



Technical Data Sheet

Previous Name: Shell Corena S

# Shell Corena S3 R 46

- Long Life
- Improved Efficiency

## Premium Rotary Air Compressor Oil

Shell Corena S3 R is a premium quality air compressor oil designed to deliver high performance lubrication of rotary sliding vane and screw air compressors. It uses an advanced additive system to provide excellent protection and performance for compressors running at up to 20 bar and 100°C discharge temperatures with oil maintenance intervals of up to 6000 hours.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

##### ■ Long oil life – Maintenance saving

Shell Corena S3 R is capable of providing oil maintenance intervals of up to 6000 hours (where allowed by manufacturers) even when operating at maximum discharge temperatures of up to 100°C.

It is formulated to help:

- Resist formation of carbon deposits in sliding vane slots in vane compressors
  - Resist formation of deposits on rotating components in screw compressors
  - Resist thermal breakdown and deposit formation to maintain excellent internal surface cleanliness particularly in oil/air separator and coalescer systems.
  - Exact oil maintenance interval will depend on intake air quality, duty cycle and ambient conditions. For hot and humid type climates as found in the Asian and Pacific regions, a reduced oil drain period is recommended (consult OEM recommendations)
  - Outstanding wear protection
- With many years of successful application, Shell Corena S3 R helps provide effective protection of internal metal surfaces from corrosion and wear.

It contains an advanced ashless anti-wear system to help prolong the life of critical parts such as bearings and gears.

##### ■ Maintaining system efficiency

Air release and prevention of foaming are critical performance characteristics in a compressor oil, ensuring reliable start-up and continuous compressed air availability. Shell Corena S3 R is designed to provide rapid air release without excessive foaming to give trouble-free operation even under cycling conditions.

In addition, Shell Corena S3 R has excellent water separation properties to help ensure continuous efficient operation of the compressor even in the presence of water.

#### Main Applications



##### ■ Rotary sliding vane air compressors

Shell Corena S3 R is suitable for oil-flooded or oil-injected vane compressors, operating at pressures of up to 10 bar and with air discharge temperatures of up to 100°C.

##### ■ Screw air compressors

Suitable for oil flooded or oil injected, single or two-stage rotary compressors, operating at pressures of up to 20 bar and with air discharge temperatures of up to 100°C.

#### Specifications, Approvals & Recommendations

##### ■ ISO 6743-3A-DAJ

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

## Compatibility & Miscibility

### ■ Seal Compatibility

Shell Corena S3 R oils are compatible with seal materials specified for use with mineral oils.

## Typical Physical Characteristics

Properties			Method	Shell Corena S3 R
ISO Viscosity Grade			ISO 3448	46
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D 445	46
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D 445	6.9
Density	@15°C	kg/m <sup>3</sup>	ASTM D 1298	868
Flash Point (COC)		°C	ASTM D 92	230
Air Release		mins	ASTM D 3427	3
RPVOT		mins	ASTM D 2272	700
FZG Test		LS Fail	CEC-L-07-A-95	11
Pour Point		°C	ASTM D 97	-30
Water Separability	@54°C	mins	ASTM D 1401	15

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

### ■ Health and Safety

Shell Corena S3 R Oil is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

### ■ Protect the Environment

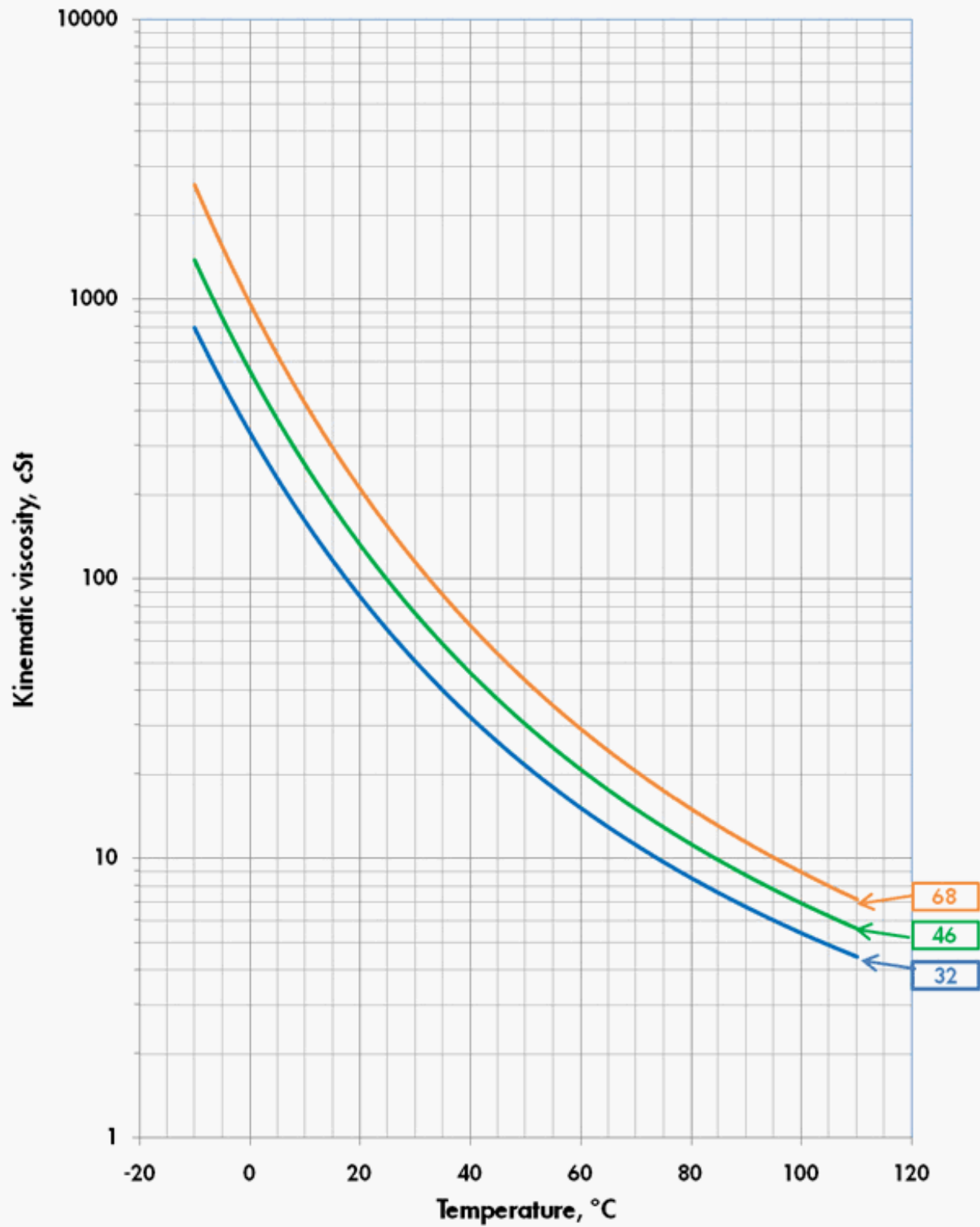
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

