Product	Benefits	Technology	ISO viscosity grades	Specifications and approvals (Full details of approvals for all products can be obtained from your Shell representative; approvals and claims will vary by viscosity grade.)
Shell **Morlina *S4*** *B*	■ Extra long life ■ Extra protection ■ Severe applications	Synthetic, mild EP	220, 320	Approved by or meets Alfa Laval Group D (gearboxes), Aerzener Maschinenfabrik (blowers), Baltimore Aircoil (gearboxes), Cincinnati Machine, David Brown and many other equipment manufacturer approvals and listings Industry standards: ISO 12925-1 type CKS; ISO 150 VG
Shell **Morlina *S2*** *B*	■ Versatile protection ■ Industrial applications	Conventional, non-EP	68, 150, 220	Approved by or meets: Morgan Morgoil® – New Oil (Rev. 1.1); and Danieli Standard Oil 6.124249.F (ISO 100-460) Industry standards: DIN 51517-2 type CL
Shell **Morlina *S2*** *BL*	■ Reliable protection ■ High-speed applications	Low-viscosity base oils, non-EP	5, 10	Approved by or meets Cincinnati Machine P-65 (ISO 2); Cincinnati Machine P-62 (ISO 5, 10); and Cincinnati Machine P-45 (ISO 22)
Shell **Morlina *S1*** *B*	■ Reliable protection ■ Special applications	Conventional, non-EP	100, 150, 220, 320, 460, 680	Approved by or meets Morgan Morgoil® – New Oil (Rev. 1.1) Industry standards: DIN 51517-1 type C

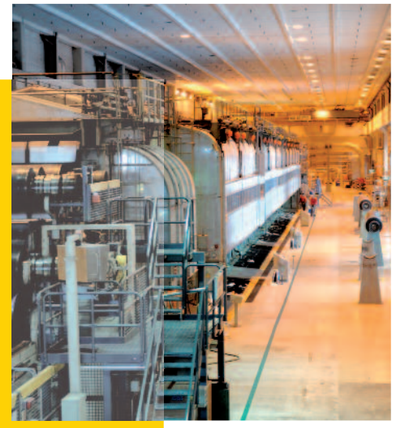
FULL PRODUCT AND SERVICE PORTFOLIO

Shell Lubricants is named a global leader in lubricants (Kline & Company 2009) and has a 60-year history of innovation. We are constantly investing to develop better lubrication solutions,
as demonstrated by

- Shell Omala S4 GX synthetic gear oil – for long life in demanding environments
- Shell Corena S4 R air compressor oil – for up to 12,000 hours of protection.

In addition, Shell provides the excellent Shell LubeAnalyst oil condition monitoring service, which is designed to help you improve your business performance.

Whatever your needs or application, Shell can provide a full range of oils and greases, including synthetic, high-performance products and additional services.



For more information, please contact

shell.com/lubricants

DESIGNED TO KEEP PRODUCING RESULTS.

JUST LIKE OUR BEARING AND CIRCULATING OILS – SHELL MORLINA.

DESIGNED TO MEET CHALLENGES

EVERY PART OF YOUR MACHINE OR PROCESS HAS BEEN METICULOUSLY ENGINEERED, SO YOU WANT TO BE SURE THAT YOU CHOOSE A LUBRICANT THAT HAS BEEN DESIGNED TO ENSURE THAT YOUR EQUIPMENT IS WELL PROTECTED AND WORKS EFFICIENTLY.

The Shell Morlina range of bearing and circulating oils has been developed to enable equipment operators to select the oil that will deliver optimum value to their operations through enhanced wear protection, long oil life and high system efficiency.

WEAR PROTECTION

Lubrication systems for industrial equipment differ considerably across industries in size, loading, operating conditions, temperatures and exposure to contamination. But whatever your application, bearings, gears and oil pumps must be well protected from wear and corrosion for long machine life.

That is why Shell offers a range of bearing and circulating oils ranging from robust, reliable products to fully synthetic products fortified with extreme-pressure (EP) additives. There are also speciality products designed to cope with hot, wet or dusty environments, or high-precision operations.

OIL LIFE

The longer the oil life, the less fluid maintenance is required to help your equipment to operate for longer without interruption. The Shell Morlina range of bearing and circulating oils enables you to match the oil life of the fluid to your operational needs. This includes the fully synthetic Shell Morlina S4 B, which offers the longest oil life in the Shell range under severe conditions, and speciality products that continue to function even when very contaminated with water, dust or dirt.

SYSTEM EFFICIENCY

Efficient systems are characterised by their ability to operate at or beyond their original design parameters. Consistent and reliable lubrication, whatever the operating conditions, is key. As every application brings specific challenges, the Shell Morlina range is designed to provide a choice of oils that can help to optimise system efficiency.

A RANGE OF BEARING AND CIRCULATING OILS DESIGNED TO MEET YOUR NEEDS

To meet the challenges of a wide range of equipment designs and applications, Shell has designed a portfolio of oils that enables you to choose a product to match your technical and operational needs.

PRODUCT NAME SUFFIX KEY

B = Bearings

L = Low load

APPLICATION ICON KEY

Roller bearing
Enclosed gear
High load
Extreme high temperature
Plain bearing
Factory/machine applications

INCREASINGLY EFFICIENT PROTECTION

ADVANCED TIER 4
MAIN LINE TIER 2
ENTRY TIER 1

THE SHELL MORLINA "B" RANGE

Bearing and circulating oils with a range of protection and performance levels for a wide range of industrial applications

Shell Morlina *S4 B*

SYNTHETIC
- Extra long life
- Extra protection
- Severe applications

Better protection, longer oil life and better system efficiency

Shell Morlina *S2 B*
- Versatile protection
- Industrial applications

Better protection, longer oil life and better system efficiency

Shell Morlina *S1 B*
- Reliable protection
- Special applications

THE SHELL MORLINA "BL" RANGE

Extra-low viscosity grades for use in high-speed machine spindle applications

Shell Morlina *S2 BL*
- Reliable protection
- High-speed applications

OUR EXPERTISE, YOUR REASSURANCE

Shell Morlina oils have been designed and developed in close co-operation with customers and equipment makers, and have a proven track record in real-life applications. They are recommended or approved by leading equipment makers and users around the world so you can be assured that they will not let you down.

RESPONDING TO YOUR NEEDS – SHELL MORLINA S4 B

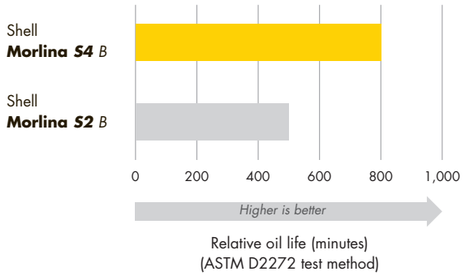
Using fully synthetic bearing and circulating oils, such as Shell Morlina S4 B, can bring significant savings to operators of heavy industrial equipment or where operating conditions are hot and severe. For instance, by switching from a conventional product, one customer reports

- increasing oil life by 400%
- reducing bearing damage
- increasing the value of production output by over $80,000[1] a year.

"Shell Lubricants" refers to the various Shell companies engaged in the lubricants business.

[1]Saving reported by one customer. Actual savings may vary, depending on the application, the current oil used, the maintenance procedures and the condition of the equipment.

Shell Morlina S4 B – For the longest oil life in the Shell range



Technical Data Sheet

Previous Name: **Shell Morlina Oils**

Shell Morlina *S2 B 68*

- *Reliable Protection*
- *Industrial Application*
- *Water Shedding*

Industrial Bearing & Circulating Oils

Shell Morlina S2 B oils are high performance oils designed to provide outstanding oxidation and water separation protection for most general industrial bearing and circulating oil system applications and certain other industrial applications which do not require oils with extreme pressure (EP) properties. These oils meet the requirements of the Morgan Construction Company and Danieli for common bearing oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**
  Shell Morlina S2 B oils are formulated with a well proven rust and oxidation inhibitor additive package that helps provide consistent performance and protection throughout the maintenance interval.
- **Reliable wear & corrosion protection**
  Shell Morlina S2 B oils help prolong the life of bearings and circulating systems through:
  - Excellent water separation characteristics that helps ensure that critical oil films are retained between highly loaded parts.
  - Good air release characteristics to minimize cavitation and associated damage to circulating pumps.
  - Helps protect against corrosion, oxidation, and emulsion formation, even in the presence of water.
- **Maintaining system efficiency**
  Shell Morlina S2 B oils are blended with high quality, solvent refined base oils that promote good water separation and air release to ensure the efficient lubrication of the machines and systems.

Main Applications

- **Machine circulation systems**
- **Oil lubricated bearings**
  Suitable for most plain and rolling element bearings and general industrial applications.
- **Roll-neck bearings**
- **Enclosed industrial gear systems**
  Low or moderately loaded enclosed gears where EP performance is not required.

