



Shell GADUS

A comprehensive grease portfolio
containing advanced technology
and delivering protection.

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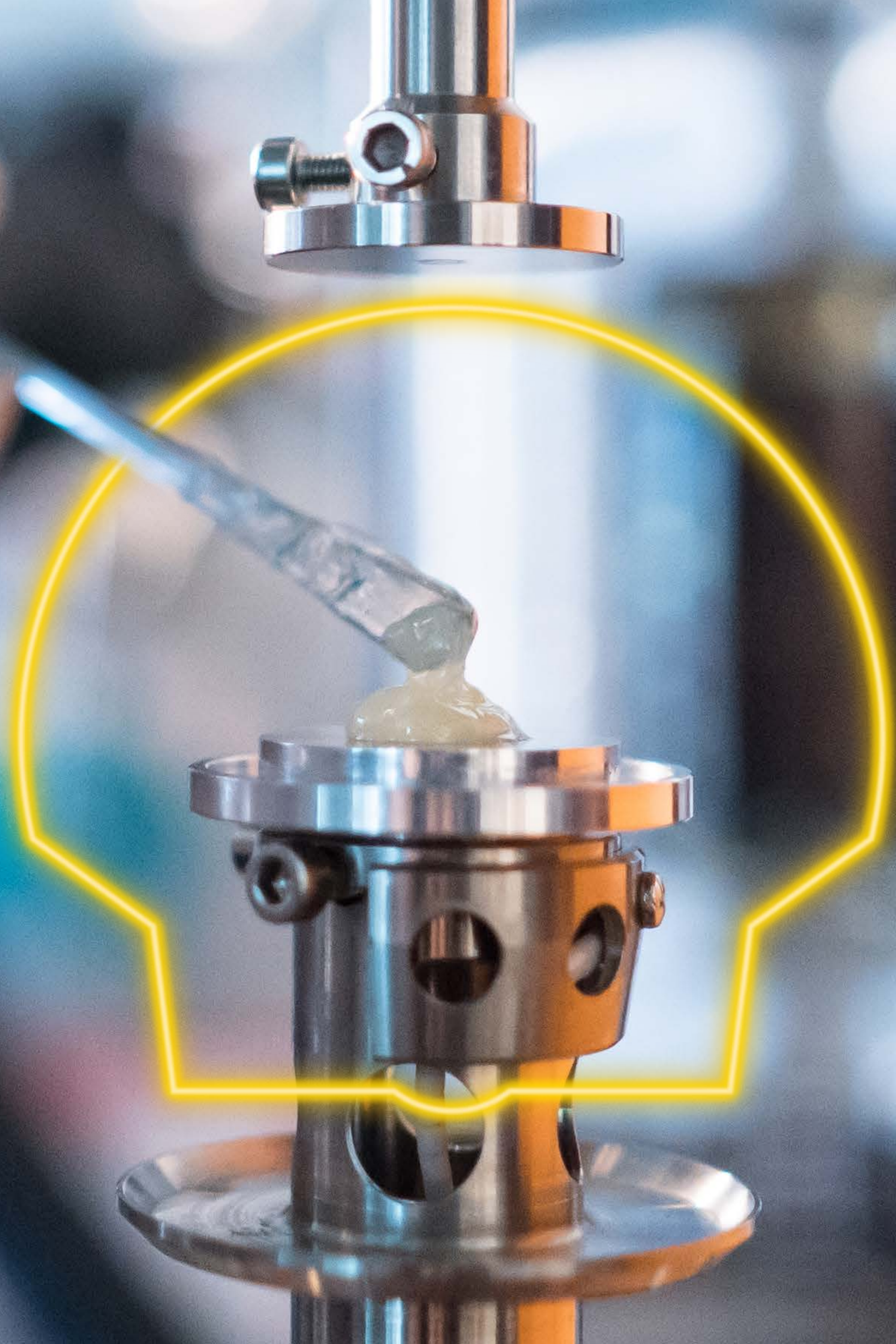


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History of Shell grease technology

Shell patented the lithium grease thickener technology worldwide¹

1942

1958

Lithium complex technology introduced²

1985

New lithium soap thickener developed for aviation grease³

1968

PU grease for Ferrari CVJ developed, still in use today

2000

GTL grease for high-speed train wheel unit approved globally⁴

2004

Shell Rhodina BBZ for wind turbines introduced

2012

Shell **GADUS** brand launched

2016

Shell Gadus ZX lithium-free grease thickener invented and patented⁵

2021

E-Grease series launched to support transportation electrification⁶

We have a history of leading through technological innovation

Eighty years after we invented lithium grease technology, we own more than 300 lubricant and grease patents globally. Our pioneering work continues with advanced polyurethane and lithium-free thickener technology development.