## Additional Information

### ■ Advice

Advice on applications not covered here may be obtained from your Shell representative.

Viscosity - Temperature Diagram for Shell Corena S3 R





Technical Data Sheet

Previous Name: Shell Corena S

# Shell Corena S3 R 68

- Long Life
- Improved Efficiency

## Premium Rotary Air Compressor Oil

Shell Corena S3 R is a premium quality air compressor oil designed to deliver high performance lubrication of rotary sliding vane and screw air compressors. It uses an advanced additive system to provide excellent protection and performance for compressors running at up to 20 bar and 100°C discharge temperatures with oil maintenance intervals of up to 6000 hours.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

##### ■ Long oil life – Maintenance saving

Shell Corena S3 R is capable of providing oil maintenance intervals of up to 6000 hours (where allowed by manufacturers) even when operating at maximum discharge temperatures of up to 100°C.

It is formulated to help:

- Resist formation of carbon deposits in sliding vane slots in vane compressors
  - Resist formation of deposits on rotating components in screw compressors
  - Resist thermal breakdown and deposit formation to maintain excellent internal surface cleanliness particularly in oil/air separator and coalescer systems.
  - Exact oil maintenance interval will depend on intake air quality, duty cycle and ambient conditions. For hot and humid type climates as found in the Asian and Pacific regions, a reduced oil drain period is recommended (consult OEM recommendations)
  - Outstanding wear protection
- With many years of successful application, Shell Corena S3 R helps provide effective protection of internal metal surfaces from corrosion and wear.

It contains an advanced ashless anti-wear system to help prolong the life of critical parts such as bearings and gears.

##### ■ Maintaining system efficiency

Air release and prevention of foaming are critical performance characteristics in a compressor oil, ensuring reliable start-up and continuous compressed air availability. Shell Corena S3 R is designed to provide rapid air release without excessive foaming to give trouble-free operation even under cycling conditions.

In addition, Shell Corena S3 R has excellent water separation properties to help ensure continuous efficient operation of the compressor even in the presence of water.

#### Main Applications



##### ■ Rotary sliding vane air compressors

Shell Corena S3 R is suitable for oil-flooded or oil-injected vane compressors, operating at pressures of up to 10 bar and with air discharge temperatures of up to 100°C.

##### ■ Screw air compressors

Suitable for oil flooded or oil injected, single or two-stage rotary compressors, operating at pressures of up to 20 bar and with air discharge temperatures of up to 100°C.

#### Specifications, Approvals & Recommendations

##### ■ ISO 6743-3A-DAJ

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

## Compatibility & Miscibility

### ■ Seal Compatibility

Shell Corena S3 R oils are compatible with seal materials specified for use with mineral oils.

## Typical Physical Characteristics

Properties			Method	Shell Corena S3 R
ISO Viscosity Grade			ISO 3448	68
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D 445	68
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D 445	8.9
Density	@15°C	kg/m <sup>3</sup>	ASTM D 1298	873
Flash Point (COC)		°C	ASTM D 92	248
Air Release		mins	ASTM D 3427	5
RPVOT		mins	ASTM D 2272	700
FZG Test		LS Fail	CEC-L-07-A-95	11
Pour Point		°C	ASTM D 97	-30
Water separability	@54°C	mins	ASTM D 1401	15