Specifications, Approvals & Recommendations

- Morgan MORGOIL® Lubricant Specification New Oil (Rev. 1.1) (MORGOIL is a registered trademark of the Morgan Construction Company)
- Danieli Standard Oil 6.124249.F
- DIN 51517-1 – type C
- DIN 51517-2 - type CL

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

Compatibility & Miscibility

- **Paint Compatibility**
  Shell Morlina S2 B oils are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Morlina S2 B 68
ISO Viscosity Grade			ISO 3448	68
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	68
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	8.8

Properties			Method	Morlina S2 B 68
Density	@15°C	kg/m³	ISO 12185	883
Viscosity Index			ISO 2909	100
Flash Point (COC)		°C	ISO 2592	250
Pour Point		°C	ISO 3016	-21
Rust, Distilled Water			ASTM D665A	Pass
Emulsion Test - @82°C (Unless specified by *)		Mins	ASTM D1401	10*
Oxidation Control Test : TOST		Hrs	ASTM D943	1500+
Oxidation Control Test : RBOT		Mins	ASTM D2272	500+
Foam Test, Seq II		ml foam at 0/10 mins	ASTM D892	5/0

- These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur. *@54°C

Health, Safety & Environment

- 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**

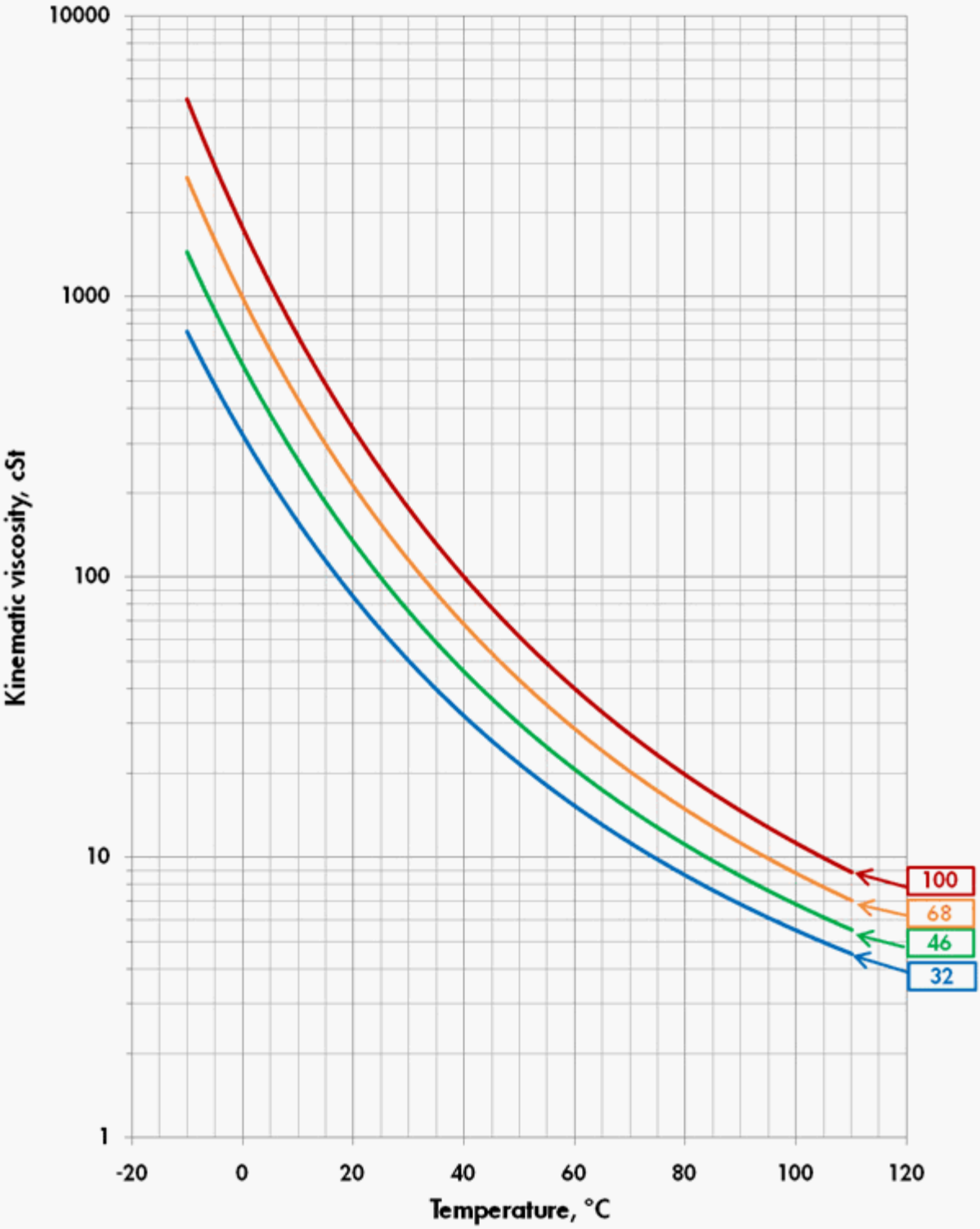
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

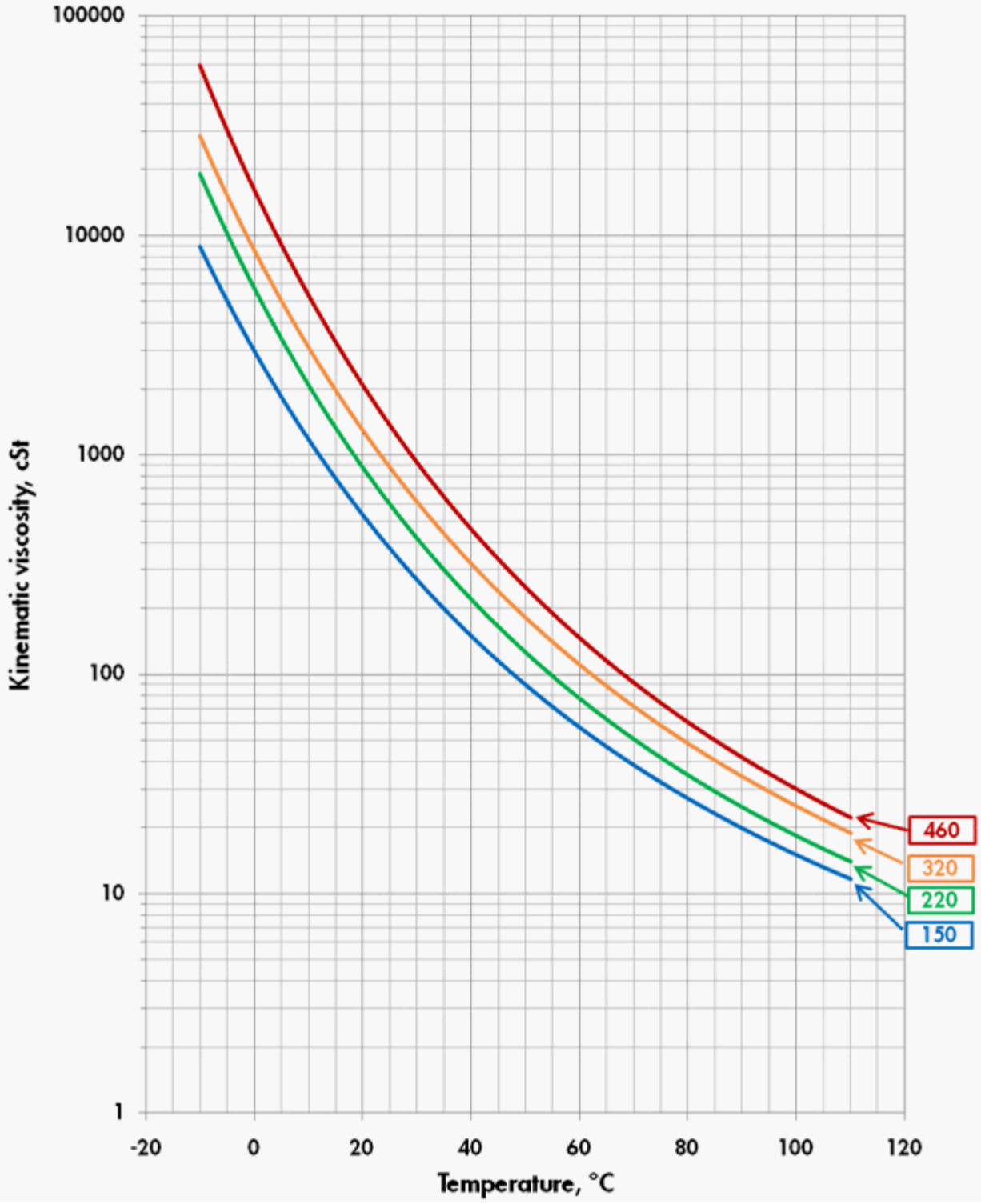
- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S2 B



Viscosity - Temperature Diagram for Shell Morlina S2 B



Technical Data Sheet

Previous Name: **Shell Morlina Oils**

Shell **Morlina** *S2 B 100*

- *Reliable Protection*
- *Industrial Application*
- *Water Shedding*

Industrial Bearing & Circulating Oils

Shell Morlina S2 B oils are high performance oils designed to provide outstanding oxidation and water separation protection for most general industrial bearing and circulating oil system applications and certain other industrial applications which do not require oils with extreme pressure (EP) properties. These oils meet the requirements of the Morgan Construction Company and Danieli for common bearing oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**

  Shell Morlina S2 B oils are formulated with a well proven rust and oxidation inhibitor additive package that helps provide consistent performance and protection throughout the maintenance interval.

- **Reliable wear & corrosion protection**

  Shell Morlina S2 B oils help prolong the life of bearings and circulating systems through:

  - Excellent water separation characteristics that helps ensure that critical oil films are retained between highly loaded parts.

  - Good air release characteristics to minimize cavitation and associated damage to circulating pumps.

  - Helps protect against corrosion, oxidation, and emulsion formation, even in the presence of water.

- **Maintaining system efficiency**

  Shell Morlina S2 B oils are blended with high quality, solvent refined base oils that promote good water separation and air release to ensure the efficient lubrication of the machines and systems.

Main Applications

- **Machine circulation systems**
- **Oil lubricated bearings**

  Suitable for most plain and rolling element bearings and general industrial applications.

- **Roll-neck bearings**
- **Enclosed industrial gear systems**

  Low or moderately loaded enclosed gears where EP performance is not required.

