



# AIR COMPRESSOR LUBRICANTS



***FOR MAXIMUM PERFORMANCE!***

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# Why CompAir Synthetic Lubricants?

## The Question...

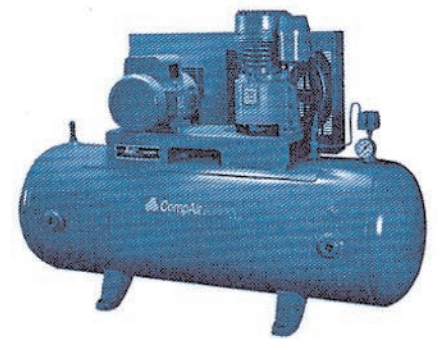
*“How do I ensure my air compressor, and related equipment, to operate efficiently and economically?”*

## The Answer...

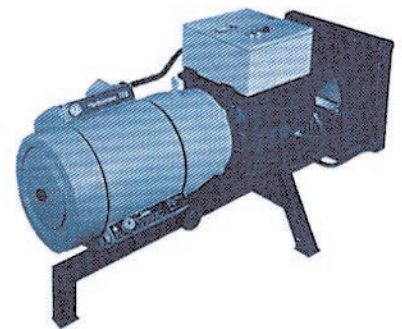
*“Select the proper CompAir lubricant for your compressor and application.”*

All good facility engineers are concerned with keeping their compressed air equipment operating to the best efficiency. To help insure your equipment is maintained in proper operating condition, CompAir has formulated a full range of special formulation and synthetic lubricants. By selecting the correct lubricant for your particular installation and application, the benefits will become self-evident as power consumption is reduced, lubricant and valve life extended, and overall operating costs are reduced significantly. Most important, potential failures due to incorrect or misapplied lubricants will be eliminated.

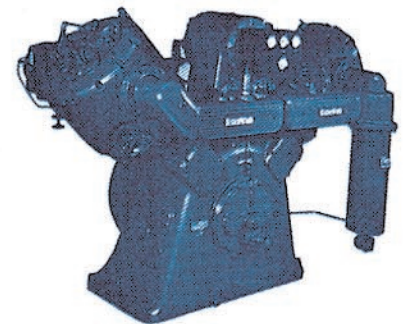
CompAir is a world leader in the design and manufacture of reciprocating, rotary vane, centrifugal, and rotary screw compressors. With a proven track record and extensive experience in all realms of the compressed air industry, CompAir is most qualified in formulating and recommending a full range of lubricants for its full range of compressors. Extensive research and field testing has resulted in the development of a superior line of lubricants for a wide variety of applications and installations.



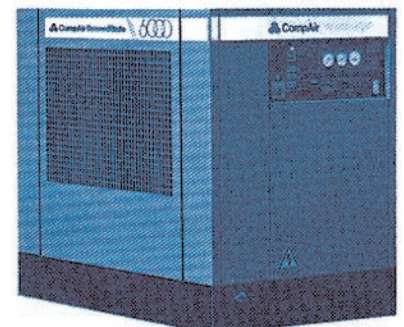
Reciprocating



Rotary Vane



Industrial Reciprocating



Rotary Screw

# Benefits and Advantages



CompAir Synthetic Lubricants are diester based lubricants and are specifically recommended for use in CompAir compressors and generally approved in many other compressors.

While petroleum based oils may be sufficient in some compressor installations, CS lubricants offer the following advantages and benefits:

- Reduce energy consumption by as much as 7%.
- Eliminate the formation sludge, varnish, and other deposits because they do not contain petroleum oil and possess an ashless additional package.
- Extend lubricant and valve life by as much as eight times.
- Perform over a wide temperature range and have a low pour point, high flash point, and low volatility.
- Provide greater resistance to fires and explosions.

- Reduce lubricant useage and make up fluid by  $\frac{1}{3}$  to  $\frac{1}{2}$  due to low evaporation and higher flash and fire points.
- Provide increased lubricating and smoother operation due to polar attraction to metal surface. Diesters are polar and provide better lubrication to bearings.
- Provide extended compressor and component life due to superior heat transfer.
- Provide clean up of old petroleum residues due to high detergency.
- Provide more rapid and more thorough water condensate separation due to superior demulsibility.



Valve after 1500 hours using CS300 oil



Valve after 1500 hours using petroleum-based oil

# Compute the Savings

A changeover from petroleum-base to diester-base synthetic lubricants in your compressor offers a tremendous potential for energy savings. The worksheet outlined below is intended only for estimating the potential energy savings you may experience by using a diester-base synthetic lubricant versus a petroleum-base lubricant. Actual results may vary depending on compressor installation and application.