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

### ■ Health and Safety

Shell Corena S3 R Oil is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

### ■ Protect the Environment

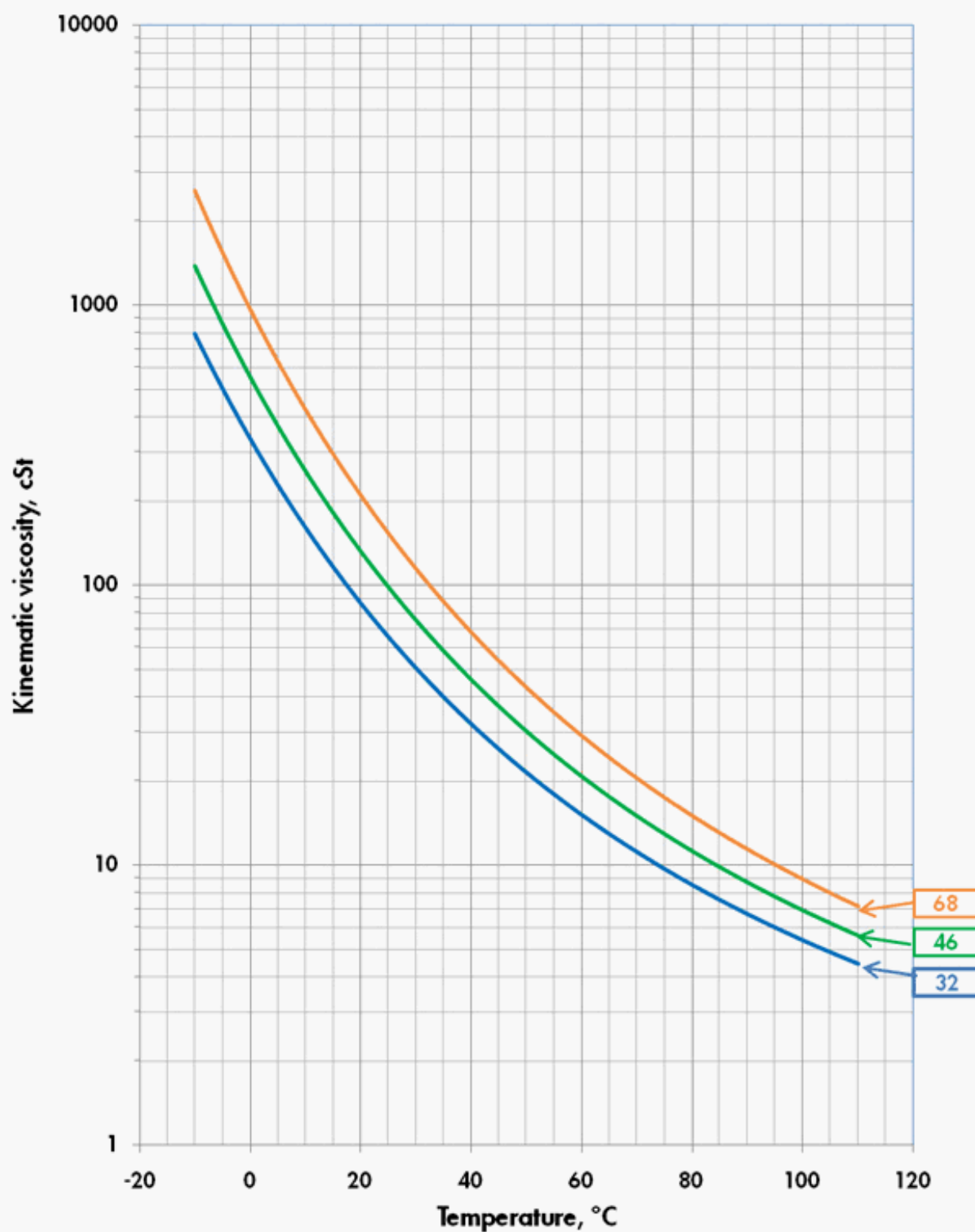
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

## Additional Information

### ■ Advice

Advice on applications not covered here may be obtained from your Shell representative.

Viscosity - Temperature Diagram for Shell Corena S3 R





Previous Name: Shell Corena AP

# Shell Corena S4 P 100

- Extra Long Life
- Improved Efficiency
- Severe Applications

*Advanced Synthetic Reciprocating (Piston) Air Compressor Oil*

Shell Corena S4 P is an advanced synthetic air compressor oil incorporating synthetic ester base fluids and a unique high performance additive system. It is designed to deliver the highest performance lubrication for high pressure reciprocating compressors running in excess of 220°C discharge temperatures at elevated pressures.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

#### • Long oil life – Maintenance saving

Shell Corena S4 P is designed to provide safe, reliable and effective lubrication for extended service periods where mineral compressor lubricants are unsatisfactory.

With an extremely low tendency for deposit build-up Shell Corena S4 P helps ensure continued high performance of the compressor over long periods and reduces maintenance costs and shutdowns.

Shell Corena S4 P can extend the normal valve maintenance period from typically up to 1000 hours of operation using conventional mineral oils, to 2000 to 4000 hours depending on operating conditions.

#### • Outstanding wear protection

Shell Corena S4 P helps provide exceptional protection of internal metal surfaces from corrosion and wear to help prolong the life of critical parts such as bearings and gears.

#### • Maintaining system efficiency

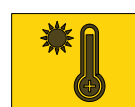
Shell Corena S4 P helps prevent the formation of carbon deposits and lacquer on valves and piston crowns at high working temperatures and pressures. These can cause serious damage, lower compressor efficiency and increase maintenance costs.

In addition, Shell Corena S4 P has excellent water separation to help prevent accelerated corrosion and facilitating easy draining of condensate.

#### • Enhanced air line safety

In discharge air lines, the combination of rust particles, dispersed in carbonaceous deposits, coupled with heat from recently compressed air, can cause a reaction leading to the possibility of fires and explosion. Shell Corena S4 P helps to minimise the likelihood of this danger.

### Main Applications



#### • Reciprocating air compressors

Shell Corena S4 P is suitable for all industrial reciprocating air compressors, in particular those operating under severe conditions of air discharge temperatures in excess of 220°C with continuous high delivery pressures.

#### • Breathing air compressors

Shell Corena S4 P may be used in breathing air compressors, provided subsidiary clean-up apparatus is used to ensure that the air produced is fit for breathing.

### Specifications, Approvals & Recommendations

- DIN 51506 VDL ISO/DP 6521-L-DAB - medium duty
- ISO 6743-3:2003 DAB - Severe duty
- EN 12021

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

## Compatibility & Miscibility

### • Miscibility

Shell Corena S4 P oils are fully miscible with mineral oils, although dilution with mineral lubricants will markedly reduce its performance.

### • Seal Compatibility

Shell Corena S4 P, in common with other ester-based lubricants, is not compatible with all seal materials, and some older compressors may need to have the seals changed before they can be run on the new grades.

