

Unleaded Aviation

Gasoline in Sweden

NRC Canada March 18-19 2014

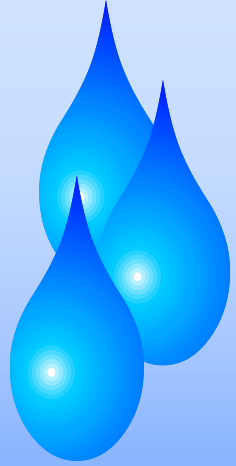


Lars Hjelmberg

Executive Director

Sweden





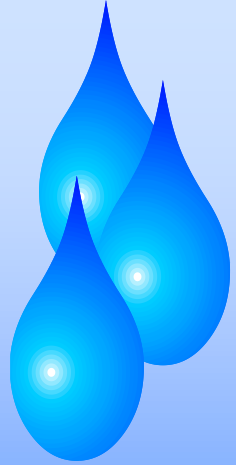
**The story of
Hjelmco
Unleaded AVGAS
Including a
100 UL Option**



Unleaded Avgas from Hjelmeo Oil

Unleaded AVGAS 80

- **Used in Sweden between 1981-1991**
- **Nationwide distribution and use**
- **More than 50 airports involved**
- **More than 400 aircraft**
- **Used by the Royal Swedish Air Force**



Sweden 1991

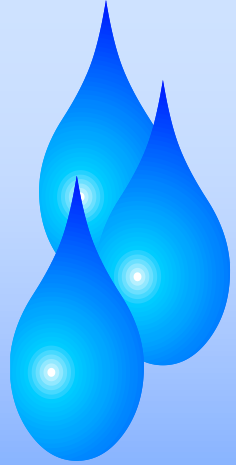
**Hjelmco Oil introduced
unleaded aviation gasoline
Hjelmco 91/96UL™**

Reason:

80/87 UL potential market c:a 30%

91/96 UL potential market c:a 70%

2014 potential market > 90 %



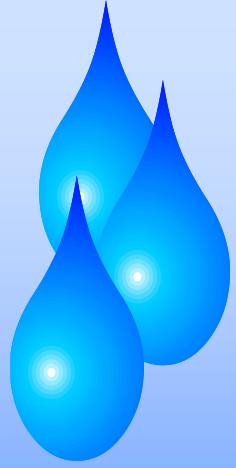
Unleaded Hjelmeo 91/96 UL™

YEAR 2014

**Existing, certified unleaded
AVGAS 91/96 UL (91/98 UL)**

**Extensive > 23 years flight-
experience**

**Recognized by the major US engine
manufacturer Lycoming in 1995**



Unleaded Hjelmeo 91/96 UL™

Very close to UL 94 AVGAS

MON \approx 93 – 94

RON > 98

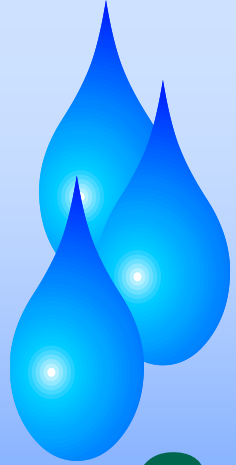
SUPERCHARGE > 98

ASTM D910 compliance

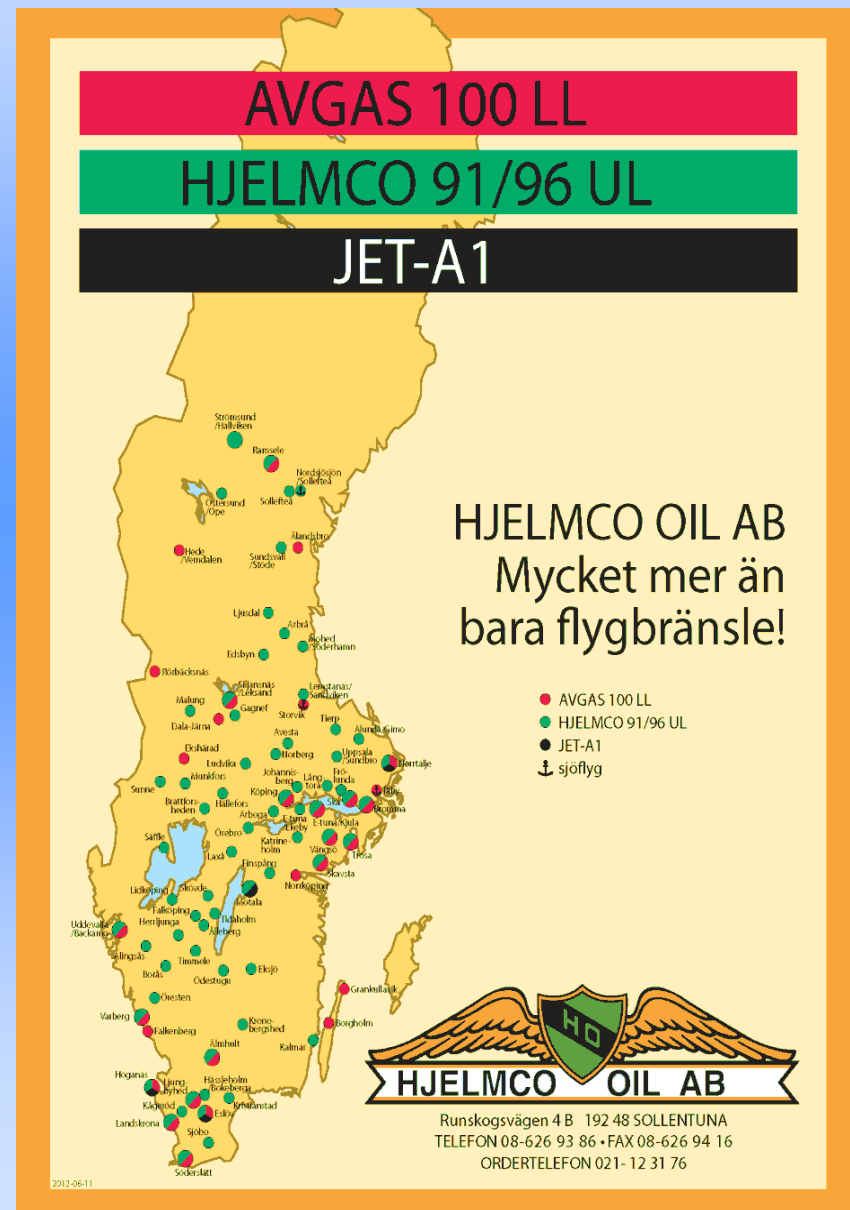
for grade 91/98

but without lead.

Sweden Year 2014



- Green dots are airports with unleaded AVGAS
- Unleaded area ~ 800 miles long 400 miles wide





Unleaded Hjelmeo 100 UL

DEVELOPED 2004

**TESTS WITH SWISS CAA AND
GERMAN DLR 2008**

1 st. FLIGHT TEST IN 2008

**DESCRIBED IN EUROCONTROL
EBAA AND IAOPA YEARBOOK**

2009



Unleaded Hjelmeo 100 UL

**MEETS ASTM D910 FOR 100 LL
TABLE 1 WITH ONE EXCEPTION
2-4 % LESS ENERGY-CONTENT
MAY CONTAIN UP TO \approx 15 VOL %
BIO-MATERIAL CHOICE OF
PRODUCER
MEETS D910 FIT FOR PURPOSE PARAMETERS**



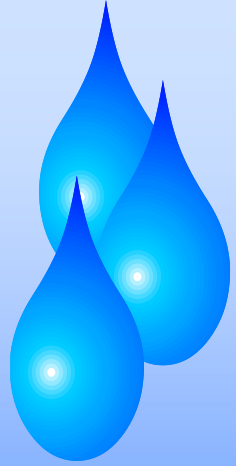
Unleaded Hjelmeo 100 UL

DOES NOT CONTAIN

AMINES

WATER-BASED ADDITIVES

UNUSUAL COMPONENTS



More to Read About Unleaded AVGAS

www.hjelmco.com