Specifications, Approvals & Recommendations

- Morgan MORGOIL® Lubricant Specification New Oil (Rev. 1.1) (MORGOIL is a registered trademark of the Morgan Construction Company)
- Danieli Standard Oil 6.124249.F
- DIN 51517-1 – type C
- DIN 51517-2 - type CL

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

Compatibility & Miscibility

- **Paint Compatibility**

  Shell Morlina S2 B oils are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Shell Morlina S2 B
ISO Viscosity Grade			ISO 3448	100
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	100
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	11.2
Density	@15°C	kg/m^3	ISO 12185	881
Viscosity Index			ISO 2909	97
Flash Point (COC)		°C	ISO 2592	250
Pour Point		°C	ISO 3016	-18
Rust, Distilled Water			ASTM D665A	Pass
Emulsion Test - @82°C (Unless specified by *)		Mins	ASTM D1401	10
Oxidation Control Test : TOST		Hrs	ASTM D943	1400+
Oxidation Control Test : RBOT		Mins	ASTM D2272	400+
Foam Test, Seq II		ml foam at 0/10 mins	ASTM D892	10/0

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur. *@54°C

Health, Safety & Environment

- 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**

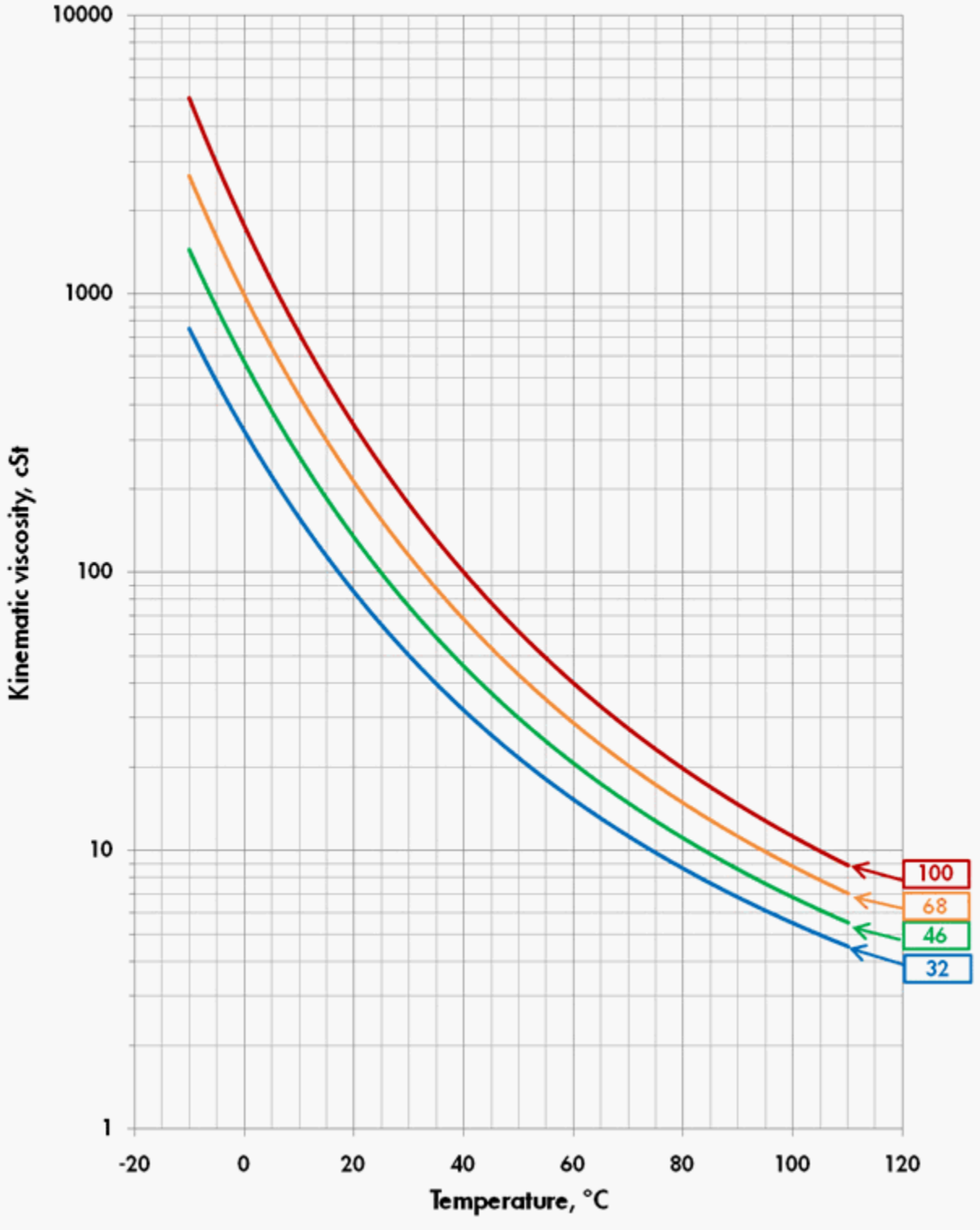
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

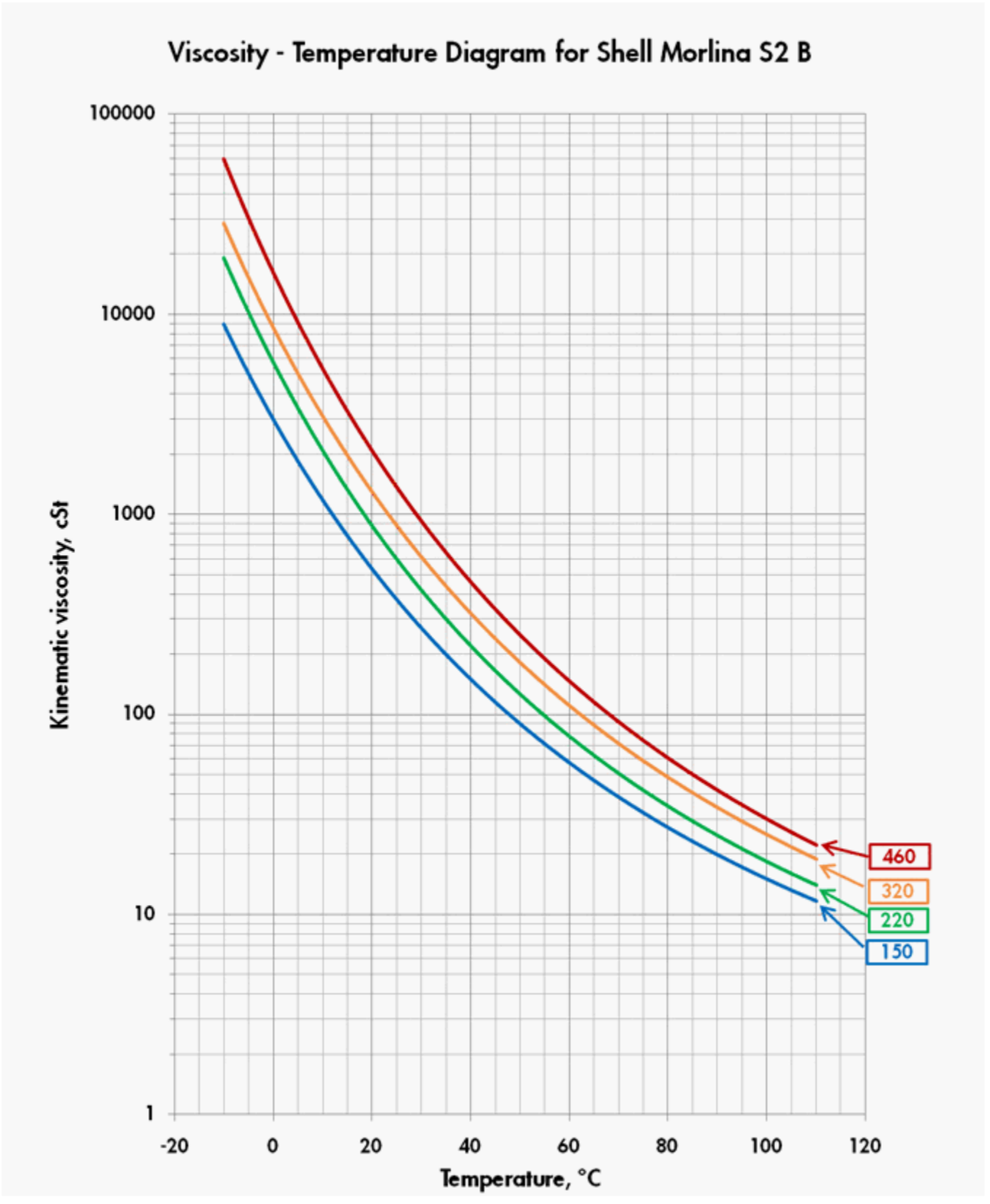
Additional Information

- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S2 B




Viscosity - Temperature Diagram for Shell Morlina S2 B
Kinematic viscosity, cSt
100000
10000
1000
100
10
1
-20
0
20
40
60
80
100
120
Temperature, °C
460
320
220
150

Technical Data Sheet

Previous Name: **Shell Morlina Oils**

Shell **Morlina** *S2 B 150*

- *Reliable Protection*
- *Industrial Application*
- *Water Shedding*

Industrial Bearing & Circulating Oils

Shell Morlina S2 B oils are high performance oils designed to provide outstanding oxidation and water separation protection for most general industrial bearing and circulating oil system applications and certain other industrial applications which do not require oils with extreme pressure (EP) properties. These oils meet the requirements of the Morgan Construction Company and Danieli for common bearing oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**

  Shell Morlina S2 B oils are formulated with a well proven rust and oxidation inhibitor additive package that helps provide consistent performance and protection throughout the maintenance interval.

- **Reliable wear & corrosion protection**

  Shell Morlina S2 B oils help prolong the life of bearings and circulating systems through:

  - Excellent water separation characteristics that helps ensure that critical oil films are retained between highly loaded parts.

  - Good air release characteristics to minimize cavitation and associated damage to circulating pumps.

  - Helps protect against corrosion, oxidation, and emulsion formation, even in the presence of water.

- **Maintaining system efficiency**

  Shell Morlina S2 B oils are blended with high quality, solvent refined base oils that promote good water separation and air release to ensure the efficient lubrication of the machines and systems.

Main Applications

- **Machine circulation systems**
- **Oil lubricated bearings**

  Suitable for most plain and rolling element bearings and general industrial applications.

- **Roll-neck bearings**
- **Enclosed industrial gear systems**

  Low or moderately loaded enclosed gears where EP performance is not required.