### • Compatibility Guide : Acceptable

High Nitrite content (SEB5)

>36% acrylonitrile

### • Compatibility Guide : Majority Acceptable

Medium nitrile content (SE70)

30 - 36% acrylonitrile

### • Compatibility Guide : Not recommended

Low nitrile content

<30% acrylonitrile

## Typical Physical Characteristics

Properties	Method	S4 P 100
ISO Viscosity Grade	ISO 3448	100
Performance Standard	DIN 51506	VDL 100
Kinematic Viscosity @40°C	mm <sup>2</sup> /s	100
Kinematic Viscosity @100°C	mm <sup>2</sup> /s	10.2
Density @15°C	kg/m <sup>3</sup>	988
Flash Point (COC)	°C	260
Pour Point	°C	-39
Sulphated Ash	%m	<0.02
Rust Prevention - Distilled Water	24 hrs	Pass
Copper Corrosion	(100°C/3hr °C)	1b
Water Separability	@82°C	min

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

### • Health and Safety

Shell Corena S4 P Oil is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

### • Protect the Environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

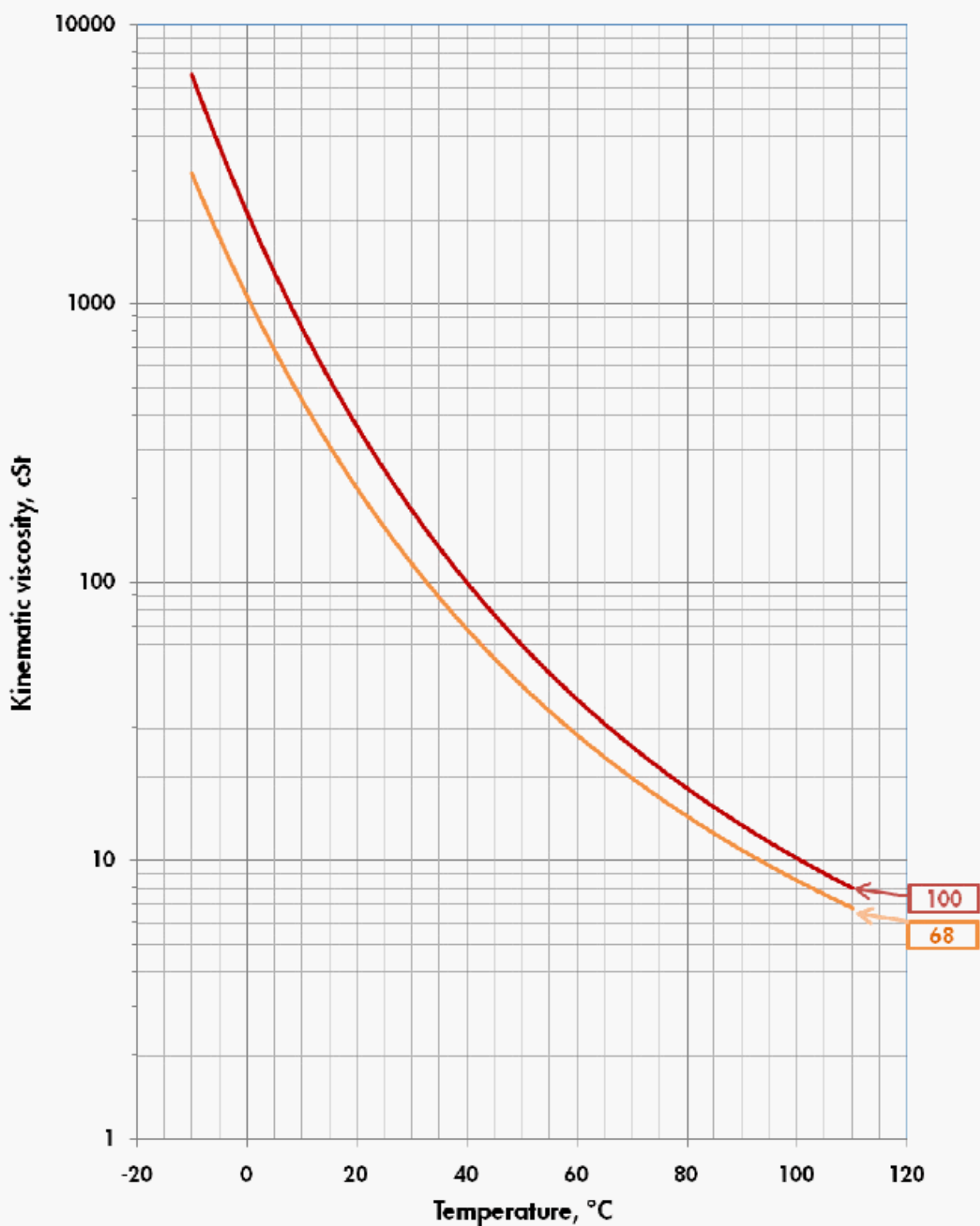
## Additional Information

### • Advice

Advice on applications not covered here may be obtained from your Shell representative.



## Viscosity - Temperature Diagram for Shell Corena S4 P





## Technical Data Sheet

Previous Name: Shell Corena AS

# Shell Corena S4 R 46

- Extra Long Life
- Improved Efficiency
- Severe Applications

## Advanced Synthetic Rotary Air Compressor Oil

Shell Corena S4 R is primarily an advanced synthetic air compressor oil incorporating a unique high performance additive system. It is designed to deliver the highest performance lubrication of rotary sliding vane and screw air compressors. It uses an advanced additive system to provide excellent protection and performance for compressors running at pressures over 25 bar and in excess of 100°C discharge temperatures with oil maintenance intervals of up to 12,000 hours. Shell Corena S4 R is also perfectly suitable to cover applications where a synthetic bearing & circulating oil or R&O oil (ISO VG 32-68) is needed.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

#### • Long oil life – Maintenance saving

Shell Corena S4 R is capable of providing oil maintenance intervals of up to 12,000 hours (where allowed by manufacturers) even when operating at maximum discharge temperatures in excess of 100°C.

