

**bulwark**<sup>®</sup>

LUBRICANTS  
BEYOND EXPECTATIONS



PRODUCT  
DATA SHEET

# PASSENGER CAR OILS (PCO)

## PREMIUM FULLY SYNTHETIC OILS

- COMMANDER PLUS 0W-16 SP/RC; ILSAC GF-6B
- COMMANDER 0W-20 SP/RC; SP PLUS; ILSAC GF-6A
- COMMANDER 5W-20 SP/RC; SP PLUS; ILSAC GF-6A
- COMMANDER 5W-16 SP/RC; SP PLUS; ILSAC GF-6A
- GLADIATOR FE 0W-20 SN/RC; ILSAC GF-5
- GLADIATOR FE 5W-20 SN/RC; ILSAC GF-5
- GLADIATOR FE 5W-30 SN/RC; ILSAC GF-5
- GLADIATOR DP 5W-40 SN
- GLADIATOR CS 0W-40 SN
- GLADIATOR SUV 5W-30 SN

## SYNTHETIC TECHNOLOGY OILS

- STORM ST 5W-30 SN/SM
- STORM ST 5W-40 SN/SM
- STORM ST 10W-30 SN/SM
- STORM ST 10W-40 SN/SM
- STORM ST 20W-50 SN/SM

## MINERAL OILS

- SUPRA 10W-30 SL
- SUPRA 20W-50 SL

# COMMANDER PLUS 0W-16 SP

**PREMIUM FULLY SYNTHETIC  
ULTRA LOW VISCOSITY & FUEL EFFICIENT  
PETROL ENGINE OIL**

**BULWARK COMMANDER PLUS** oil is premium fully synthetic, multi-grade Ultra Low Viscosity Fuel Efficient (ULVFE) motor oil engineered to meet the requirements of ultra-modern «downsized» engines equipped with Stop & Start technologies and hybrid engines which require very low viscous engine oils and seeking high performance and additional protection benefits. The product is intended for use in modern engines of passenger cars, pick-ups and light trucks including turbocharged & supercharged engines, which require ULVFE category oils.

**BULWARK COMMANDER PLUS SAE 0W-16** oil is manufactured using high-quality synthetic base stocks, premium and technologically advanced additive packages. Recommended for use in all-season operations, especially gasoline engines of cars from European, American, Japanese and other Asian manufacturers, which require oils with API SP performance levels in SAE 0W-16

#### PERFORMANCE LEVEL\*

- API SP/RC
- ILSAC GF-6B

#### KEY BENEFITS

- Engine protection and cleanliness in severe urban driving conditions.
- Protection after treatment systems and reduces NOx, HC and CO in particular.
- Ultra-low viscosity together with special additives, makes cold engine starts easier
- Unique formulation demonstrates robustness specific to low speed premature ignition prevention.
- Excellent fuel economy benefits

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	0W-16
Density @ 29.5°C, Kg/m3	ASTM D4052	0.848
Kinematic Viscosity @ 100°C cSt	ASTM D7042	7.32
Viscosity Index	ASTM D2270	168
Cold Cranking Viscosity at -35°C, mPa.s	ASTM D5293	3,560
Borderline Pumping Viscosity at -40°C, mPa.s	ASTM D4684	10,950
Sulphated Ash, %	ASTM D874	0.82
Flash Point, COC, °C	ASTM D92	232
Pour Point, °C	ASTM D97	-54
Total Base Number, mg KOH/g	ASTM D2896B	7.52

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COMMANDER 0W-20, 5W-20, 5W-16

**PREMIUM FULLY SYNTHETIC  
LOW VISCOSITY & EXTRA FUEL EFFICIENT  
PETROL ENGINE OIL**

**BULWARK COMMANDER** oils are premium fully synthetic, multi-grade Low Viscosity Extra Fuel Efficient (LVEFE) motor oils engineered to meet the requirements of ultra-modern downsized and hybrid engines seeking high performance and additional protection benefits. The product is intended for use in modern engines of passenger cars, pick-ups and light trucks including turbocharged & supercharged engines, which require LVEFE category oils.