Specifications, Approvals & Recommendations

- Morgan MORGOIL® Lubricant Specification New Oil (Rev. 1.1) (MORGOIL is a registered trademark of the Morgan Construction Company)
- Danieli Standard Oil 6.124249.F
- DIN 51517-1 – type C
- DIN 51517-2 - type CL

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

Compatibility & Miscibility

- **Paint Compatibility**

  Shell Morlina S2 B oils are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Shell Morlina S2 B
ISO Viscosity Grade			ISO 3448	150
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	150
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	15
Density	@15°C	kg/m^3	ISO 12185	887
Viscosity Index			ISO 2909	95
Flash Point (COC)		°C	ISO 2592	262
Pour Point		°C	ISO 3016	-15
Rust, Distilled Water			ASTM D665A	Pass
Emulsion Test - @82°C (Unless specified by *)		Mins	ASTM D1401	20
Oxidation Control Test : TOST		Hrs	ASTM D943	1300+
Oxidation Control Test : RBOT		Mins	ASTM D2272	400+
Foam Test, Seq II		ml foam at 0/10 mins	ASTM D892	10/0

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur. *@54°C

Health, Safety & Environment

- 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**

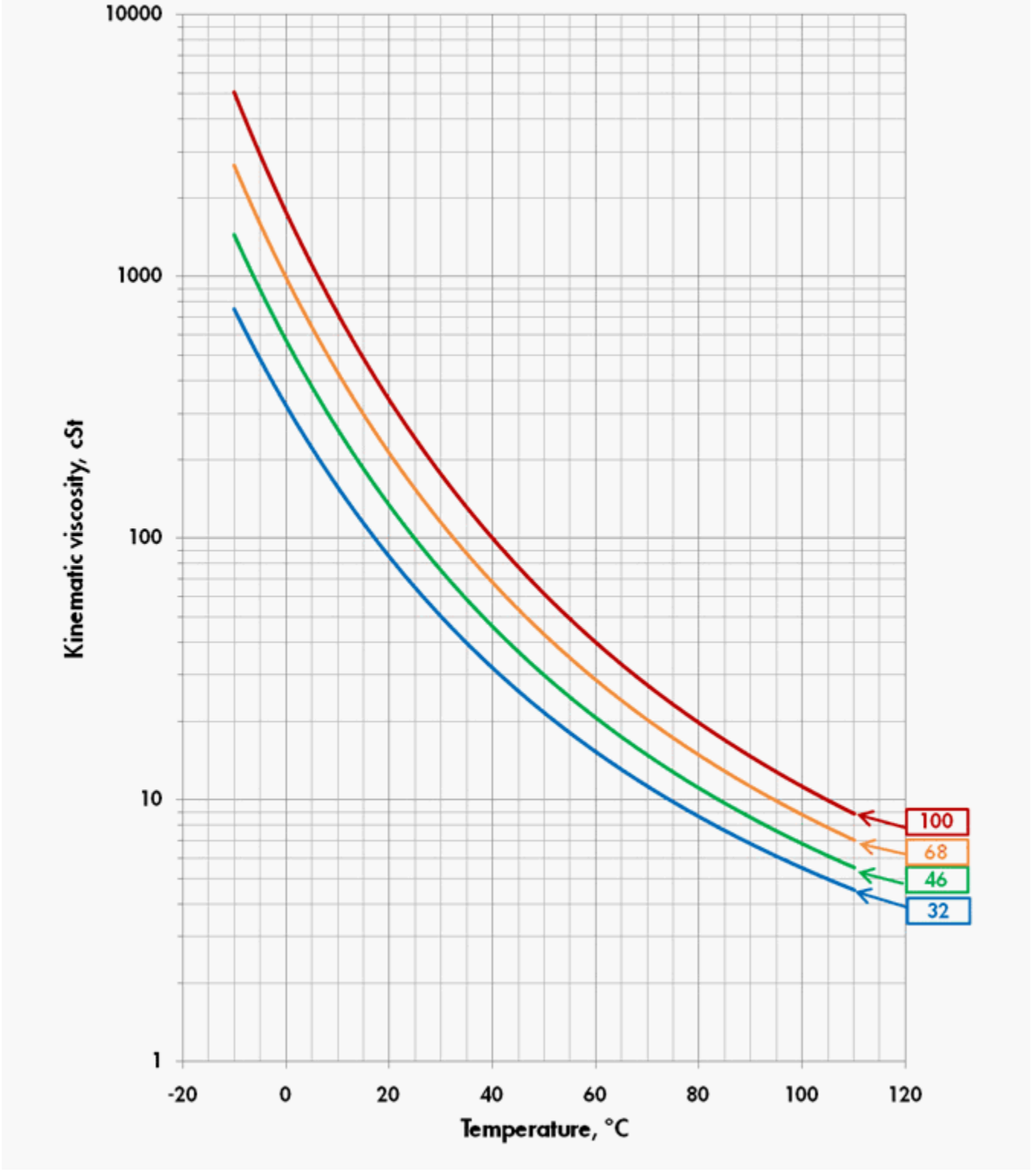
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

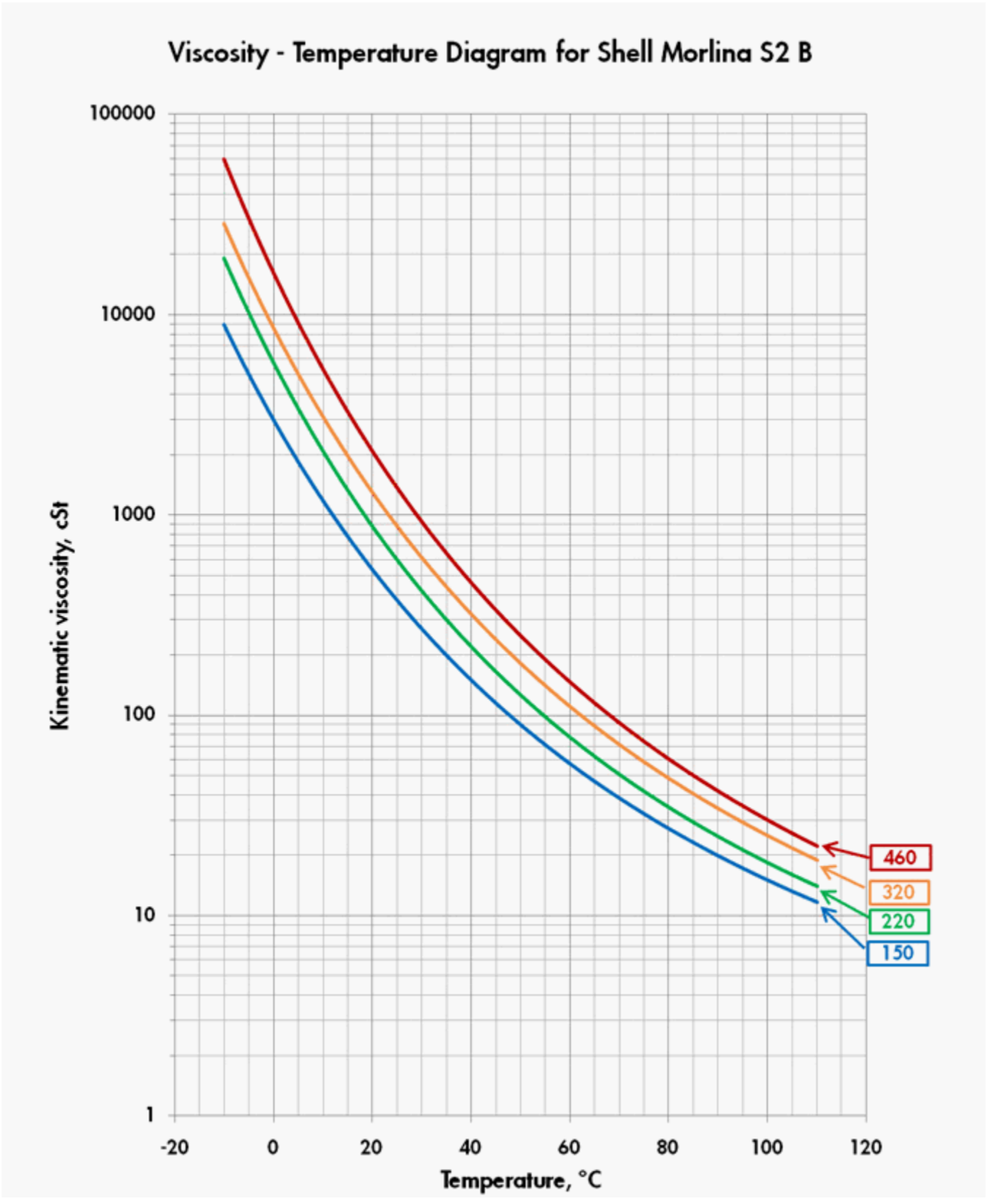
Additional Information

- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S2 B




Viscosity - Temperature Diagram for Shell Morlina S2 B
Kinematic viscosity, cSt
100000
10000
1000
100
10
1
-20
0
20
40
60
80
100
120
Temperature, °C
460
320
220
150

Technical Data Sheet

Previous Name: **Shell Morlina Oils**

Shell Morlina *S2 B 220*

- *Reliable Protection*
- *Industrial Application*
- *Water Shedding*

Industrial Bearing & Circulating Oils

Shell Morlina S2 B oils are high performance oils designed to provide outstanding oxidation and water separation protection for most general industrial bearing and circulating oil system applications and certain other industrial applications which do not require oils with extreme pressure (EP) properties. These oils meet the requirements of the Morgan Construction Company and Danieli for common bearing oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**
  Shell Morlina S2 B oils are formulated with a well proven rust and oxidation inhibitor additive package that helps provide consistent performance and protection throughout the maintenance interval.
- **Reliable wear & corrosion protection**
  Shell Morlina S2 B oils help prolong the life of bearings and circulating systems through:
  - Excellent water separation characteristics that helps ensure that critical oil films are retained between highly loaded parts.
  - Good air release characteristics to minimize cavitation and associated damage to circulating pumps.
  - Helps protect against corrosion, oxidation, and emulsion formation, even in the presence of water.
- **Maintaining system efficiency**
  Shell Morlina S2 B oils are blended with high quality, solvent refined base oils that promote good water separation and air release to ensure the efficient lubrication of the machines and systems.

Main Applications

- **Machine circulation systems**
- **Oil lubricated bearings**
  Suitable for most plain and rolling element bearings and general industrial applications.
- **Roll-neck bearings**
- **Enclosed industrial gear systems**
  Low or moderately loaded enclosed gears where EP performance is not required.