The advanced formulation of Shell Corena S4 R helps deliver exceptional oil life through:

- Exceptional resistance to thermal and chemical breakdown.
- Resist formation of deposits on rotating components in screw compressors and in sliding vane slots for continuous efficient operation.
- Exceptionally low levels of deposit formation to help maintain excellent internal surface cleanliness particularly in oil/air separator and coalescer systems.

#### • Outstanding wear protection

Shell Corena S4 R is designed to provide rapid air release without excessive foaming to give trouble-free operation even under cycling conditions helping to ensure reliable start-up and continuous compressed air availability.

Shell Corena S4 R has low volatility and oil carryover to provide reduced oil top-up requirements in combination with increased air quality.

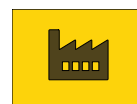
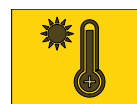
#### • Maintaining system efficiency

Shell Corena S4 R is designed to provide rapid air release without excessive foaming to give trouble-free operation even under cycling conditions helping to ensure reliable start-up and continuous compressed air availability.

Shell Corena S4 R has low volatility and oil carryover to provide reduced oil top-up requirements in combination with increased air quality.

In addition, Shell Corena S4 R has excellent water separation properties to help ensure continuous efficient operation of the compressor even in the presence of water.

### Main Applications



#### • Rotary sliding vane and screw air compressors

Shell Corena S4 R is suitable for oil-flooded/oil injected, single or two-stage compressors, operating at pressures of in excess of 25 bar and with air discharge temperatures of over 100°C (including intermittent operation under these conditions).

#### • Severe service conditions

May also be used where exceptionally high ambient temperatures are found, when the oil temperature cannot be reduced to normal levels.

#### • ABB Turbochargers

The product is recommended for use in ABB turbochargers fitted to low and medium speed diesel engines used in marine and power generation applications.

#### • Bearing & Circulating oil

Perfectly suitable to cover applications where a synthetic bearing & circulating oil or R&O oil (ISO VG 32-68) is required and will provide benefits due to increased resistance to deposit formation, improved low temperature fluidity, and lowering equipment operating temperatures.

- When a higher viscosity grade synthetic oil is required we recommend to use Shell Morlina S4 B grades for such applications.

### Specifications, Approvals & Recommendations

- ISO 6743-3A-DAJ.

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

### Compatibility & Miscibility

#### Miscibility

Shell Corena S4 R oils are fully miscible with mineral oils, although dilution with mineral lubricants will markedly reduce its performance. Care must be taken to avoid mixing Shell Corena S4 R with certain other types of synthetic fluids. Contact your Shell representative for further information.

#### Seal Compatibility

Shell Corena S4 R oils are compatible with seal materials specified for use with mineral oils.

### Typical physical characteristics

Properties			Method	S4 R 46
ISO Viscosity Grade			ISO 3448	46
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D445	46
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D445	7.7
Viscosity Index (VI)			DIN ISO 2909	135
Density	@15°C	kg/m <sup>3</sup>	ASTM D1298	843
Flash Point (COC)		°C	ASTM D92	230
Pour Point		°C	ASTM D97	-45
Air Release		mins		2
Rust Prevention - Synthetic Sea Water			ASTM D665B	Pass
Water Separability		mins	ASTM D1401	10
Rotating Pressure Vessel Oxidation		mins	ASTM D2272	2200
FZG Load Carrying Test		failure load stage	CEC-L-07-A-95	>12

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

### Health, Safety & Environment

#### Health and Safety

Shell Corena S4 R Oil is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

#### Protect the Environment

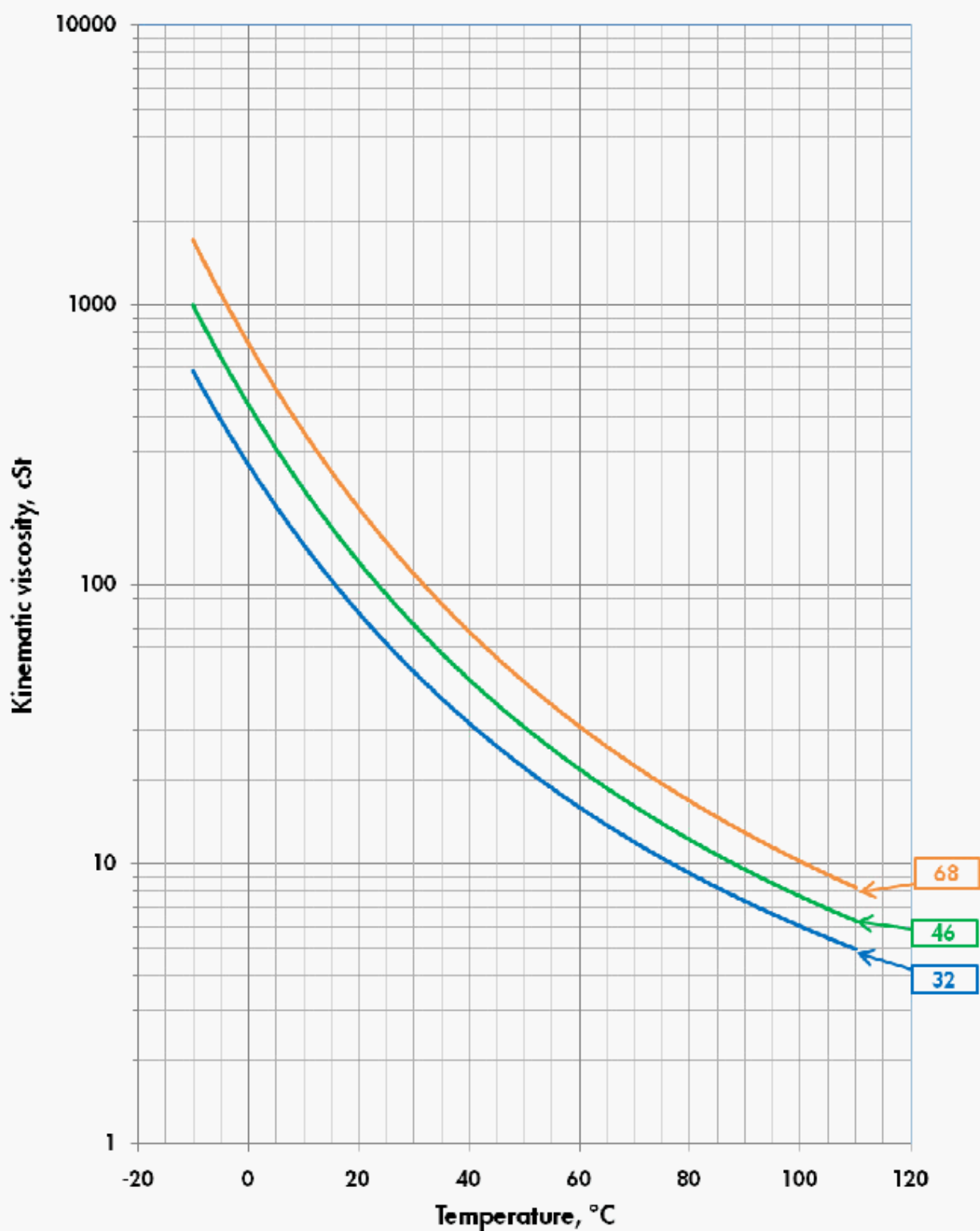
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