**BULWARK COMMANDER** oils are manufactured using high-quality synthetic base stocks and technologically advanced premium additive packages. Recommended for use in all-season operations, especially gasoline engines of cars from European, American, Japanese and other Asian manufacturers, which require oils with performance levels API SP/RC (Resource Conserving) and SAE 0W-20, 5W-20 & 5W-16 viscosity.

#### PERFORMANCE LEVEL\*

- API SP/RC; SP Plus
- ILSAC GF-6A

#### KEY BENEFITS

- Excellent fuel economy benefits.
- Protection after treatment systems and extends oil drain intervals.
- Ultra-low viscosity together with special additives, makes cold engine starts easier
- Unique formulation demonstrates robustness specific to low speed premature ignition prevention.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	0W-20	5W-20	5W-16
Density @ 29.5°C, Kg/m3	ASTM D4052	0.851	0.853	0.852
Kinematic Viscosity @ 100°C cSt	ASTM D7042	8.12	8.56	7.82
Viscosity Index	ASTM D2270	154	162	164
Cold Cranking Viscosity, mPa-s	ASTM D5293	3980 at -35°C	4100 at -30°C	4260 at -30°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	12,300 at -40°C	16,500 at -35°C	11,520 at -35°C
Sulphated Ash, %	ASTM D874	0.80	0.80	0.80
Flash Point, COC, °C	ASTM D92	232	228	234
Pour Point, °C	ASTM D97	-54	-48	-48
Total Base Number, mg KOH/g	ASTM D2896B	7.32	7.32	7.32

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GLADIATOR FE 0W-20, 5W-20, 5W-30

**PREMIUM FULLY SYNTHETIC  
FUEL EFFICIENT  
PETROL ENGINE OIL**

**BULWARK GLADIATOR FE** oils are premium fully synthetic, multi-grade Fuel Efficient (FE) motor oils of the latest generation engineered to meet the requirements of additional fuel efficiency benefits. The product is intended for use in modern high-performance engines of passenger cars, pick-ups and light trucks including turbocharged & supercharged engines, which require Fuel Efficient (FE) category oils.

**BULWARK GLADIATOR FE** oils are manufactured using high-quality synthetic base stocks and technologically advanced premium additive packages. Recommended for use in all-season operations, especially gasoline engines of cars from European, American, Japanese and other Asian manufacturers, which require oils with API SN, ILSAC GF-5 performance levels with SAE 0W-20, 5W-20 or 5W-30 viscosity.

#### PERFORMANCE LEVEL\*

- API SN/RC; ILSAC GF-5
- Dexos1
- ACEA C3 (5W-30)
- MB 229.31, 229.51
- VW 502.00/505.00
- BMW LL-04 and PSA B71 2290

#### KEY BENEFITS

- Improved fuel economy with excellent low-temperature capabilities.
- Maximum engine protection against wear in severe urban driving conditions.
- Excellent detergency/dispersant properties prevent formation of deposit.
- Optimized for engines operating under high-load and varying engine speeds.
- Lower oil consumption, maintains higher oil pressure leading to longer engine life.
- Excellent oxidation stability ensures lower deposits and protects against wear.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	0W-20	5W-20	5W-30
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.851	0.852	0.854
Kinematic Viscosity @ 100°C cSt	ASTM D7042	8.23	8.47	10.42
Viscosity Index	ASTM D2270	154	162	169
Cold Cranking Viscosity, mPa-s	ASTM D5293	4120 at -35°C	4800 at -30°C	5260 at -30°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	21,300 at -40°C	26,500 at -35°C	31,520 at -35°C
Sulphated Ash, %	ASTM D874	0.76	0.76	0.76
Flash Point, COC, °C	ASTM D92	222	228	236
Foam Stability	ASTM D892			
Seq I		0/0	0/0	0/0
Seq II		0/0	0/0	0/0
Seq III		0/0	0/0	0/0
Pour Point, °C	ASTM D97	-54	-48	-48
Total Base Number, mg KOH/g	ASTM D2896B	8.60	8.60	8.60

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GLADIATOR DP 5W-40

**PREMIUM FULLY SYNTHETIC  
DOUBLE PROTECTION  
PETROL ENGINE OIL**

**BULWARK GLADIATOR DP** oils are multi-grade premium fully synthetic motor oils of the latest generation suitable for use in modern engines of passenger cars, light commercial trucks, sport cars and vans including turbocharged and supercharged engines. They provide best in class wear protection and all-round superior performance.