Specifications, Approvals & Recommendations

- Morgan MORGOIL® Lubricant Specification New Oil (Rev. 1.1) (MORGOIL is a registered trademark of the Morgan Construction Company)
- Danieli Standard Oil 6.124249.F
- DIN 51517-1 – type C
- DIN 51517-2 - type CL

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

Compatibility & Miscibility

- **Paint Compatibility**
  Shell Morlina S2 B oils are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Morlina S2 B 220
ISO Viscosity Grade			ISO 3448	220
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	220
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	18.3

Properties			Method	Morlina S2 B 220
Density	@15°C	kg/m³	ISO 12185	891
Viscosity Index			ISO 2909	92
Flash Point (COC)		°C	ISO 2592	280
Pour Point		°C	ISO 3016	-15
Rust, Distilled Water			ASTM D665A	Pass
Emulsion Test - @82°C (Unless specified by *)		Mins	ASTM D1401	20
Oxidation Control Test : TOST		Hrs	ASTM D943	1300+
Oxidation Control Test : RBOT		Mins	ASTM D2272	400+
Foam Test, Seq II		ml foam at 0/10 mins	ASTM D892	10/0

- These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur. *@54°C

Health, Safety & Environment

- 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**

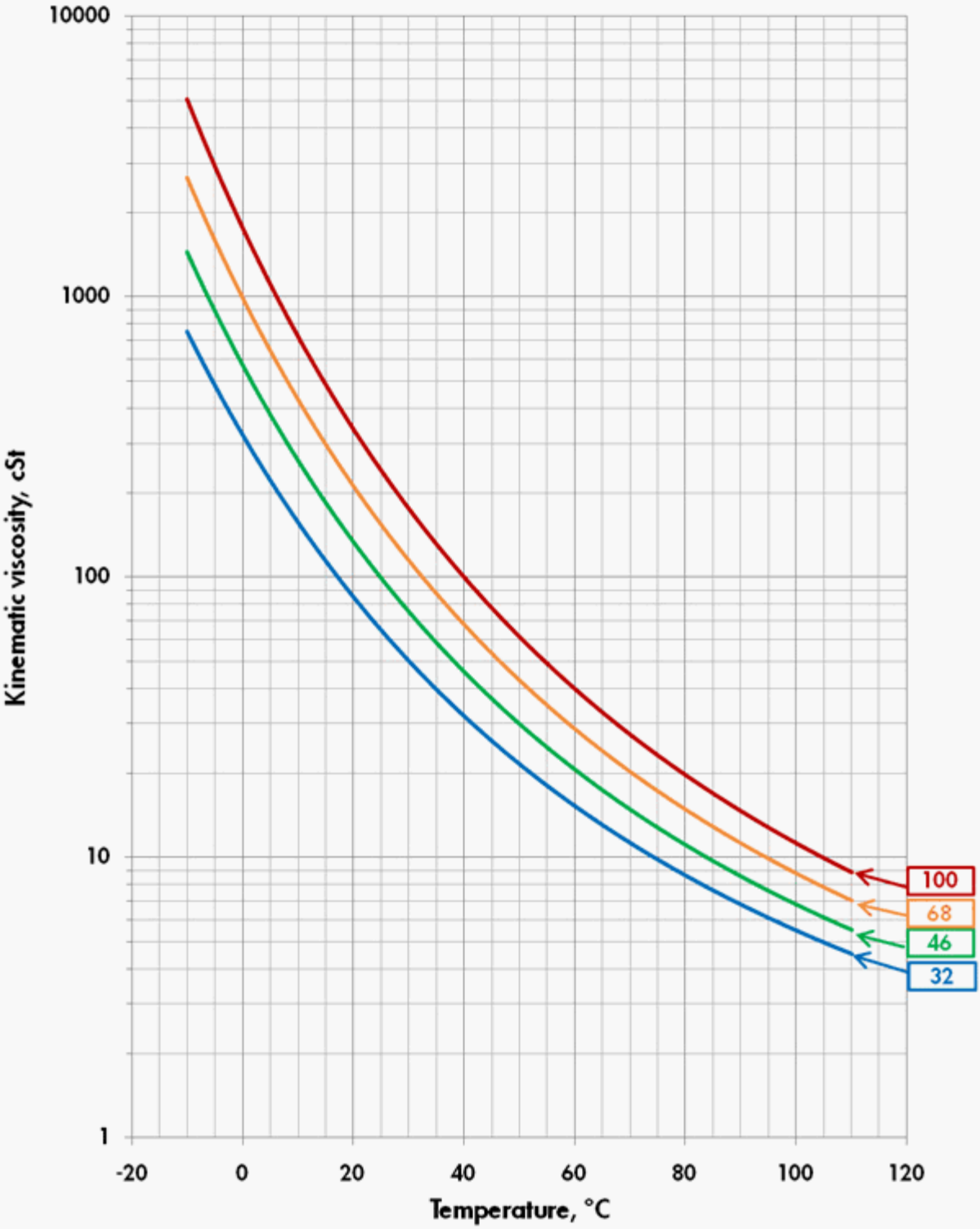
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

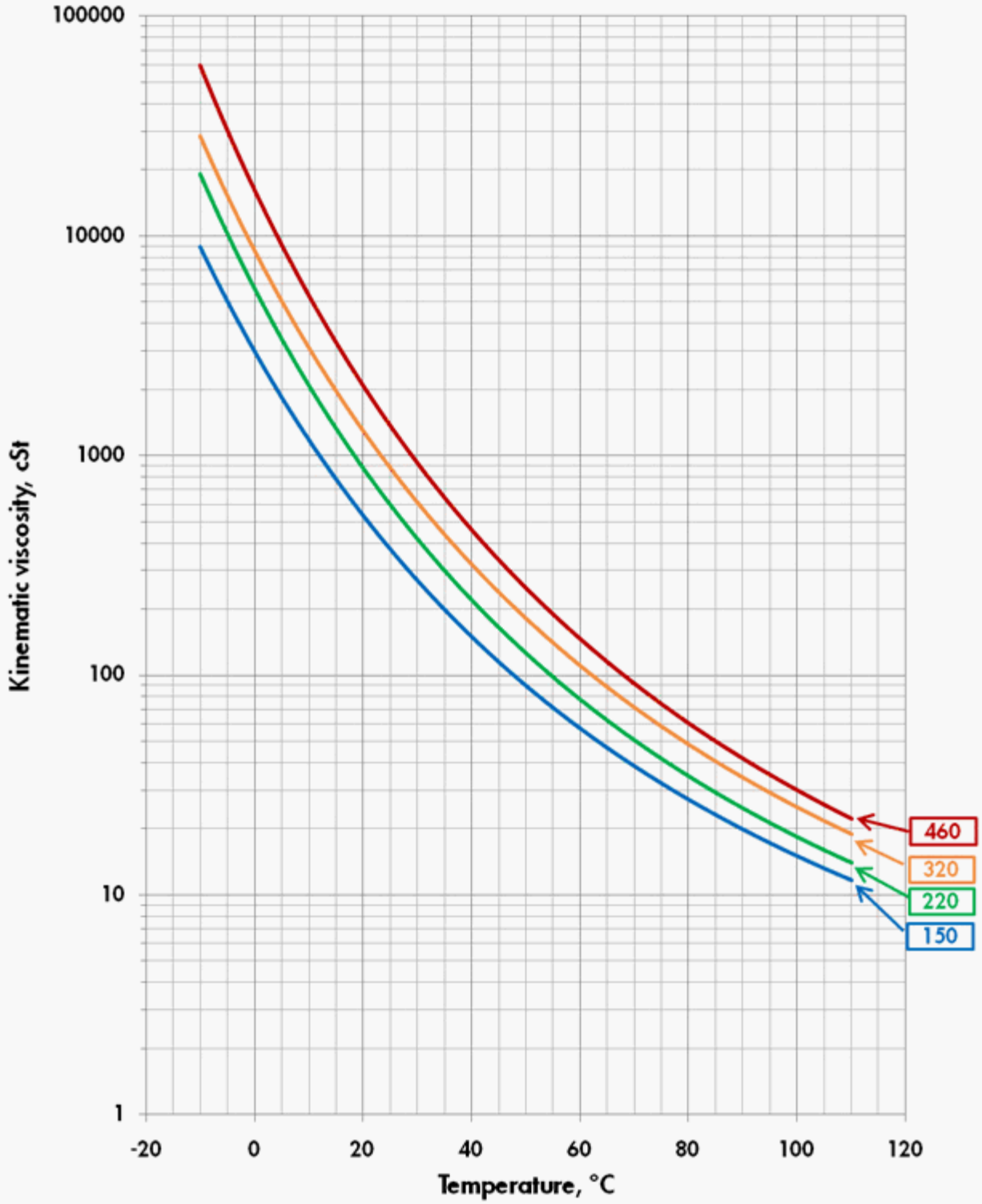
- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S2 B



Viscosity - Temperature Diagram for Shell Morlina S2 B



Technical Data Sheet

Previous Name: **Shell Morlina Oils**

Shell **Morlina** *S2 B 320*

- *Reliable Protection*
- *Industrial Application*
- *Water Shedding*

Industrial Bearing & Circulating Oils

Shell Morlina S2 B oils are high performance oils designed to provide outstanding oxidation and water separation protection for most general industrial bearing and circulating oil system applications and certain other industrial applications which do not require oils with extreme pressure (EP) properties. These oils meet the requirements of the Morgan Construction Company and Danieli for common bearing oils.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**

  Shell Morlina S2 B oils are formulated with a well proven rust and oxidation inhibitor additive package that helps provide consistent performance and protection throughout the maintenance interval.

- **Reliable wear & corrosion protection**

  Shell Morlina S2 B oils help prolong the life of bearings and circulating systems through:

  - Excellent water separation characteristics that helps ensure that critical oil films are retained between highly loaded parts.

  - Good air release characteristics to minimize cavitation and associated damage to circulating pumps.

  - Helps protect against corrosion, oxidation, and emulsion formation, even in the presence of water.

- **Maintaining system efficiency**

  Shell Morlina S2 B oils are blended with high quality, solvent refined base oils that promote good water separation and air release to ensure the efficient lubrication of the machines and systems.

Main Applications

- **Machine circulation systems**
- **Oil lubricated bearings**

  Suitable for most plain and rolling element bearings and general industrial applications.

- **Roll-neck bearings**
- **Enclosed industrial gear systems**

  Low or moderately loaded enclosed gears where EP performance is not required.

Specifications, Approvals & Recommendations

- Morgan MORGOIL® Lubricant Specification New Oil (Rev. 1.1) (MORGOIL is a registered trademark of the Morgan Construction Company)
- Danieli Standard Oil 6.124249.F
- DIN 51517-1 – type C
- DIN 51517-2 – type CL

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

Compatibility & Miscibility

- **Paint Compatibility**

  Shell Morlina S2 B oils are compatible with seal materials and paints normally specified for use with mineral oils.