We offer performance-enhancing products

Our global network of technology centres works closely with customers and equipment makers to accelerate innovation and improve their productivity. We develop greases that go beyond the conventional by using performance-enhancing formulations and production technologies.

We provide global access

Our grease production centres deliver consistent products around the world, manufactured under a harmonised quality control system. We ensure product performance, wherever you are located, combined with first-class customer service and technical support.

¹Patent Specification No. 637932 by The Patent Office UK. Complete Specification, Improvements of Lubricants. ²Research Report No. 376: Preparation of Lithium Complex Soap-Thickened Greases Pt. 2. ³Stamina 0912, refer to the Shell Gadus brand webpage www.shell.com/Gadus ⁴Development of AEROSHELL Grease 22, NAVAIRDEVCEEN RPT 6101/6763 & DTNSRDC RPT.NO.SME-84/119, 4 March 1985. ⁵Gadus Rail S4 High Speed EUDB/EUFR approved by SNCF/DBAG and leading OEMs in the rail industry. ⁶Refer to the Shell Gadus brand webpage www.shell.com/Gadus ⁷Patent Specification No. JP 6712943 by Japan Patent Office. ⁸Shell Gadus E6 2400 product leaflet. Refer to the Shell Gadus brand webpage www.shell.com/Gadus ⁹<https://file.blackwoods.com.au/a/Shell-Grease-Selection.pdf>

Why Shell?

Technology leadership

Shell Lubricant Solutions has world-class lubricant research and development centres in Germany, the USA, China, India and Japan, and employs more than 500 scientists.

These centres are at the heart of industrial regions, spanning multiple time zones. We work collaboratively to find innovative solutions that fulfil the diverse requirements of global markets by leveraging knowledge and resources from different countries.

Global reach

Our greases are produced in Shell grease manufacturing plants and approved affiliated facilities around the world. We guarantee the same high quality, regardless of location, to offer you security of supply and peace of mind. We can deliver products with unrivalled efficiency while providing in-depth customer support locally.



A grease to meet every need

The Shell Gadus portfolio is an extensive range of greases containing advanced technology that are designed to meet a wide range of challenges. From multipurpose greases for simplifying your product inventory to advanced synthetic products designed for the most severe extreme-temperature and long-life applications, Shell has a grease to meet your needs.



Established industrial sectors

Metals | Manufacturing | Mining

Emerging energy transition

Robotics | Wind | Electric vehicles

The Shell Gadus range delivers value by offering enhanced wear protection, extended grease life and optimised system efficiency – for traditional sectors, and for those emerging from the energy transition.

Selecting the right grease

To make life easier for you, Shell Gadus greases have a simple-to-understand naming convention.

When selecting a grease, there are four key properties to consider

- thickener type
- base oil viscosity
- operating conditions
- National Lubricating Grease Institute (NLGI) grade.

These properties are featured in the naming system for each Shell Gadus grease.

Shell Gadus is the brand name for all Shell greases

Thickener guide

Special conditions or applications

Shell Gadus

S3

V460D

2

Relative performance level from S1 to S5 (higher is better)

Base oil viscosity

NLGI grade

Key letters used

A – Wet (aqueous) conditions

C – Coloured grease

D – Contains solids, suitable for shock load conditions

OG – Open gear

Q – Noise-dampening (quiet) applications

T – Extreme-temperature applications, polyurea thickener

V – Versatile, lithium, lithium calcium or lithium complex thickener

Shell Gadus greases are supplied in a range of consistencies to support low- to high-load applications and rotating speeds.

The NLGI grade provides a measurement of a grease’s consistency, ranging from 000 for fluid to 6 for block greases.

NLGI grade	Type	Description
6	Journal bearings	Block
5	Journal bearings	Very stiff
4	High speed/low load	Stiff
3	High-speed bearings	Medium
2	Ball/roller bearings	Medium soft
1	Centralised lubrication systems/low temperature	Soft
0	Centralised lubrication systems	Very soft
00	Enclosed gears	Semi-fluid
000	Enclosed gears	Fluid

The consistency is determined by the ratio of thickener to oil. More thickener creates a stiffer grease (higher NLGI class), less thickener makes it softer (lower NLGI class).

