



Nonfood Compounds  
Program Listed HX-1

**BRAD-CHEM**

**TECHNICAL DATA**

## **BRAD-CHEM 346**

**THIS PRODUCT SOLD BY:**



**Azelis L&MF US**

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A multi functional additive / ester blend for the manufacture of industrial lubricants with incidental food contact approval.

Brad-Chem 346 is registered to the NSF Registration Guidelines as an acceptable ingredient for use in lubricants with incidental food contact (HX-1) for use in and around food processing areas. NSF Registration No. 138459.

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### **Features / Benefits**

- A specially formulated blend of ashless additives for industrial lubricants
- Contains antioxidants, EP/AW additives and corrosion inhibitors
- Test data suggests that Brad-Chem 346 would readily meet the hydraulic requirements of DIN 51524, Part II at a treat rate of 4.0% w/w
- Test data suggests that Brad-Chem 346 would meet the requirements of DIN 51517 T3, ISO 1292-1 CKD, AGMA 250.04 and US Steel 224 Gear Oil Specifications in a PAO / Ester lubricant.
- Brad-Chem 346 is registered for use as a component of oil-based lubricants with incidental food contact at a level not to exceed 4% by weight.
- Mobile liquid, easy to handle
- Soluble in basestocks at typical treat rates
- Suitable for all typical basestocks with incidental food contact approval e.g. appropriate grades of white oils, esters, poly alpha olefins, poly isobutylenes, VHVI fluids, esters etc.

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### **Applications / Typical Treat Rates**

Brad-Chem 346 is suitable for the manufacture of a wide range of thermally stable synthetic industrial lubricants where incidental food contact approval is required. The basestock viscosity should be chosen to provide the appropriate viscosity grade lubricant. Brad-Chem 346 can also be used as an additive package for the manufacture of synthetic gear oils that do not require H-1 approval manufactured from PAO's synthetic esters and possibly PAG's. Typical treat rates of Brad-Chem 346 in formulations for the manufacture of NSF approved lubricants are:

Gear oils	4% w/w
Hydraulic oils	3% w/w
Chain lubricants	3 – 4% w/w
Compressor lubricants	4% w/w

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### Typical Properties

Appearance	Pale amber liquid
Specific Gravity @ 20°C	ca 0.96
Viscosity @ 40°C (ASTM D7042)	ca 22
Acid Value (mg.KOH/g)	ca 11
VI	ca 107
Viscosity @ 100°C (ASTM D7042)	ca 4

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### Technical Performance

A synthetic compressor formulation manufactured using 4% w/w Brad-Chem 346 would typically have the following properties:-

<b>Viscosity (VG Grade)</b>		<b>46</b>	<b>68</b>
Viscosity at 40°C (cSt)		ca. 46	ca. 68
Viscosity at 100°C (cSt)		ca. 8	ca. 11
VI		ca. 174	ca. 176
Pour Point	ASTM D97 (°C)	ca. - 50	ca. - 40
Demulse	ASTM D1401	ca 35	ca. 40
TAN	(mgKOH/g)	ca. 0.7	ca. 0.7
Foaming	ASTM D892	ca. 20/0	ca. 20/0
Seq. 1	(ml/ml foam)		
Flashpoint	ASTM D92 (°C)	ca. 230	ca. 230
Air Release	IP313, DIN 51381	ca. 5	ca. 5
Rust Test	ASTM D665A	Pass	Pass
FZG Max	DIN 51354	11	>12

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### Wear Inhibition

4% w/w Brad-Chem 346 in 500 solvent neutral oil gives the following anti-wear performance in the 4 ball test (ASTM D 2783):

Wear scar diameter (mm) after 60mins, 400N	0.3
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### Oxidation stability and thermal stability properties

	<b>VG46</b>	<b>VG68</b>
<b>Pneurop Test DIN 51352, part2</b>		
CCR Final (%)	ca. 0.2	ca. 0.1
Evaporation Loss (%) wt.	ca. 4.2	ca.3.0
<b>RoCOT</b>		
(140°C, 168 hrs, 15 litres air per hour)		
Evaporation Loss (%) wt.	ca. 1.8	ca. 1.8
Viscosity Increase (cSt)	ca. 0.5	ca. 0.9
Acidity Increase (mg.KOH/g)	ca. 0.11	ca. 0.10
Sludge (mg/60 g. oil)	ca. 0.5	ca. 1.0

### Thermal / Oxidative Stability (FTMS 5308.6)

72 hours, 5 litres air / hour

Typical Results.

Test carried out on VG 68 grade	175°C	195°C
Weight change of metal specimens (mg/ cm <sup>3</sup> )		
Copper	+ 0.02	+ 0.04
Steel	+ 0.05	+ 0.04
Aluminium	+ 0.04	- 0.02
Magnesium	+ 0.11	- 0.04
Silver	+ 0.05	+ 0.05
TAN	0.3	3.0
Evaporation Loss (% wt)	1.2	2.3
Insolubles (% wt)	0.2	0.2

Features of finished lubricant include: -

- Stable synthetic compressor lubricant for operations of all normal compressors
- Low odour and excellent oxidative / corrosive stability
- Contains metal passivators and antiwear / extreme pressure additives for improved performance.



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## **BRAD-CHEM 346**

### **Synthetic Ester HX-1 Lubricants**

Typical results for 4% w/w Brad-Chem 346 in HX-1 approved synthetic esters

<b>ISO VG</b>	<b>150</b>	<b>220</b>	<b>320</b>
Kinematic Viscosity @ 40°C (mm <sup>2</sup> s <sup>-1</sup> )	141	201	302
VI	152	149	148
Flash Point COC (°C)	266	276	276
Pour Point (°C)	-45	-36	-33
Copper Corrosion (3 hours @ 100°C)	1b	1b	1b
4 ball scar diameter (mm)	0.44	0.36	0.39
Weld Load (kg)	200	200	200
Volatility (6.5 hours @ 204°C) (%)	2.3	2.7	2.6

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### **NSF H1, Halal, and Kosher Applications**

Brad-Chem 346 can be used to produce lubricants suitable for registration as NSF H1. This can be achieved by adding Brad-Chem 346 at treat rate up to 4% (w/w) to an NSF H1 approved base oil, or to a mixture of NSF H1 approved base oils.

When applying for NSF H1 registration for your incidental food contact lubricant, contact the NSF to obtain the necessary forms. Fill in the details of your lubricant formulation, quoting the NSF H1 registration numbers of the base oils, and the NSF HX-1 registration number of Brad-Chem 346: NSF registration number 138459.

This product is not currently certified for Halal or Kosher; however, neither Brad-Chem 346, nor any of its component raw materials derive from any animal sources, and neither this product nor any of its component raw materials contain or have ever had contact to ethyl alcohol or any other Haram materials.

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## **BRAD-CHEM 346**

### **Pack Size**

Available in 25 kg drums and 190 kg drums.

### **Storage Conditions**

Protect from frost, store above 5°C.

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The information contained within this publication is based upon the present state of our knowledge. Any recommendations or conclusions are made without liability on our part. Values shown are typical and should not be construed as specification limits.

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