Typical Physical Characteristics

Properties			Method	Shell Morlina S2 B
ISO Viscosity Grade			ISO 3448	320
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	320
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	25
Density	@15°C	kg/m^3	ISO 12185	897
Viscosity Index			ISO 2909	96
Flash Point (COC)		°C	ISO 2592	282
Pour Point		°C	ISO 3016	-12
Rust, Distilled Water			ASTM D665A	Pass
Emulsion Test - @82°C (Unless specified by *)		Mins	ASTM D1401	30
Oxidation Control Test : TOST		Hrs	ASTM D943	1100+
Oxidation Control Test : RBOT		Mins	ASTM D2272	400+
Foam Test, Seq II		ml foam at 0/10 mins	ASTM D892	20/0

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur. *@54°C

Health, Safety & Environment

- 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**

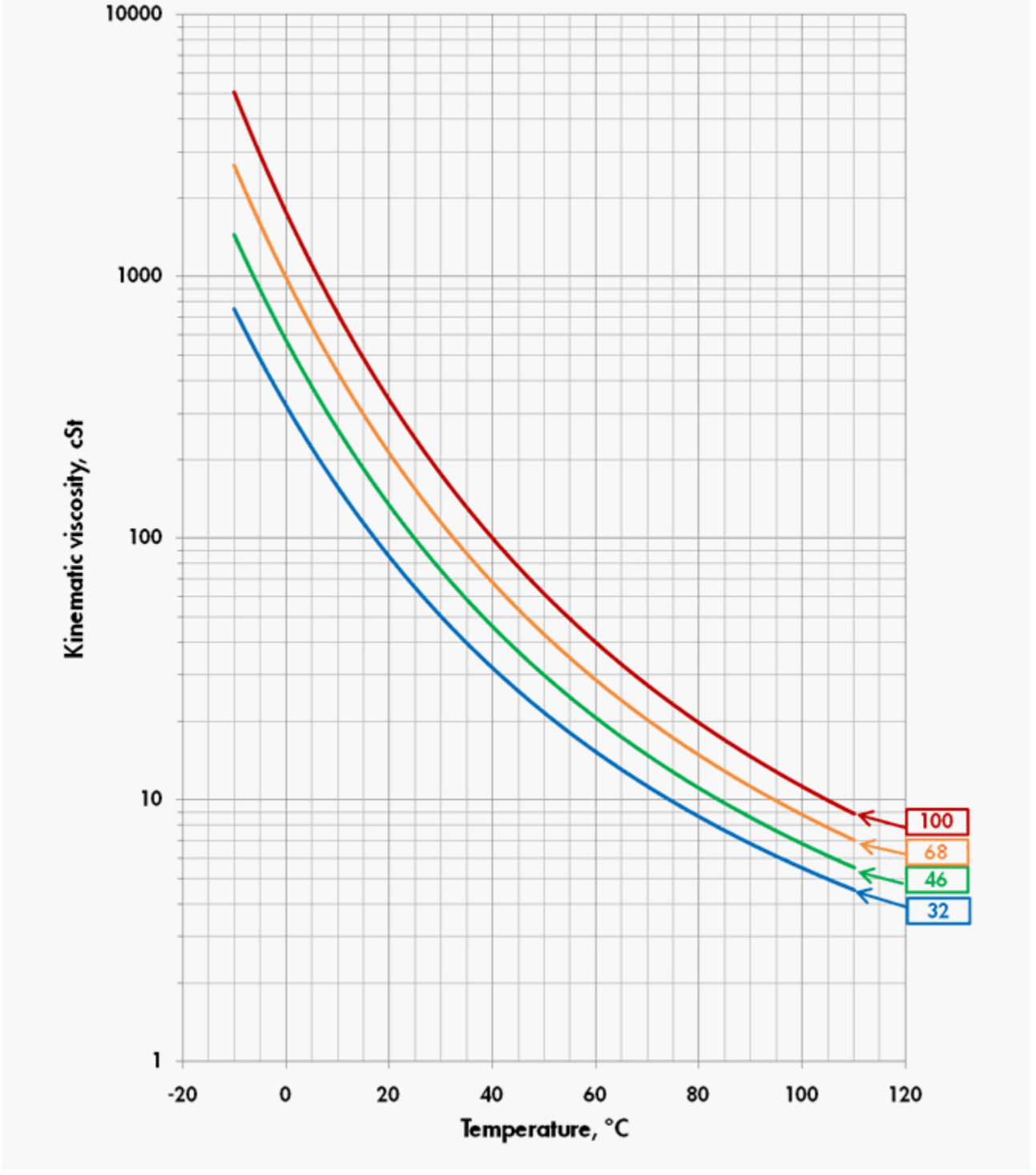
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

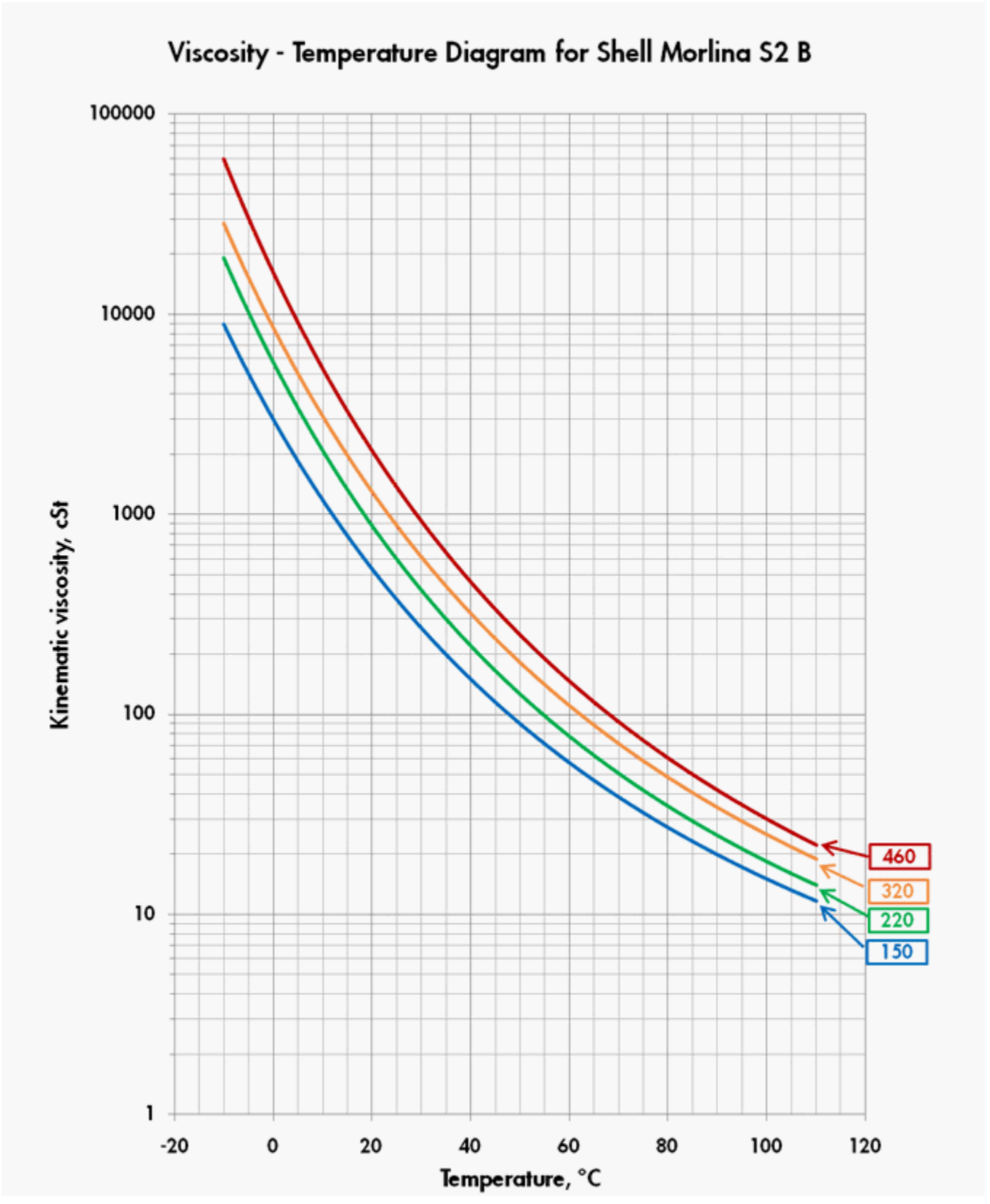
Additional Information

- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S2 B




Viscosity - Temperature Diagram for Shell Morlina S2 B
Kinematic viscosity, cSt
100000
10000
1000
100
10
1
-20
0
20
40
60
80
100
120
Temperature, °C
460
320
220
150

Technical Data Sheet

Previous Name: **Shell Morlina 10, Shell Morlina HS 10**

Shell Morlina *S2 BL 10*

- *Reliable Protection*
- *High Speed Applications*

Special Application Bearing & Circulating Oils

Shell Morlina S2 BL oils are special low viscosity, solvent refined mineral oil blended with zinc free additives, to provide extended performance in the high speed spindles of machine tools.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life – Maintenance saving**
  Shell Morlina S2 BL oils are formulated with a well proven rust and oxidation inhibitor package that provides high resistance to oxidation, caused by heat in the presence of air, water and metal catalysts, such as copper, and helps to prolong oil life and lower maintenance costs.
- **Reliable wear & corrosion protection**
  The special additives provide efficient anti-wear performance without reacting to the softer metals in bearings and enhance machine reliability.

  In addition the additive package enhances the oil's natural corrosion protective properties and helps to prolong bearing life.
- **Maintaining system efficiency**
  The low viscosity components of these oils have been chosen to help promote the smooth running of high speed machine elements and minimize heat build up through frictional energy losses.

Main Applications

- **Machine bearing and circulating systems**
  Suitable for a range of machine lubrication systems that include oil lubricated plain and rolling element bearings.
- **High speed spindles**
  The low viscosity fluids (ISO grades 2, 5 and 10) are particularly suitable for the lubrication of high speed spindles in machine tools.

Specifications, Approvals & Recommendations

- Fives Cincinnati P-65 (ISO VG 2)
- Fives Cincinnati P-62 (ISO VG 5, 10)
- Shell Morlina S2 BL oils are designed to meet specifications requiring a premium quality, light viscosity oil for applications running at high speeds such as those found in high speed frames and automated machine tools.
- For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Typical Physical Characteristics

Properties			Method	Morlina S2 BL 10
Viscosity Grade			ISO 3448	10
Kinematic Viscosity	@20°C	mm^2/s	ASTM D445	-
Kinematic Viscosity	@40°C	mm^2/s	ASTM D445	10
Kinematic Viscosity	@100°C	mm^2/s	ASTM D445	2.3
Density	@15°C	kg/m^3	ISO 12185	881
Flash Point (COC)		°C	ASTM D93	150
Pour Point		°C	ISO 3016	-30
Rust, Salt Water			ASTM D665B	Pass
Oxidation Control Test : TOST		Hrs	ASTM D943	2000+
Oxidation Control Test : RPVOT		Mins	ASTM D2272	300

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

- 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.