NLGI-2

NLGI-1

NLGI-0
















NLGI-00

Thickeners

Base oils

Additives

Shell Gadus guide to greases

	Product	Key characteristics			Applications					Grease features									
		Thickener type	NLGI grade available	Temperature range	Plain bearing	Roller bearing	Geared coupling	Slide, linkage and pin	Electric motor	High speed	Low speed	High temp.	Low temp.	Extreme pressure	Vibration resistance	Water resistance	Shock load	Grease life	Tactic EMV
																			
Top tier →	Shell Gadus S5 V460	Lithium complex	00/1.5/2	−40 to 150°C	★	★	●	★	★	●	★	★	★	★	★	★	★	★	–
	Shell Gadus S5 V220	Lithium complex	2	−40 to 150°C	★	★	●	★	★	●	★	★	★	★	★	★	★	★	–
	Shell Gadus S5 V220C	Lithium complex	1.5	−40 to 150°C	★	★	●	★	★	●	★	★	★	★	★	●	★	★	★
	Shell Gadus S5 V100	Lithium complex	2	−50 to 150°C	★	★	–	●	★	★	●	★	★	✓	✓	✓	–	★	★
	Shell Gadus S5 T460	Polyurea	1.5	−40 to 180°C	★	★	●	★	–	●	★	★	★	★	★	★	✓	★	★
	Shell Gadus S5 T100	Polyurea	2	−40 to 180°C	●	★	–	●	★	★	●	★	★	●	✓	★	●	★	★
Premium →	Shell Gadus S3 V460	Lithium complex	1/1.5/2	−20 to 150°C	★	✓	✓	✓	–	●	★	★	●	★	★	✓	✓	✓	–
	Shell Gadus S3 V460D	Lithium complex with solids	2	−20 to 150°C	★	✓	✓	★	–	●	★	★	●	★	★	✓	★	✓	★
	Shell Gadus S3 V460XD	Lithium complex with solids	1/2	−20 to 150°C	★	✓	✓	★	–	●	★	★	✓	★	★	✓	★	✓	–
	Shell Gadus S3 V220C	Lithium complex	1/1.5/2/3	−25 to 140°C	✓	★	●	●	✓	–	✓	★	✓	✓	✓	✓	●	✓	★
	Shell Gadus S3 T460	Polyurea	1.5	−20 to 160°C	★	★	●	★	–	●	★	★	●	★	★	★	✓	★	–
	Shell Gadus S3 T220	Polyurea	2	−20 to 160°C	✓	★	●	✓	●	●	✓	★	●	●	✓	★	✓	★	★
	Shell Gadus S3 T100	Polyurea	2	−20 to 160°C	●	★	–	●	★	★	●	★	✓	●	✓	★	●	★	–
Mainline →	Shell Gadus S2 V220	Lithium	00/0/1/2/3	−20 to 120°C	✓	★	●	✓	✓	●	✓	●	●	✓	✓	✓	✓	✓	–
	Shell Gadus S2 V220AC	Lithium calcium	1/2/3	−20 to 120°C	✓	★	●	✓	●	●	✓	●	–	✓	✓	–	✓	✓	–
	Shell Gadus S2 V220AD	Lithium calcium with solids	1/2	−10 to 120°C	✓	✓	✓	★	–	–	✓	●	●	★	★	★	★	✓	–
	Shell Gadus S2 V160Z	Lithium	3	−20 to 120°C	★	★	●	✓	●	–	✓	–	●	★	✓	★	✓	●	–
	Shell Gadus S2 V150C	Lithium	3	−20 to 130°C	★	★	●	★	●	–	✓	–	●	★	★	★	★	★	–
	Shell Gadus S2 V100	Lithium	1/2/3	−25 to 130°C	✓	★	–	●	★	★	●	●	✓	–	●	●	–	✓	–
Economic →	Shell Gadus S1 V220	Lithium	1/2/3	−20 to 120°C	★	★	–		–	●	●	●	●	●	–	●	–	●	–
	Shell Gadus S1 V160	Lithium	2/3	−20 to 120°C	★	★	–	–	–	●	●	●	●	–	–	–	–	●	–
	Shell Gadus S1 V100	Lithium	2/2.5/3	−10 to 110°C	★	★	–	–	●	●	●	●	●	–	–	●	–	●	–

★ Best ✓ Good ● Suitable

Shell Gadus and meeting sustainability targets



Shell E-Greases for electrified drivetrains use novel thickener technology to provide high-speed electric motor bearing lubrication in both wet and dry motor designs.