**BULWARK GLADIATOR DP 5W-40** oil is formulated using premium quality synthetic base oils and advanced high-performance additive packages. Recommended for use during all-season operations in gasoline engines of cars from European, American, Japanese and other Asian manufacturers, which require oils with API SN, ACEA A3/B4 performance levels and SAE 5W-40 viscosity.

#### PERFORMANCE LEVEL\*

- API SN
- ACEA A3/B4
- MB 229.3, 229.5
- PORSCHE A40; VW 502.00/505.00;
- BMW LL-01
- RN 0700/0710
- PSA B71 2296

#### KEY BENEFITS

- Excellent anti-oxidation & anti-corrosion properties provide protection to the engine against wear in severe operating conditions.
- Unique formulation minimizes oil consumption.
- Facilitates smoother engine operation at high loads and in "start-stop" mode.
- Easy cold start and excellent low-temperature properties, reduces engine start-up wear.
- Prevents the formation of high and low temperature deposits on the engine components.
- High BN reserve and retention allow use of high sulfur fuel.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	5W-40
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.857
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.78
Viscosity Index	ASTM D2270	166
Cold Cranking Viscosity at -30°C, mPa-s	ASTM D5293	5060
Borderline Pumping Viscosity at -35°C, mPa-s	ASTM D4684	18,520
Sulphated Ash, %	ASTM D874	0.82
Flash Point, COC, °C	ASTM D92	242
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-48
Total Base Number, mg KOH/g	ASTM D2896B	8.60

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GLADIATOR CS 0W-40

**FULLY SYNTHETIC  
PAO BASED PETROL ENGINE OIL  
QUICK COLD START**

**BULWARK GLADIATOR CS** oils are advanced and latest generation premium fully synthetic multi-grade motor oils suitable for use in modern engines of passenger cars, light commercial trucks, sport cars and vans including turbocharged engines. The product is formulated using premium quality Poly Alpha Olefin base stocks and advanced technology additive packages to provide quick cold start, best in class start up wear protection, and all-round superior performance.

**BULWARK GLADIATOR CS 0W-40** is recommended for use during all-season operations, especially in extreme cold weather conditions below -30°C in passenger cars running on petrol fuel and made by European, Japanese, American and Asian manufacturers, which require API SN, ACEA A3/B4 performance levels and SAE 0W-40 viscosity.

#### PERFORMANCE LEVEL\*

- API SN
- ACEA A3/B4
- MB 229.3, 229.5
- PORSCHE A40
- VW 502.00/505.00
- BMW LL-01
- RN 0700/0710
- PSA B71 2296

#### KEY BENEFITS

- Easy cold start and excellent fluidity at low temperature provides engine start-up wear protection.
- Excellent anti-oxidation & anti-corrosion properties provide better engine protection in severe operating conditions and at varying loads.
- Advanced formulation minimizes oil consumption and aids in smoother engine operation in "start-stop" mode.
- Prevents the formation of high and low temperature deposits on the engine components.
- High quality acid neutralizing additives protects the engine from corrosion.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	0W-40
Density @ 29.5°C, Kg/m3	ASTM D4052	0.850
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.51
Viscosity Index	ASTM D2270	176
Cold Cranking Viscosity at -35°C, mPa-s	ASTM D5293	4020
Borderline Pumping Viscosity at -40°C, mPa-s	ASTM D4684	12,320
Sulphated Ash, %	ASTM D874	0.82
Flash Point, COC, °C	ASTM D92	232
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-54
Total Base Number, mg KOH/g	ASTM D2896B	8.60

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GLADIATOR SUV 5W-30

**FULLY SYNTHETIC  
ADVANCED ENGINE OIL  
FOR SUVs & LIGHT TRUCKS**

**BULWARK GLADIATOR SUV** oil is premium fully synthetic, multi-grade oil specially designed for use in the latest generation of SUV, 4X4 and off-road light duty trucks running on diesel or petrol fuel. This product meets the requirements for offering fuel efficiency benefits and other additional protection in vehicles with high power output including turbocharged & supercharged engines.