Technical Data Sheet

Shell **Morlina** *S4 B 220*

- *Wear Protection*
- *Extra Oil Life and Filterability*
- *Enhanced Energy Efficiency*
- *Intended for multi-purpose Applications*

New Generation - Advanced Bearing & Circulating Oils based on synthetic technology

Shell Morlina S4 B oils are high performance synthetic bearing and circulation lubricants, manufactured with high performance base fluids. They offer outstanding lubrication performance, including improved energy efficiency, filterability, and long service life even under challenging operating conditions.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Extra Long oil life - maintenance saving**

  The use of highly stable synthetic base oils in conjunction with robust rust and oxidation inhibitor additives help provide excellent oxidation and hydrolytic stability. This allows Shell Morlina S4 B to extend the maintenance capability of equipment compared to products based on conventional mineral oils. In addition, it resists the formation of harmful products from oxidation at high operating temperatures which helps maintain system cleanliness and the reliability of the equipment. The excellent filterability of this product will also reduce contamination and further maintain cleanliness of the oil.

- **Excellent wear and corrosion protection**

  Shell Morlina S4 B has been formulated to provide excellent
  anti-wear performance and provides high levels of wear protection for plain and rolling element bearings and moderately loaded gearboxes, compared to mineral oil-based products. This helps provide superior gear and bearing component life. In addition it also provides outstanding rust and corrosion protection of all metal surfaces.

- **Enhancing system efficiency**

  Shell Morlina S4 B can help improve the efficiency of lubrication in bearing and circulating systems. The superior low temperature performance and reduced variation in viscosity with increasing temperature, in comparison to mineral oil-based products, provides better lubrication at low start-up temperatures and the opportunity for energy savings through reduced pumping and flow losses during normal operating conditions.

  Rapid water shedding and efficient air release properties further enhance the efficiency of the lubrication system by helping maintain critical oil films between loaded components.

Main Applications

- **Applications involving moderate loads**

  Shell Morlina S4 B is recommended for systems that include moderately loaded gearboxes, worm gear drives, vacuum pumps, and gearboxes with internal backstops subjected extreme temperature variations. The enhanced energy efficiency of Shell Morlina S4 B will help reduce friction in operating equipment and potentially reduce energy consumption.

- **Lubricated for life systems**

  The long oil life of Shell Morlina S4 B makes is suitable for use in certain ‘lubricated-for-life’ systems.

- **Bearing and circulating oil systems**

  Shell Morlina S4 B is recommended for use in systems containing plain or rolling element bearings, including those with highly loaded bearings commonly found in cement or quarrying applications.
  Note: Where Bearing & Circulating oils with a lower viscosity is required (ISO VG 32 and 46), please use Shell Corena S4 R.

Specifications, Approvals & Recommendations

- ISO 12925-1 Type CKT specification
- ANSI/AGMA 9005-E02
- DIN 51517, Part 3 (CLP Oils)

- Siemens/VAI ‘Morgan "Morgoil®" Lubricant Spec. New Oil (Rev. 1.1)’

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

Compatibility & Miscibility

- **Seal & Paint Compatibility**

  Shell Morlina S4 B is compatible with all seal materials and paints normally specified for use with mineral and most synthetic oils.

- **Change-over Procedure**

  Shell Morlina S4 B is compatible with petroleum mineral oils and no special change-over procedure is necessary. However, to realise the full benefits, it should not be mixed with other oils.

  It is also advisable to ensure that oil systems are clean and free from contamination to optimise potential service life.

Typical Physical Characteristics

Properties			Method	Shell Morlina S4 B
Viscosity Grade			ISO 3488	220
Kinematic Viscosity	@40°C	mm^2/s	ISO 3104	220
Kinematic Viscosity	@100°C	mm^2/s	ISO 3104	28
Viscosity Index (VI)			ISO 2909	164
Flash Point (COC)		°C	ISO 2592	275
Pour Point		°C	ISO 3016	-45
Density	@15°C	kg/m^3	ASTM D4052	852
Water Seperability	@82°C	minutes maximum	ASTM D1401	20
Foam Test, Seq II		ml foam '@0/10 mins	ASTM D892	10/0
Oxidation Control Test: RPVOT		minutes minimum	ASTM D2272	1750
Oxidation Control Test: TOST		hours	ASTM D943	10 000
FZG Load Carrying Test		failure load stage minimum	DIN 51354-2 A/8.3/90	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 & Safety**

  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**

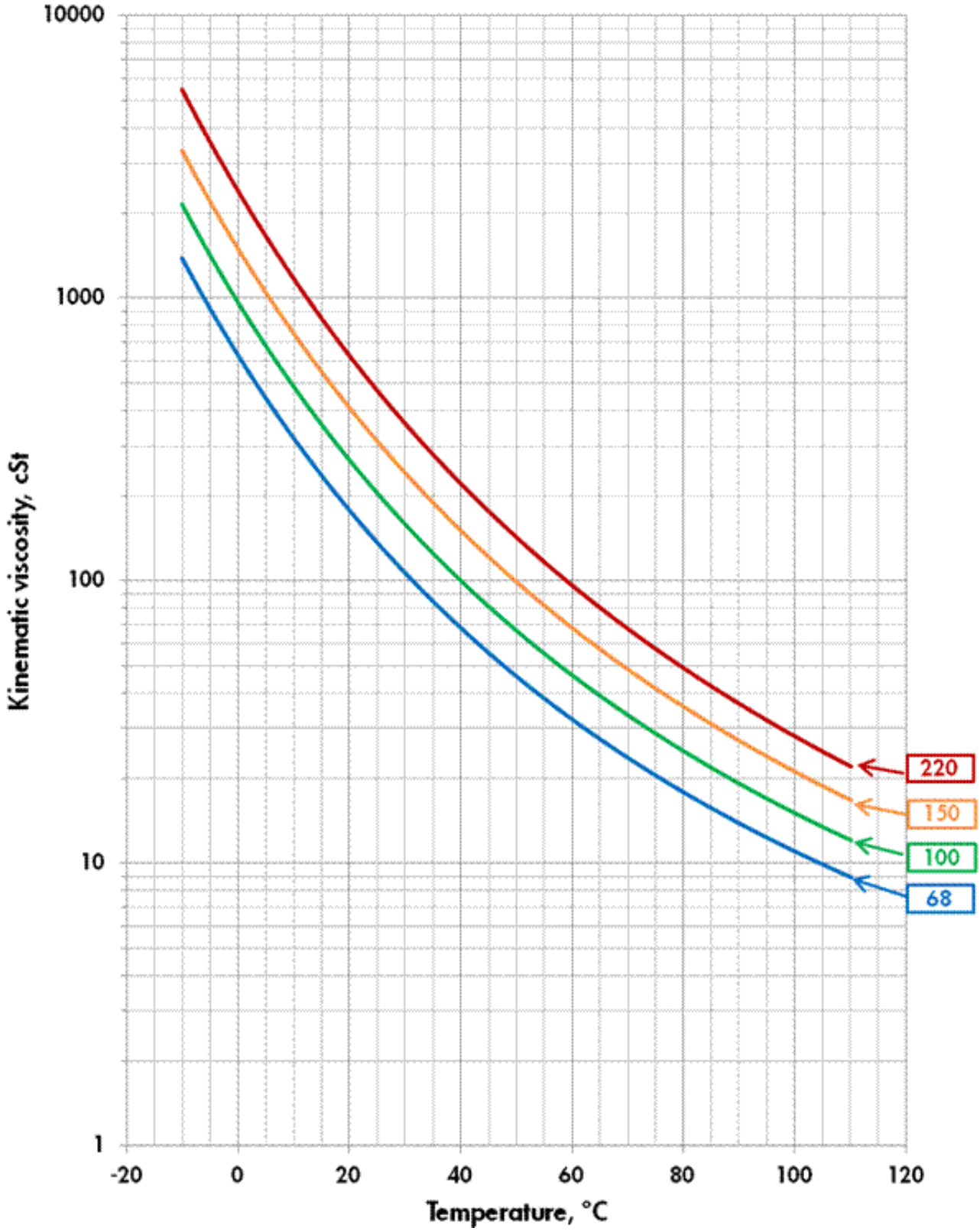
  Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

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

Viscosity - Temperature Diagram for Shell Morlina S4 B 68-220



Technical Data Sheet

Previous Name: **Shell Omala RL**

Shell **Morlina** *S4 B 320*

- *Extra Life and Protection*
- *Severe Applications*

Advanced Bearing & Circulating Oils

Shell Morlina S4 B oils are high performance synthetic bearing and circulation lubricants, based on high performance base fluids. They offer outstanding lubrication performance under severe operating conditions, including improved energy efficiency and long service life even in severe operating conditions.

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **Long oil life - maintenance saving**

  The use of highly stable synthetic base oils in conjunction with a robust rust and oxidation inhibitor package helps provide excellent oxidation and thermal stability. This provides Shell Morlina S4 B with extending maintenance capability compared to conventional oils.

  In addition it resists the formation of harmful products of oxidation at high operating temperatures, to help maintain system cleanliness and therefore reliability of the equipment.

- **Excellent wear and corrosion protection**

  Shell Morlina S4 B has been formulated to provide excellent anti-wear performance and provides high levels of wear protection for plain and rolling element bearings and moderately loaded gearboxes, compared to mineral oil-based products. This helps provide superior gear and bearing component life.

  In addition it also provides outstanding rust and corrosion protection of all metal surfaces.

- **Enhancing system efficiency**

  Shell Morlina S4 B can help improve the efficiency of lubrication in bearing and circulating systems. The superior low temperature performance and reduced change in viscosity with increase in temperature in comparison to mineral oil-based products provides better lubrication at low start-up temperatures and the opportunity for energy savings through reduced pumping and flow losses during normal operating conditions.

  Rapid water shedding and air release properties further enhance the efficiency of the lubrication system by helping maintain critical oil films between loaded components.