### Additional Information

#### Advice

Advice on applications not covered here may be obtained from your shell representative.

## Viscosity - Temperature Diagram for Shell Corena S4 R





## Technical Data Sheet

# Shell Corena S5 R 46

- Long Life
- High temperature applications
- High pressure applications

## High quality synthetic fluid designed for rotary screw air compressors

Shell Corena S5 R is a top tier synthetic lubricant based on polyalkylene glycol (PAG) and ester technology designed for use in rotary screw air compressors. It enables long oil drain intervals with varnish free operation and is the product of choice for unprecedented, challenging operations. It is an excellent choice for service fill in situations where polyglycol-ester type lubricants are already in use.

## DESIGNED TO MEET CHALLENGES

### Performance, Features & Benefits

#### • Long oil life – Maintenance saving

Shell Corena S5 R is capable of providing oil change intervals of up to 10,000 hours (where allowed by manufacturers) depending on running conditions. Long oil drain intervals are realised by outstanding fluid properties in the areas of thermal, hydrolytic and oxidative stability, resistance to sludge and varnish formation.

#### • Machine protection

Shell Corena S5 R protects machine internals from corrosion and wear. Its high viscosity index and high flash point enable safe operation over a wide range of ambient operating conditions. Compressor bearing protection is retained even in cases where modern compressors reach high temperature trip levels. Fluid intrinsic lubricity combined with excellent load carrying characteristics help prolong the life of critical parts such as bearings and gears.

#### • Maintaining system efficiency

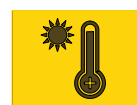
Shell Corena S5 R oils display a combination of properties that are key for maintaining total lifecycle system efficiency for the entire compressor string.

Shell Corena S5 R is especially synthesized towards low product vapour pressure, rapid air release and low foaming properties. This enables for low lubricant make-up rates and minimal complications arising from the presence of entrained lubricant in downstream air system.

Shell Corena S5 R has good thermal conductivity which makes it an effective coolant. It empowers efficient gas compression throughout your operation 24/7.

Shell Corena S5 R exhibits superior environmentally friendly properties.

### Main Applications



#### • Rotary sliding vane and screw air compressors

Shell Corena S5 R is suitable for use in oil-flooded/ oil injected screw air compressors. It will meet the lubrication requirements of many positive displacement compressors operating under adverse conditions requiring similar viscosity grades.

#### • Severe service conditions

Shell Corena S5 R is the fluid of choice for machines that

- Have high capacity utilization.
- Require high reliability.
- Have high compression ratios including multi stage compression.
- Operate in hot environments.
- Operate in humid conditions.
- Operate in environments where intake air quality is low.

### Specifications, Approvals & Recommendations

- ISO 6743-3:2003 L-DAJ
- Shell Corena S5 R lubricants are especially recommended for use in rotary screw air compressors operating under severe conditions.

It is an excellent choice for service fill in situations where polyglycol-ester type lubricants are already in use.

- Shell Corena S5 R has demonstrated its resilience in the field both on- & offshore.

It has demonstrated its strong performance in machines of market leading OEMs such as Ingersoll-Rand®.

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

#### • Change-over Procedure

Shell Corena S5 R contains polyalkylene glycols and is not compatible with mineral oils or most synthetic ester or PAO lubricant types. Care should be taken when changing from such products to Shell Corena S5 R. For more information, please contact your local Shell Technical Helpdesk.

### Compatibility & Miscibility

#### • Seal & Paint Compatibility

High quality epoxy paints are recommended as polyalkylene glycols will not be compatible with certain conventional paints. Shell Corena S5 R has been found to be satisfactory with nitrile and Viton® seal materials, although Viton® seals are preferred. Consult your Shell representative or the equipment manufacturer for additional details about seal compatibility.

### Typical Physical Characteristics

Properties			Method	Shell Corena S5 R 46
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D445	46
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D445	8.2
Viscosity Index			ASTM D2270	170
Density	@15°C	kg/m <sup>3</sup>	ASTM D445	990
Flash Point (COC)		°C	ASTM D92	270
Rust Test, Salt Water			ASTM D665B	Pass
Cu Corrosion	@150°C		ASTM D130	1B
Air Release	@50°C	minutes	ASTM D3427	3.2
Thermal Conductivity (DSM)	@110°C	W/(m <sup>0</sup> k)	PLTL-73	0.14

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

### Health, Safety & Environment

#### • Health and Safety

Shell Corena S5 R is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from <https://www.epc.shell.com/>

#### • Protect the Environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

### Additional Information

#### • Advice

Advice on applications not covered here may be obtained from your Shell representative.