Shell Gadus E6 M
Shell Gadus E6 2400
Shell Gadus E4 3259



Shell Gadus greases for wind are designed to maximise equipment performance, even in extreme conditions.

Shell Gadus S5 V460KP
Shell Gadus S5 V110KP
Shell Rhodina BBZ

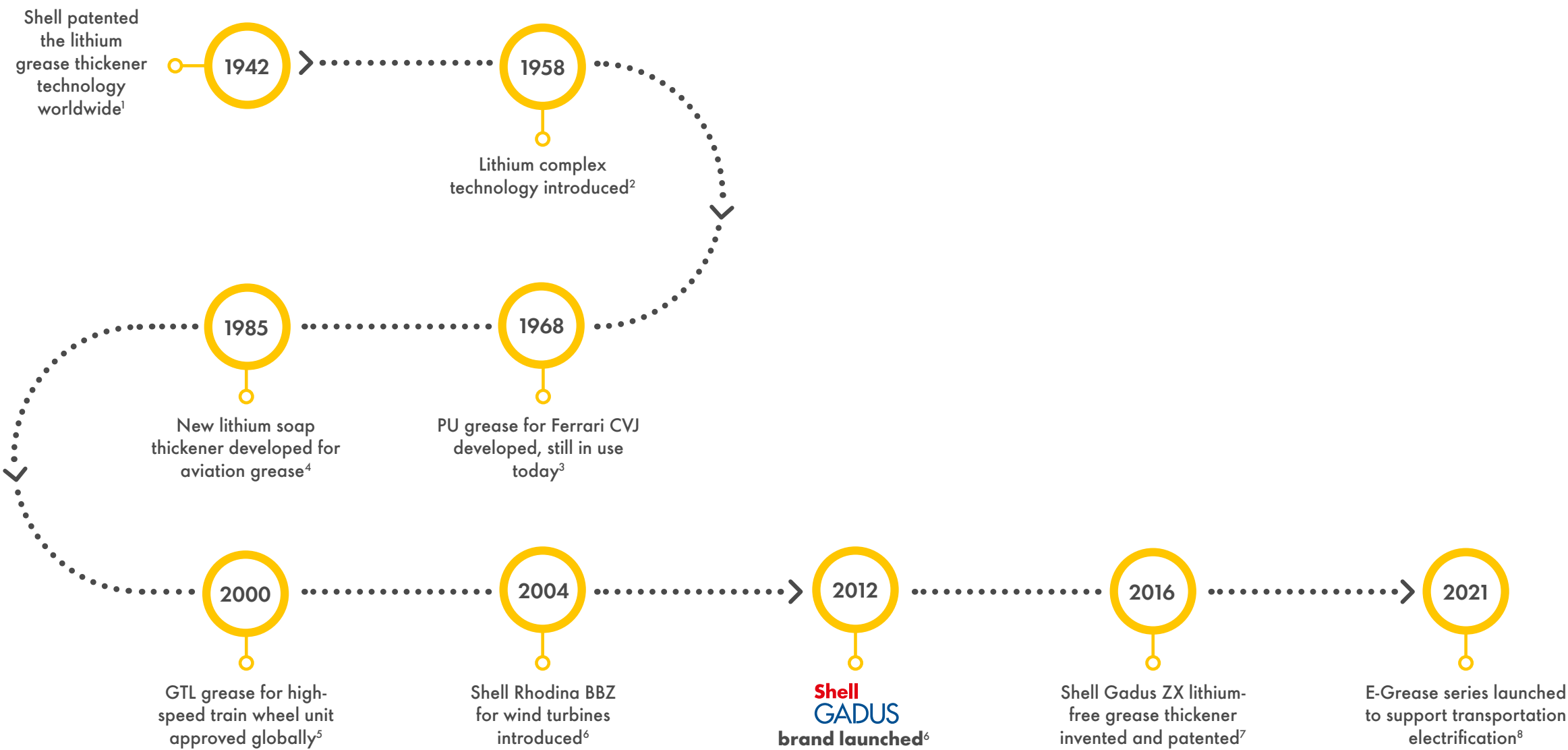


Shell PANOLIN is a well-known name in high-quality biodegradable lubricants. The Shell PANOLIN brand offers environmentally responsible lubricants with technology, performance and reliability.