<b>I. Electrical Energy Costs</b>	A.	Number of annual hours of compression operation		hrs.		
	B.	Compressor horsepower rating		HP		
	C.	Select the KWH figure representative of your energy costs from the listing below. The number in the bottom row corresponds to your cost of operation per KWH for each horsepower unit, based on 50% load. Select the appropriate cost per horsepower figure for your geographical area and insert here.				
		Cost per KWH	.07   .06   .05   .04   .03			
		Cost per HP	.0309   .0265   .0221   .0177   .0132			
	D.	Multiply line B by line C to equal hourly cost per unit				
	E.	Multiply line A by line D to equal estimated annual electrical cost				
F.	Apply estimated annual electrical cost reduction factor for synthetic fluids of 7% (.07 x line E). The result is the estimated annual electrical savings per unit when compressor synthetic lubricant is used.		\$			
<b>II. Comparative Product Cost Analysis</b>	A.	Cost per gallon	\$	Petroleum	\$	Synthetic
	B.	Number of gallons required for unit fill		gals.		gals.
	C.	Cost per unit fill (multiply lines A & B)	\$		\$	
	D.	Annual hours of operation		hrs.		hrs.
	E.	Life of fluid (in hours)		hrs.		hrs.
	F.	Number of changes (divide line E into line D)		chgs.		chgs.
	G.	Total product costs, multiply lines F & C	\$		\$	
	H.	Insert the savings (subtract Synthetic from Petroleum, line G)			\$	
<b>II. Comparative Man-Power Cost Analysis</b>	A.	Estimated cost per ½ man-hour*	\$	7.50	\$	7.50
	B.	Number of ½ man-hours required for fluid change Insert from line F (section II) above)				
	C.	Number of ½ man-hours required for equipment valve cleaning				
	D.	Total ½ man-hours required (add line B & C)				
	E.	Multiply line A x line D. Result is total cost:	\$		\$	
	F.	Insert savings (subtract Synthetic from Petroleum, line E)			\$	
<b>IV. Replacement Parts Costs</b>	A.	Estimated annual replacement costs: valve, etc.	\$		\$	0
	B.	Insert savings (subtract Synthetic from Petroleum)			\$	
<b>V. Summary of Estimated Savings</b>	A.	Electrical energy, enter amount from Part I, line F.			\$	
	B.	Comparative product-cost savings, enter amount from Part II, line H			\$	
	C.	Comparative man-hour savings, enter amount from Part III, line F			\$	
	D.	Replacement Parts Cost, enter amount from Part IV, line B			\$	
	E.	Total Estimated Savings			\$	

\*National average cost per man-hour is estimated to be \$15.00—it is estimated that ½ hour (\$7.50) is required to change fluid.

# The Lubricant Lineup

CS Lubricants	Typical Properties			
	CS100	CS200	CS300	CS400
SAE Viscosity Grade	10W	20W	30W	40W
ISO Viscosity Grade	32	68	100	150
Viscosity, SUS, 100 °F	155	330	530	755
Viscosity, SUS, 210 °F	50	53	62	72
Viscosity Index	115	72	75	80
Flash Point, CO.O.C., °F	475	483	520	525
Autoignition Temperature, °F	765	768	775	775
Pour Point, °F	-50	-40	-30	-30
API Gravity, 60 °F	27.1	17.6	18.2	19.0
Specific Gravity, 60 °F	0.927	0.949	0.945	0.940
Pounds Per Gallon, 60 °F	7.72	7.90	7.90	7.83
Appearance	Green	Green	Green	Green

## U.S.D.A. Rating

CS Lubricants are U.S.D.A. rated "H2" (BB). These compounds may be used as a lubricant on equipment and machine parts in locations in which there is not possibility of the lubricant or lubricated part contacting edible products.

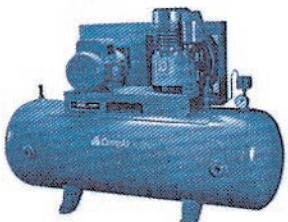



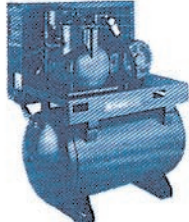



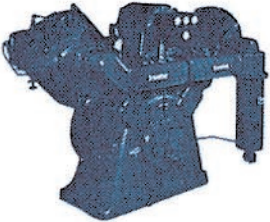



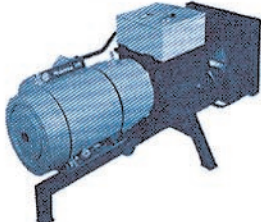



## CN 300

CN 300 naphthenic petroleum-based oil is designed for use in air cooled reciprocating compressors. It is approved by many air compressor manufacturers and is U.S.D.A. rated "H2". Low carbon residue, reducing valve deposits, and non-foaming agents, providing efficient crankcase lubrication, are two advantages when using CN300 in reciprocating compressors. The benefits are obvious: reduced maintenance, reduced downtime, and prolonged life for running components.