**BULWARK GLADIATOR SUV SAE 5W-30** oil is manufactured using high-quality synthetic base stocks, and technologically advanced premium additive packages. Recommended for use in all-season operations, especially gasoline/diesel engines of SUVs from European, American, Japanese and other Asian manufacturers, which require oils with API SN, ACEA C3 performance levels and SAE 5W-30 viscosity. They can also be used in diesel engines fitted with Diesel Particulate Filters (DPF).

#### PERFORMANCE LEVEL\*

- API SN
- ACEA C3
- Dexos 1 Gen 2

#### KEY BENEFITS

- Improved fuel economy with excellent low-temperature capabilities.
- Maximum engine protection against wear in severe urban driving conditions.
- Excellent detergency/dispersant properties prevent formation of deposit.
- Optimized for engines operating under high-load and varying engine speeds.
- Lower oil consumption, maintains higher oil pressure leading to longer engine life.
- Excellent oxidation stability ensures lower deposits and protects against wear.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	5W-30
Density @ 29.5°C, Kg/m3	ASTM D4052	0.858
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.42
Viscosity Index	ASTM D2270	169
Cold Cranking Viscosity at -30°C, mPa-s	ASTM D5293	5260
Borderline Pumping Viscosity at -35°C, mPa-s	ASTM D4684	27,520
Sulphated Ash, %	ASTM D874	0.76
Flash Point, COC, °C	ASTM D92	236
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-48
Total Base Number, mg KOH/g	ASTM D2896B	9.32

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# STORM ST 5W-30, 5W-40, 10W-30, 10W-40, 20W-50

## SYNTHETIC TECHNOLOGY PETROL ENGINE OIL

**BULWARK STORM ST** oils are multi-grade synthetic technology motor oils of the latest generation suitable for use in modern engines of passenger cars, light commercial trucks, sport cars and vans including turbocharged engines. The product is manufactured using a combination of premium quality synthetic and mineral base stocks and advanced technology additive packages to provide best in class anti-wear protection and improved cold start.

**BULWARK STORM ST 10W-30 and 10W-40** oils are recommended for use in gasoline engines of cars from Japanese, American and Korean automakers requiring API SN or SM, ACEA A3/B3, A3/B4 performance level

### PERFORMANCE LEVEL\*

- API SN/SM
- API SN (20W-50)
- ACEA A3/B4 (10W-30 & 10W-40)
- VW 502.00/505.00 (5W-30 & 5W-40)
- MB 229.3
- RN 0700/0710

### KEY BENEFITS

- Good anti-oxidation & anti-corrosion properties provide greater protection to the engine components against wear in extreme operating conditions.
- Enables easy cold start due to excellent low-temperature properties.
- Reduced high and low temperature deposits formation.
- Higher BN reserves and acid neutralizing additives increases corrosion protection.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	5W-30	5W-40	10W-30	10W-40	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.857	0.859	0.857	0.858	0.878
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.82	14.12	10.62	14.72	18.50
Viscosity Index	ASTM D2270	162	172	165	169	132
Cold Cranking Viscosity at -30°C, mPa-s	ASTM D5293	5,490	5,890	-	-	-
-25°C, mPa-s		-	-	5,090	5,360	-
-15°C, mPa-s		-	-	-	-	8,200
Borderline Pumping Viscosity 35°C, mPa-s	ASTM D4684	30,520	34,520	-	-	-
30°C, mPa-s		-	-	39,020	34,670	-
20°C, mPa-s		-	-	-	-	32,600
Sulphated Ash, %	ASTM D874	1.10	1.10	1.10	1.10	1.17
Flash Point, COC, °C	ASTM D92	232	242	234	242	256
Foam Stability	ASTM D892					
Seq I		0/0	0/0	0/0	0/0	0/0
Seq II		0/0	0/0	0/0	0/0	0/0
Seq III		0/0	0/0	0/0	0/0	0/0
Pour Point, °C	ASTM D97	-42	-42	-39	-39	-30
Total Base Number, mg KOH/g	ASTM D2896B	7.32	7.32	7.32	7.32	7.32