Shell PANOLIN S5 Grease EAL A460
Shell PANOLIN S5 Grease EAL V320
Shell PANOLIN S5 Grease EAL V120P

Appendix

Figure 1



The figure is a visual timeline illustrating Shell’s milestones in grease technology innovation over nearly 80 years. Key events are presented in chronological order along a dotted path, each marked with a year and a brief description of the advancement:

- 1942:** Shell patented the lithium grease thickener technology worldwide.
- 1958:** Introduction of lithium complex technology.
- 1968:** Development of polyurethane (PU) grease for Ferrari constant velocity joints (CVJ), which remains in use today.
- 1985:** Introduction of a new lithium soap thickener specifically for aviation grease.
- 2000:** Global approval of Shell’s GTL (gas-to-liquid) grease for high-speed train wheel units.

- 2004:** Launch of Shell Rhodina BBZ, a grease designed for wind turbine applications.
- 2012:** Introduction of the Shell Gadus brand for high-performance greases.
- 2016:** Invention and patenting of Shell Gadus ZX, a lithium-free grease thickener.
- 2021:** Launch of the E-Grease series to support the growing transportation electrification sector.

The design uses yellow-outlined circles to indicate years, connected by dotted lines that guide the viewer along the progression of innovations. The timeline displays Shell’s continued leadership and evolution in grease formulation and application across diverse industrial and transportation sectors.

Appendix

Figure 2



The image is a stylised world map highlighting Shell’s global grease manufacturing network. Each facility is marked by a coloured icon:

Yellow circles indicate Shell-operated sites, green circles indicate joint venture-operated sites

Shell-operated grease manufacturing sites (yellow):

- Tehachapi, California, USA
- SWRS, Texas, USA
- Ghent, Belgium
- Bern, Switzerland
- Derince, Turkey
- Tuas, Singapore
- Zhuhai, China
- Busan, South Korea
- Chongnonsri, Bangkok, Thailand

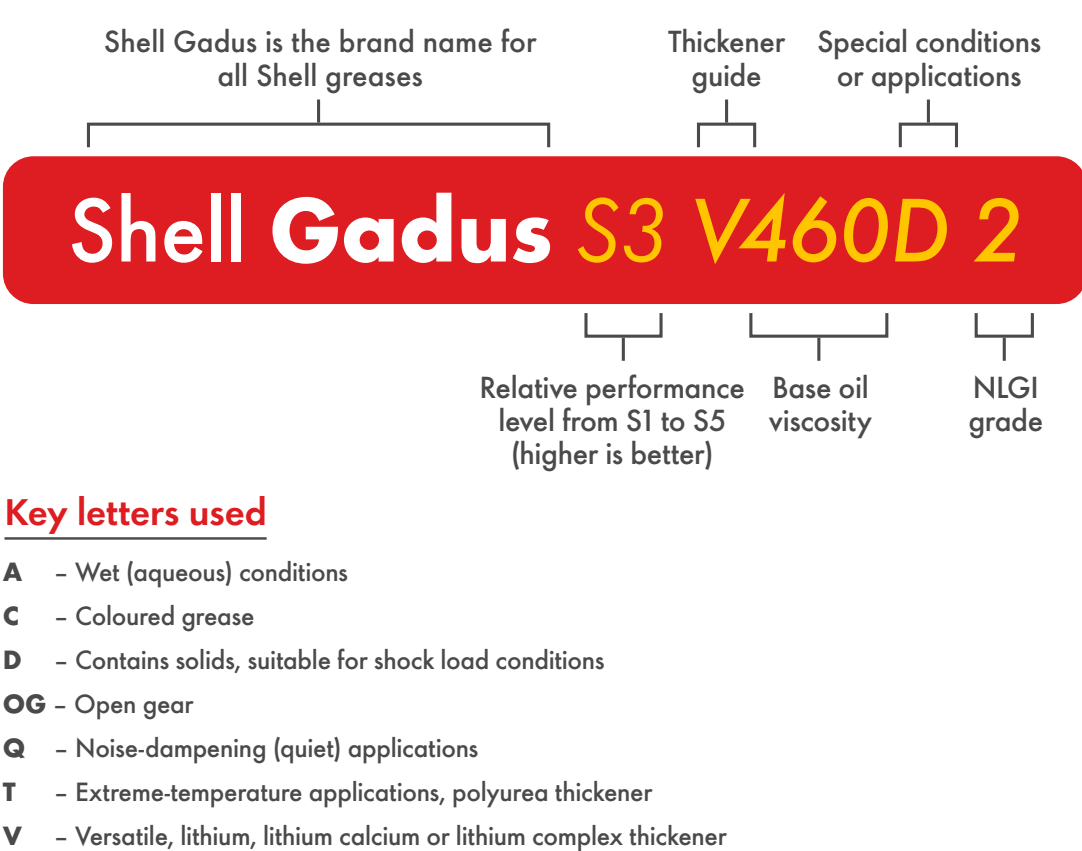
Joint venture-operated sites (green):