	CN 300
SAE Grade	30W
Viscosity, SUS, 100 °F	760
Viscosity, SUS, 210 °F	60
Viscosity, cSt, 40 °C	148
Viscosity, cSt, 100 °C	10.0
Flash Point, C.O.C., °F	420
Pour Point, °F	-10
Carbon Residue, %	.04
API Gravity, 60 °F	20.5
Specific Gravity, 60 °F	0.93
Pounds Per Gallon, 60 °F	7.75



# CompAir Lubricant Match-Up Guide

Compressor Models	Recommended Lubricant Normal Conditions (40°F - 90°F)	*Cold Ambient Conditions (20° - 40°F)	Exceptions Hot Ambient Conditions (90°F - 110°F)
Kellogg & 4000 Series 	CN 300 	CS 200 	CS 300 
Rotary Screw 	CS 200 	CS 200 	CS 300 
BroomWade 	CS 300 	CS 200 	CS 400 
Hydrovane 	CS 300 	CS 200 	CS 400 

\*For applications below 20°F, please contact factory.

## Synthetic Lubricant Changeover Procedure

It is almost always more advantageous to change from a petroleum-based to a diester-based lubricant. When implementing this cost savings changeover, it is critical that some simple steps be followed:

- Check compressor history
- Run oil analysis
- Check components
- Flush as required (contact manufacturer for specifics)
- Polycarbonate protection
- Monitor synthetic service
- Routine maintenance

# CompAir Air Compressor Lubricant Chart

Compressor Manufacturer	Compressor Type	Petroleum Based		Synthetic		
		CN 300	CS100	CS 200	CS 300	CS 400
Atlas-Copco	Recip	•			•	
	Rotary Vane			•		
	Rotary Screw			•		
Champion	Recip	•			•	
	Rotary Screw			•		
Chicago-Pneumatic	Recip	•			•	
	Rotary Vane			•		
	Rotary Screw			•		
Gardner Denver	Recip	•			•	
	Rotary Screw			•		
Ingersoll Rand	Type 30 & 40	•			•	•
	ESV & ESH	•			•	
	XLE & XLH	•			•	
	PHE	•			•	
	LLE	•			•	
	PAC AIR			•		
	SSR2000			•		
Joy	Recip				•	
	Rotary Screw		•	•		
Kaeser	Rotary Screw			•		
Quincy	Recip	•			•	
	Rotary Screw			•		
Worthington	Recip	•			•	
	Rotary Vane			•		
	Rotary Screw			•		

These recommendations are based upon our study of existing specifications. This lubricant chart is to quickly provide you with our recommendations. Extremely high or low ambient temperatures require careful selection of compressor lubricant. Also, compressor manufacturers lubricant recommendations may vary or change without notice. It is critical that lubricant recommendations be verified when operating outside normal conditions.

# CompAir Synthetic Lubricants

Packaging, Shipping, Storage, Handling,  
Safety, and First Aid

## Packaging

CS Lubricants are available in one gallon, five gallon, and 55 gallon containers.

## Shipping

*Over the road*—Use freight classification, LUBRICATING OIL LIQUID, OTHER THAN PETROLEUM OIL, NOIBN.

*Via air*—LUBRICATING OIL LIQUID, OTHER THAN PETROLEUM OIL, NOIBN. FLASH POINT EXCEEDS 450 °F  
NON HAZARDOUS.

## Storage

Store indoors in protected area. Keep containers closed.

## Handling

CS Lubricants are handled as petroleum oils but they are generally less toxic.

Handle as petroleum oil for disposal purposes. Consult state or local authorities for any specific state or local procedures.

## Safety and First Aid

*Skin Contact*—Extended contact can result in defatting skin and slight irritations. If reasonable care and personal cleanliness are practiced during handling, skin contact will be minimized. If contact occurs, remove the lubricant with soap and water.

*Clothing*—Remove from clothing by washing with laundry products or by dry cleaning.

*Eye Contact*—Slight eye irritation may occur. Flush eyes with copious flow of water for 5 to 15 minutes. Get medical attention. Use of safety glasses is a good practice.

*Inhalation*—Slight exposure to these lubricants can cause minor irritation, but no injury. If prolonged exposure has occurred, remove person to fresh air.

*Ingestion*—This material is low in oral toxicity. If swallowed, do not induce vomiting. Get medical attention.



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CompAir is an Invensys company