

  Candidate Data Package for API SN ongoing

  - LUBRITEC SN LT 67001 @

  LUBRITEC SN LT 67001 6.5% (API SL/CF)

- SAE Grades covered:

  - 10W-30, 15W-40 and 20W-50 in full Lubritec GP I stocks

  Candidate Data Package available

  LUBRITEC SN LT 67001 @ 5.8 % (API SJ/CF)

- SAE Grades covered:

  - 10W-30, 15W-40 and 20W-50 in full Lubritec GP I stocks

  Candidate Data Package available

LUBRITEC SN LT 67001 - 15W-40/20W-50

Final Formulations - API SJ/CF @ 5.8wt%

SAE	15W-40	20W-50
OIL REFERENCE OR-F	OR-F56369DB	OR-F56369OA
LUBRITEC SN LT 67001, wt%	5.8	5.8
Dutral OCP 2550, wt %	9.07	8.4
PPD, wt%	0.3	0.3
G I base oil SN 150, wt%	53.44	11.37
G I base oil SN 500, wt%	31.39	74.13
KV 100°C, mm/s	14.0	19.0
CCS, mPa.s at - 15°C	-	9110
CCS, mPa.s at -20°C	6604	-
HTHS, mPa.s	3.8	4.7
Noack volatility,%	9.6	6.0

LUBRITEC SN LT 67001 - 15W-40/20W-50

Final Formulations - API SL/CF @ 6.5wt%

SAE GRADE	15W-40	20W-50
OIL REFERENCE OR-F	OR-F56506DA	OR-F56506OA
LUBRITEC SN LT 67001, wt%	6.5	6.5
Dutral OCP 2550, wt %	9.26	8.1
PPD, wt%	0.3	0.3
G I base oil SN 150, wt%	54.56	21.27
G I base oil SN 500, wt%	29.38	63.83
KV 100°C, mm^2/s	14.1	17.29
KV 100°C after shearing, mm^2/s	12.57	15.54
CCS, mPa.s at - 15°C	-	7466
CCS, mPa.s at -20°C	6648	-
HT/HS, mPa.s	3.77	4.35
Noack volatility, %	11.0	6.5

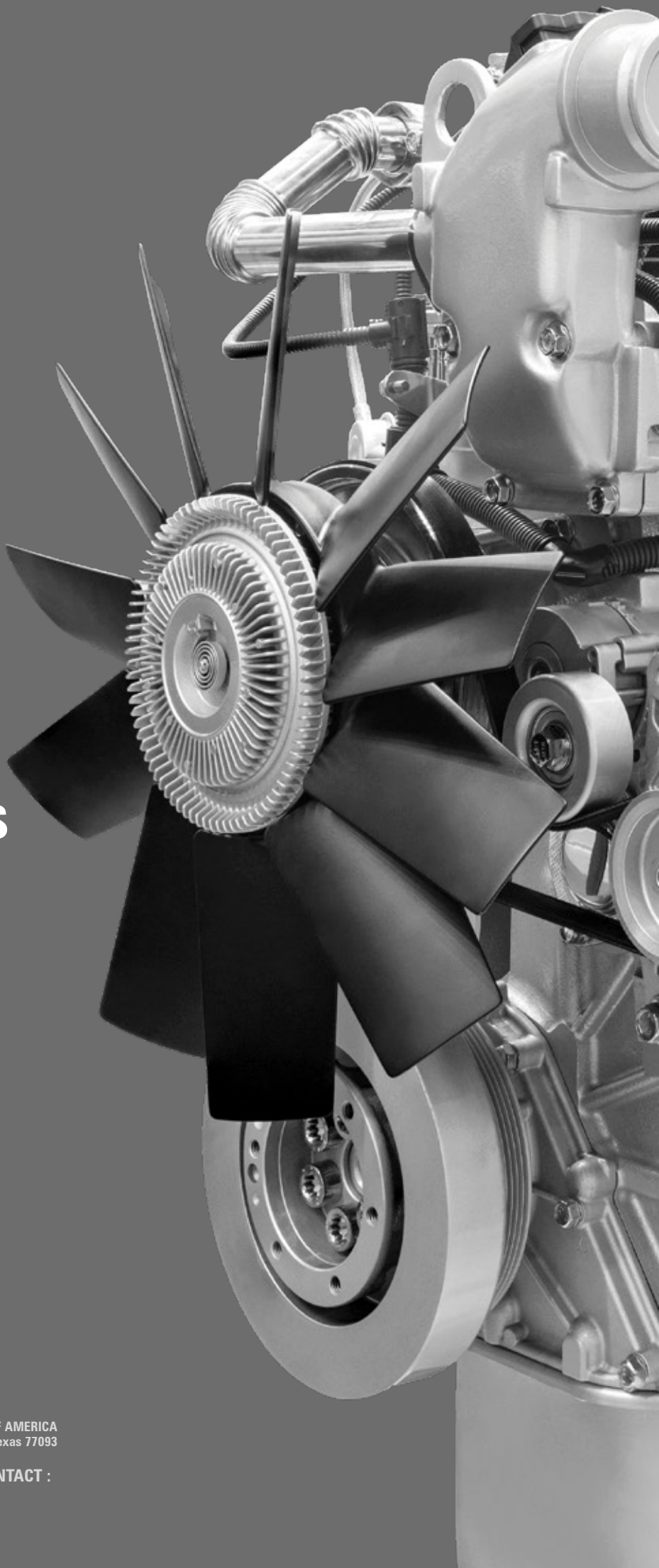
Viscosity grades covered : 10W30, 15W40 and 20W50

LUBRITEC SN LT 67001 - 10W-40/15W-40/20W-50

Final Formulations - API SN/SM/CF

SAE GRADE	10W-40	15W-40	20W-50
LUBRITEC SN LT 67001, wt%	6.5	6.5	6.5
LUBRITEC SN LT 67001, wt%	2.05	2.05	2.05
Dutral OCP 2550, wt %	11.95	8.6	8.2
PPD, wt%	0.3	0.3	0.3
Nexbase 3050, wt%	15.0	10.0	10.0
G I base oil N 150, wt%	61.17	37.08	0.68
G I base oil N 500, wt%	3.03	35.47	72.27
KV 100°C, mm^2/s	13.88	14.08	19.0
CCS, mPa.s at - 15°C	-	-	8363
CCS, mPa.s at -20°C	-	6820	-
CCS, mPa.s at -25°C	6639	-	-
HT/HS, mPa.s	3.74	3.72	4.81
Noack volatility,%	11.48	9.6	4.95

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Our Additives Makes Engines Runs Forever

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