- Yokohama, Japan
- Ilha do Governador, Rio de Janeiro, Brazil
- Sola, Buenos Aires, Argentina
- Blendcor, Durban, South Africa

The map uses green and yellow lines connecting facility names to their geographic locations, set against a deep navy-blue background with a dotted world map overlay. A legend in the lower left clarifies the meaning of the green and yellow dots.

Appendix

Figure 3



The figure represents a technical reference guide for the Shell Gadus grease product line, detailing key specifications and application codes. Shell Gadus S3 V460D 2 is shown as an example. Shell Gadus is the umbrella brand for all Shell greases. According to their performance level, the greases rank from S1 (lowest) to S5 (highest). The number that follows designates the base oil viscosity (460 cSt in the example). The accompanying letter codes describe the thickener technology and specific applications:

A - wet/aqueous conditions.

C - coloured grease.

D - contains solids (improved shock load resistance);

OG - open gear applications.

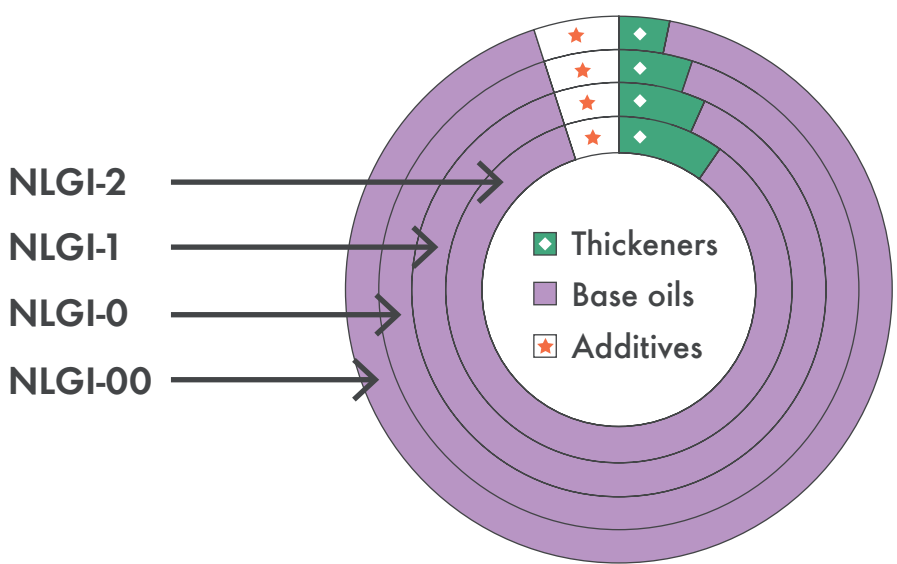
Q - noise dampening applications.

T - extreme temperature applications (polyurea thickener).

V - versatile applications, lithium-based thickener.

The last digit describes the NLGI grade of the grease.

Figure 4



The figure represents a concentric ring diagram set against a yellow background, representing four National Lubricating Grease Institute (NLGI) consistency grades (NLGI 00, 0, 1 and 2) from the innermost to the outermost ring.

Each ring is segmented into three colour-coded categories:

White with red star icons for “Thickeners”

Purple for “Base oils”

Green with diamond icons for “Additives”

As the consistency increases from NLGI 00 (softest) to NLGI 2 (firmest), the proportion of thickener increases, while the share of base oil generally decreases. Additive content remains relatively constant across all grades.

The diagram effectively visualises how grease formulations change with consistency grade, emphasising the increased structural content (thickeners) in firmer greases and higher base oil content in softer ones. This helps convey how the grease behaviour varies depending on its NLGI classification.

Speak with our experts

We recognise the crucial role that greases play in your products, so we offer expert consultation and technical advice to support your business needs. We also understand that the quality of these grease products is paramount in minimising downtime for your equipment.

For further information, please contact our experts:
www.shell.com/gadus



Shell
LubeAnalyst

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LubeExpert

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LubeCoach

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