Previous Name: Shell Corena P

# Shell Corena S2 P 100

- *Reliable Protection*
- *Standard Life Applications*

## Reciprocating (Piston) Air Compressor Oil

Shell Corena S2 P is high quality air compressor oil designed to deliver the lubrication performance for high pressure reciprocating compressors. It is suitable for most reciprocating air compressors running at up to 220°C discharge temperatures at elevated pressures.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

- **Long oil life – Maintenance saving**

Shell Corena S2 P allows the interval between valve and piston maintenance to be extended under certain applications. Compressors can be kept in service for much longer periods, operating at a consistently high level of efficiency.

Extended maintenance capability is supported by resistance to formation of carbon deposits and lacquer on valves and piston crowns at high working temperatures and pressures.

- **Outstanding wear protection**

Shell Corena S2 P helps provide effective protection of internal metal surfaces from corrosion and wear to help prolong the life of critical parts such as bearings and pistons.

- **Maintaining system efficiency**

Shell Corena S2 P helps prevent the formation of carbon deposits and lacquer on valves and piston crowns at high working temperatures and pressures. These can cause serious damage, lower compressor efficiency and increase maintenance costs. In addition, Shell Corena S2 P has good water separation to help prevent accelerated corrosion, facilitating easy condensate draining.

- **Enhanced air line safety**

In discharge air-lines, the combination of rust particles, dispersed in carbonaceous deposits, coupled with heat from recently compressed air, can cause a reaction leading to the possibility of fires and explosion. Shell Corena S2 P helps to minimise the likelihood of this danger.

#### Main Applications



- **Reciprocating air compressors**

Shell Corena S2 P is suitable for use in industrial reciprocating air compressors operating with air discharge temperatures of up to 220°C.

- **Breathing air compressors**

Shell Corena S2 P may be used in breathing air compressors, provided subsidiary clean-up apparatus is used to ensure that the air produced is fit for breathing.

#### Specifications, Approvals & Recommendations

- ISO 6743-3A-: DAA Normal Duty
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk, or the OEM Approvals website.

#### Compatibility & Miscibility

- **Seal Compatibility**

Shell Corena S2 P oils are compatible with all sealing materials commonly used in air compressors.

## Typical physical characteristics

Properties			Method	Corena S2 P 100
ISO Viscosity Grade			ISO 3448	100
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D 445	100
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ASTM D 445	9.2
density	@15°C	kg/m <sup>3</sup>	ASTM D 1298	899
Flash Point		°C	ASTM D 92 (COC)	240
Pour Point		°C	ASTM D 97	-33
Neutralisation Value		mg KOH/g	ASTM D 974	0.3
Sulphated Ash		% m	DIN 51575	0.06
Oxidation Stability (delta CCR)		% m	DIN 51352-2	2
Properties Of The Distillation Residue (20%) - Carbon Residue (C)		% m	DIN 51551	0.3
Properties Of The Distillation Residue (20%) - Kinematic Viscosi	@40°C	mm <sup>2</sup> /s	DIN 51562	160