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# SUPRA 10W-30, 20W-50

## MINERAL PETROL ENGINE OIL

**BULWARK SUPRA** oils are mainstream multi-grade mineral motor oils suitable for use in engines of passenger cars, light commercial trucks and vans including turbocharged engines. The product is manufactured using high quality mineral base stocks and advanced technology additive packages to provide the best anti-wear protection and all-round superior performance.

**BULWARK SUPRA 10W-30 and 20W-50** oils are recommended for use during all-season operations in gasoline engines of cars from Japanese, American and Korean manufacturers, where API SL performance is required.

### PERFORMANCE LEVEL\*

- API SL
- ACEA A2/B2; CF-4/CF (10W-30)

### KEY BENEFITS

- High antioxidation and better dispersant properties
- Low oil consumption.
- Minimizes wear and noise level (especially in older and worn engines) during extreme operational conditions.
- Excellent protection against corrosion.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-30	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.878	0.885
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.25	18.50
Viscosity Index	ASTM D2270	136	127
Cold Cranking Viscosity, mPa-s	ASTM D5293	5190 at -25°C	8350 at -15°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	30,120 at -30°C	33,120 at -20°C
Sulphated Ash, %	ASTM D874	1.05	1.05
Flash Point, COC, °C	ASTM D92	232	248
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-42	-30
Total Base Number, mg KOH/g	ASTM D2896B	7.45	7.45

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# MOTORCYCLE OILS (MCO)

## PREMIUM FULLY SYNTHETIC OILS

- BLAZE S 4T 10W-50 SN
- BLAZE S 4T 10W-40 SN

## SYNTHETIC TECHNOLOGY OILS

- BLAZE ST 4T 10W-30 SN

## MINERAL OILS

- BLAZE M 4T 10W-30 SL
- BLAZE M 4T 20W-40 SL
- BLAZE M 4T 20W-50 SL

# BLAZE S 4T 10W-40, 10W-50

**FULLY SYNTHETIC  
4-STROKE MOTOR CYCLE OIL**

**BULWARK BLAZE S 4T** oils are premium quality 4-stroke fully synthetic engine oils specifically designed for the new generation of premium motorcycles, scooters & mopeds. Blended with superior synthetic base stocks and high-performance additives to provide reliable protection for your engine by keeping it cooler, cleaner with improved and smoother clutch performance.

**BULWARK BLAZE S 4T SAE 10W-40 and 10W-50** oils are recommended for use in air and liquid cooled four-stroke motorcycle engines with combined engine and transmission units or separate gearboxes where a multi-grade fully synthetic 10W-40 or 10W-50, API SN and JASO MA2 performance levels are required.

#### PERFORMANCE LEVEL\*

- API SN
- JASO MA2

#### KEY BENEFITS

- High performance, long life oil hence reduced maintenance cost
- Better oxidation stability and detergency keeps engine cleaner
- Reduces engine heat, keeps it cooler helps reduce wear and extend engine life
- Provides smoother and better clutch performance
- Improved and better pick-up / acceleration

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-40	10W-50
Density @ 29.5°C, Kg/m3	ASTM D4052	0.858	0.853
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.12	18.12
Viscosity Index	ASTM D2270	169	179
Cold Cranking Viscosity at -25°C, mPa-s	ASTM D5293	5360	5060
Borderline Pumping Viscosity at -30°C, mPa-s	ASTM D4684	34,670	30,670
Sulphated Ash, %	ASTM D874	0.92	0.92
Flash Point, COC, °C	ASTM D92	238	252
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-42	-42
Total Base Number, mg KOH/g	ASTM D2896B	7.12	7.12

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# BLAZE ST 4T 10W-30

**SYNTHETIC TECHNOLOGY  
4-STROKE MOTOR CYCLE OIL**

**BULWARK BLAZE ST 4T** oils are 4-stroke synthetic technology blend engine oils specifically designed for the latest generation motorcycles, scooters & mopeds. They are blended using a combination of superior mineral and synthetic base stocks and high-performance additives to provide reliable protection to your engine by keeping it cooler, cleaner with improved and smoother clutch performance.