Main Applications

- **Severe operating conditions**

  Shell Morlina S4 B is recommended for systems incuding moderately loaded gearboxes, operating under severe conditions such as low or high temperatures or with wide temperature variations.

- **Lubricated for life systems**

  The long oil life of Shell Morlina S4 B makes is suitable for use in certain ‘lubricated-for-life’ systems.

- **Bearing and circulating oil systems**

  Suitable for use in systems containing plain or rolling element bearings, including those highly loaded bearings found in such as those found in cement or quarrying applications.
  Where Bearing & Circulating oils with a lower viscosity is required (ISO VG 32 and 46), please use Shell Corena S4 R.

Specifications, Approvals & Recommendations

- Alfa Laval Group D gearbox applications
- Aerzen Maschinenfabrik GmbH Blower Applications
- Baltimore Aircoil Gear Boxes
- Fives Cincinnati Various P applications
- David Brown Table H applications

- Emerson Power Transmission
- GEA Westfalia Separator GmbH
- Renold Gears (various applications)
- Sharpe E-series worm gear reducers
- Winsmith (Peerless-Winsmith Inc) worm gear reducer
- ISO 12925-1 Type CKS specification

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

Compatibility & Miscibility

- **Seal & Paint Compatibility**

Shell Morlina S4 B is compatible with all seal materials and paints normally specified for use with mineral oils.

- **Change-over Procedure**

Shell Morlina S4 B is compatible with petroleum mineral oils and no special change-over procedure is necessary. However, to realise the full benefits, it should not be mixed with other oils.

It is also advisable to ensure that oil systems are clean and free from contamination to optimise potential service life.

Typical Physical Characteristics

Properties			Method	S4 B 320
Viscosity Grade			ISO 3448	320
Kinematic Viscosity	@40°C	mm^2/s	ISO 3104	320
Kinematic Viscosity	@100°C	mm^2/s	ISO 3104	33.8
Viscosity Index (VI)			ISO 2909	148
Flash Point (COC)		°C	ISO 2592	270
Pour Point		°C	ISO 3016	-45
Density	@15°C	kg/m^3	ISO 12185	853
Emulsion Test		mins	ASTM D1401	20
Foam Test, Seq II		ml foam '@0/10 mins	ASTM D892	0/0
FZG Load Carrying Test		failure load stage minimum	DIN 51354-2 A/8.3/90	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 & Safety**

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

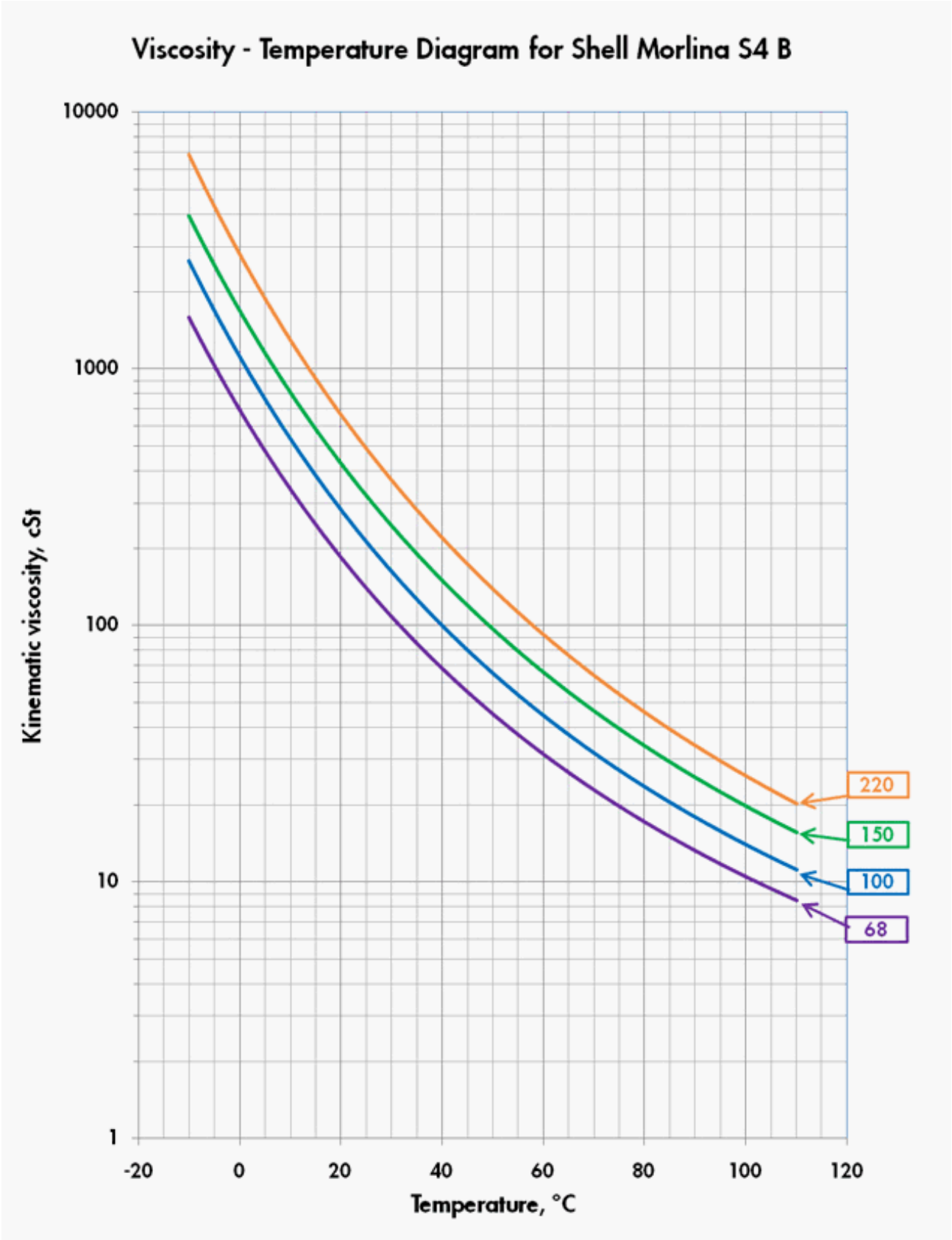
- **Protect the Environment**

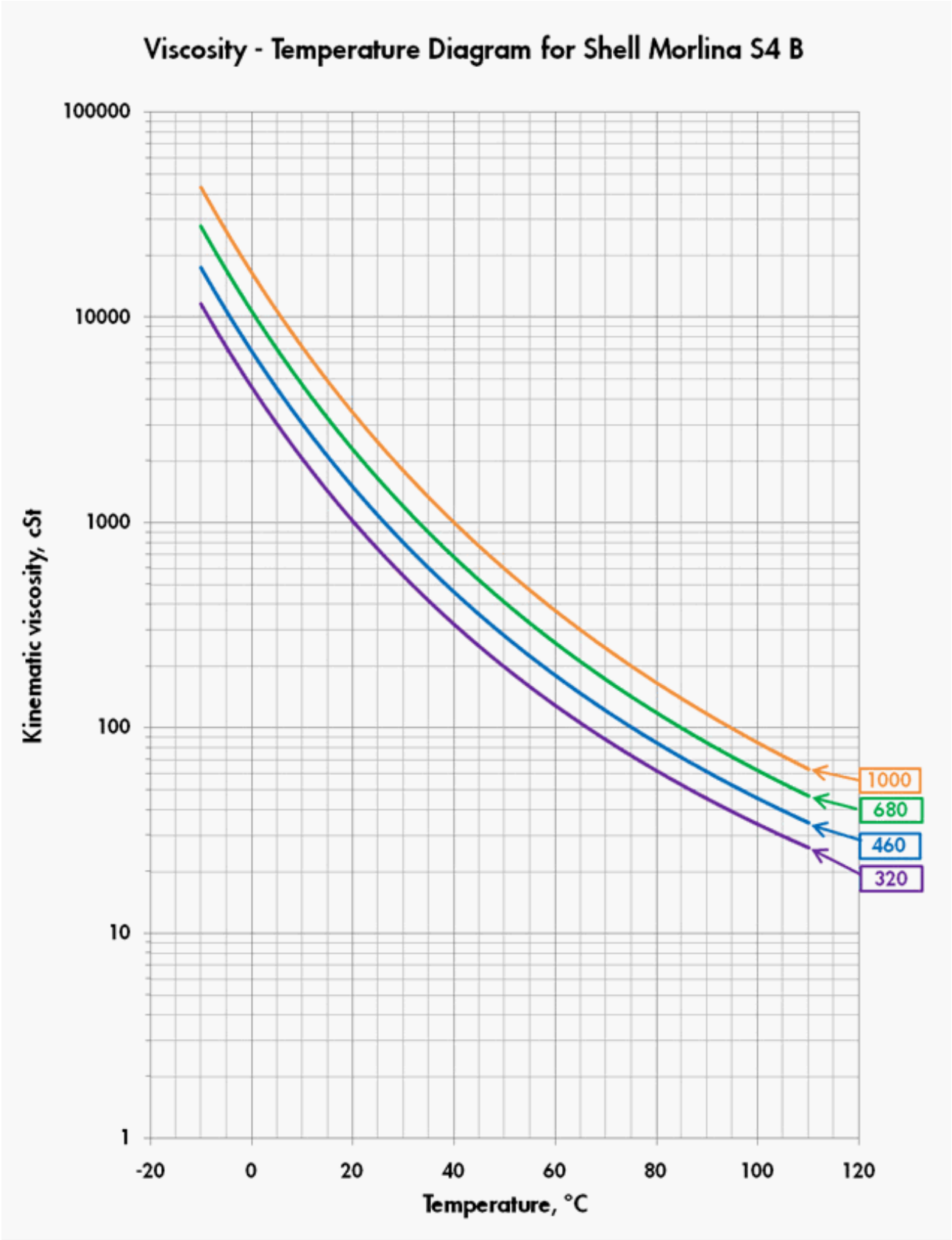
Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

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


Viscosity - Temperature Diagram for Shell Morlina S4 B
Kinematic viscosity, cSt
10000
1000
100
10
1
-20
0
20
40
60
80
100
120
Temperature, °C
220
150
100
68


Viscosity - Temperature Diagram for Shell Morlina S4 B
Kinematic viscosity, cSt
100000
10000
1000
100
10
1
-20
0
20
40
60
80
100
120
Temperature, °C
1000
680
460
320