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

### • Health and Safety

Shell Corena S2 P is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

### • Protect the Environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

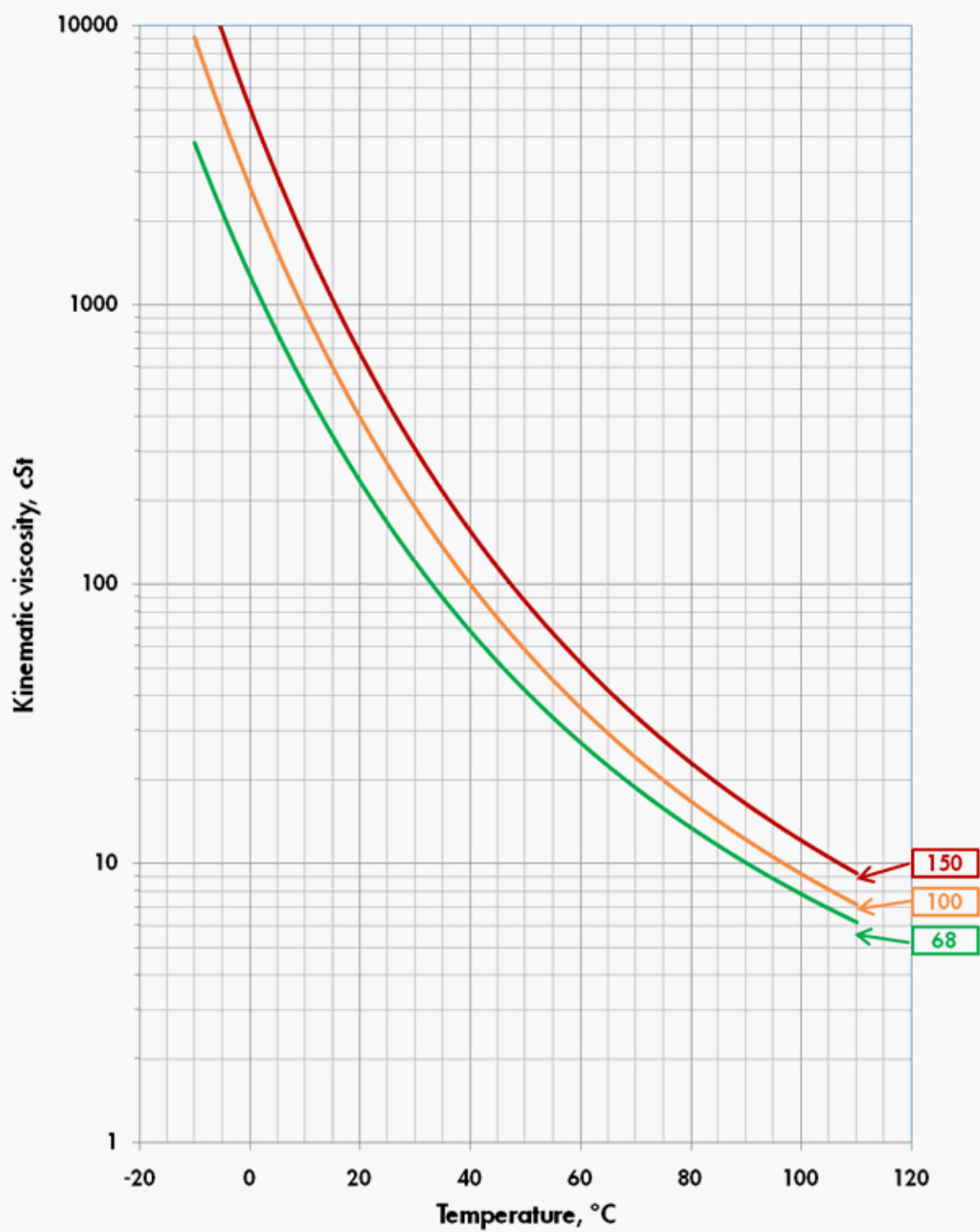
## Additional Information

### • Advice

Advice on applications not covered here may be obtained from your shell representative.



## Viscosity - Temperature Diagram for Shell Corena S2 P



[www.famcocorp.com](http://www.famcocorp.com)  
 E-mail: [info@famcocorp.com](mailto:info@famcocorp.com)  
[@famco\\_group](#)

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Previous Name: Shell Madrela T

# Shell Gas Compressor Oil S4 PV 190

- Extra Performance
- Versatile Applications

## Advanced Synthetic Gas Compressor Oil

Shell Gas Compressor Oil S4 PV has been specially developed as a versatile cylinder lubricant for reciprocating compressors handling a range of hydrocarbon and other gases. It is based on polyalkylene glycol base fluids and is fully approved by leading gas compressor manufacturers.

### DESIGNED TO MEET CHALLENGES

#### Performance, Features & Benefits

- **Extended maintenance intervals**

Shell Gas Compressor Oil S4 PV has reduced hydrocarbon gas solubility to provide reduced viscosity loss in comparison with mineral oil-based products, improving piston ring and packing lubrication and helping to extend service intervals, reducing maintenance and downtime costs.

- **Outstanding wear protection**

The low hydrocarbon gas solubility and associated low viscosity loss results in retention of a stronger lubricant film on the cylinder wall, piston rings and packing components, delivering low levels of corrosion and cylinder wear.

- **Maintaining system efficiency**

Lower cylinder feed rates are possible compared to conventional oil due to the higher levels of wear protection and lubrication provided improving reliability and reducing the oil carryover into the compressed gas.

#### Main Applications



- **Reciprocating gas compressors**

Sump and lubrication systems of enclosed pattern compressors handling hydrocarbon and other gases where the crankcase and bearings operate in a gas atmosphere.

- **Labyrinth piston compressors**

Labyrinth piston compressors do not require cylinder lubrication. Shell Gas Compressor Oil S4 PV is needed for the forced feed lubrication of the plain bearings (crankcase closed).

- **Versatile gas compression applications**

Shell Gas Compressor S4 PV is suitable for compressors handling the following gases:

Methane; Butylene; Ethane; Butadiene; Ethylene; Vinyl Chloride Monomer (VCM); Propane; Propylene; Ammonia; Inert gases (dry); Butane.

#### Specifications, Approvals & Recommendations

- Shell Gas Compressor Oil S4 PV is approved by the following manufacturers of gas cargo and general service compressors:
- Burckhardt Compression A.G: approved for use in their K-type gas compressors for general LPG/LNG service and for ammonia, vinyl chloride monomer, butadiene etc. Meets Burckhardt Lubricating Oil Specification (VSB) 1001301.
- Linde A.G: approved for general service gas compression including ammonia, vinyl chloride monomer and butadiene.
- GreenField A.G. (Atlas Copco): approved for use in their trunk piston gas compressors with hydrocarbon, helium, argon, hydrogen, nitrogen and carbon dioxide gases.

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

## Compatibility & Miscibility

### • Seal Compatibility

Shell Gas Compressor Oil S4 PV may be used with most common seal and packing materials, including butyl, nitrile, neoprene and Viton seal materials. Care should be taken if the system is being converted from mineral oil to Shell Gas Compressor Oil S4 PV. Seals normally used in conjunction with mineral oils swell slightly in operation, whereas the same material tends to either remain unchanged or shrink slightly when using Shell Gas Compressor Oil S4 PV.

Leakage could result from worn or damaged seals. Fitment of new seals is recommended on change-over

### • Change-over Procedure

Shell Gas Compressor Oil S4 PV contains polyalkylene glycols and is not compatible with mineral oils or most other synthetic lubricant types. Care should be taken when changing from such products to Shell Gas Compressor Oil S4 PV.

## Typical physical characteristics

Properties			Method	Gas Comp Oil S4 PV 190
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ISO 3104	190
Kinematic Viscosity	@100°C	mm <sup>2</sup> /s	ISO 3104	36
Viscosity Index			ISO 2909	234
Flash Point (COC)		°C	ISO 2592	262
Pour Point		°C	ISO 3016	-30
Density	@15°C	kg/m <sup>3</sup>	ISO 12185	1056

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

## Health, Safety & Environment

### • Health and Safety

Shell Gas Compressor Oil S4 PV 190 is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Material Safety Data Sheet, which can be obtained from <http://www.epc.shell.com/>

### • Protect the Environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

## Additional Information

### • Advice

Advice on applications not covered here may be obtained from your shell representative.