**BULWARK BLAZE ST 4T SAE 10W-30** oil is recommended for use in air and liquid cooled four-stroke motorcycle engines with combined engine and transmission units or separate gearboxes where a multi-grade synthetic technology API SN and JASO MB performance levels are required.

#### PERFORMANCE LEVEL\*

- API SN
- JASO MA2

#### KEY BENEFITS

- Higher performance, longer oil life hence reduced maintenance cost
- Better oxidation stability and detergency keeps engine cleaner
- Reduces engine heat, keeps it cooler helps reduce wear and extend engine life
- Provides smoother and better clutch performance

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-30
Density @ 29.5°C, Kg/m3	ASTM D4052	0.857
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.62
Viscosity Index	ASTM D2270	165
Cold Cranking Viscosity at -25°C, mPa-s	ASTM D5293	5090
Borderline Pumping Viscosity at -30°C, mPa-s	ASTM D4684	39,020
Sulphated Ash, %	ASTM D874	0.82
Flash Point, COC, °C	ASTM D92	234
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-42
Total Base Number, mg KOH/g	ASTM D2896B	7.52

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk



# BLAZE M 4T 10W-30, 20W-40, 20W-50

## 4-STROKE MOTOR CYCLE OIL

**BULWARK BLAZE M 4T** oils are high quality 4-stroke mineral engine oils specifically designed for motorcycles, scooters & mopeds. They are manufactured using superior hydrocracked mineral base stocks and high-performance additives to provide reliable protection to your engine by keeping it cooler, cleaner with smoother clutch performance.

**BULWARK BLAZE M 4T SAE 10W-30, 20W-40 and 20W-50** oils are recommended for use in air cooled four-stroke motorcycle engines with combined engine and transmission units where API SL and JASO MA performance levels are required.

### PERFORMANCE LEVEL\*

- API SL
- JASO MA2

### KEY BENEFITS

- Better oxidation stability and detergency keeps engine cleaner
- Reduces engine heat, keeps it cooler and helps extending engine life
- Provides smoother and better clutch & engine performance

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-30	20W-40	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.878	0.882	0.885
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.98	14.50	18.50
Viscosity Index	ASTM D2270	145	132	137
Cold Cranking Viscosity	ASTM D5293	5890 at -25°C	7850 at -15°C	8350 at -15°C
Borderline Pumping Viscosity	ASTM D4684	32,010 at -30°C	30,120 at -20°C	33,120 at -20°C
Sulphated Ash, %	ASTM D874	1.05	1.05	1.05
Flash Point, COC, °C	ASTM D92	228	242	254
Foam Stability	ASTM D892			
Seq I		0/0	0/0	0/0
Seq II		0/0	0/0	0/0
Seq III		0/0	0/0	0/0
Pour Point, °C	ASTM D97	-42	-30	-30
Total Base Number, mg KOH/g	ASTM D2896B	7.50	7.50	7.50

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COMMERCIAL VEHICLE OILS (CVO)

## PREMIUM FULLY SYNTHETIC OILS

- HERCULES PREMIUM XLA 10W-30 CK-4
- HERCULES PREMIUM XLA 10W-40 CK-4/SN
- HERCULES PREMIUM XLA 15W-40 CK-4/SN
- HERCULES PREMIUM LA 10W-40 CJ-4/SN
- HERCULES PREMIUM LA 15W-40 CJ-4/SN

## SYNTHETIC TECHNOLOGY OILS

- HERCULES LD 10W-40 CI-4
- HERCULES LD 15W-40 CI-4/CI-4 PLUS

## MINERAL OILS

- HERCULES HD 15W-40 CI-4, CH-4/SL
- HERCULES HD 20W-50 CI-4, CH-4/SL
- HERCULES MULTI 15W-40 CF-4, CF
- HERCULES MULTI 20W-50 CF-4, CF
- HERCULES SAE 40 CF-4, CF-2
- HERCULES SAE 50 CF-4, CF-2
- HERCULES PREMIUM MA 15W-40 CJ-4/CI-4PLUS

## GAS ENGINE OILS (LCV)

- HERCULES CNG 15W-40 CF-4
- HERCULES CNG 20W-50 CF-4
- HERCULES CNG LA 10W-40 CI-4
- HERCULES LPG 20W-50 SM/SL

## TRACTOR OIL

- TRACTOR OIL 15W-40 (STOU) CG-4/GL-4

## MULTI-FUNCTION OILS (MFO) (UTTO, CONSTRUCTION & OFF-HIGHWAY)

- POWER-TRANS 10W (UTTO) GL-4
- POWER-TRANS 30 (UTTO) GL-4
- POWER-TRANS 50 (UTTO) GL-4
- POWER-TRANS MULTI 10W-30 GL-4
- POWER-TRANS MULTI 10W-40 GL-4
- POWER-TRANS MULTI 15W-40 GL-4

# HERCULES PREMIUM XLA 10W-30, 10W-40, 15W-40

**FULLY SYNTHETIC  
SUPER ULTRA HIGH PERFORMANCE  
DIESEL ENGINE OIL (SUHPD)**

**BULWARK HERCULES PREMIUM XLA** oils are premium fully synthetic, high performance, Super Ultra High-Performance Diesel engine oils (SUHPD) designed to meet latest ACEA requirements and more challenging OEM specifications for Euro 6 commercial diesel vehicles equipped with EGR, SCR & NOx reduction systems and with diesel particulate filters (DPF).

**BULWARK HERCULES PREMIUM XLA 10W-30, 10W-40 and 15W-40** are manufactured using optimized combination of synthetic base oils with premium additives to provide proven & reliable long drain interval and all year-round performance. It is a low SAP oil recommended for use with Ultra Low Sulphur Diesel (ULSD) in turbo-charged high speed 4-stroke diesel engines deployed in off-highway and on-highway applications including mining & construction industry, where ACEA E9 & API CK-4 oils are specified.

#### PERFORMANCE LEVEL\*

- API CK-4/CJ-4/CI-4Plus
- ACEA E9-16
- MB 228.31
- MTU Type 2.1; Ford WSS-M2C171-F1
- CAT ECF-3; Cummins CES 20081, 20086
- Volvo VDS 4.5, Mack EOS 4.5 &, Renault RLD-3
- Detroit DDC93K222, DDC93K218;
- MAN M3775; Mack EO-O PP
- Deutz DQC III-18 LA

#### KEY BENEFITS

- Lower maintenance costs from minimized piston crown deposits.
- Lower maintenance costs from minimized piston crown deposits.
- Lower multi-grade viscosities ensure improved oil circulation and reduced friction at start-up and maximum lubricity at higher operating temperatures.
- Excellent oxidation stability & BN retention ensure negligible oil degradation and improves oil service life in turn providing longer drain intervals.
- Lower oil consumption due to high shear stable VI improvers and low volatile synthetic base fluids.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-30	10W-40	15W-40
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.854	0.860	0.877
Kinematic Viscosity @ 100°C cSt	ASTM D7042	10.67	14.12	14.5
Viscosity Index	ASTM D2270	145	161	142
Cold Cranking Viscosity at -25°C, mPa-s	ASTM D5293	5700	6080	5900* @ -20° C
Borderline Pumping Viscosity at -30°C, mPa-s	ASTM D4684	24,800	27,800	26,500 @ -15°
Sulphated Ash, %	ASTM D874	1.03	1.03	1.03
Flash Point, COC, °C	ASTM D92	228	246	238
Foam Stability	ASTM D892	-	-	-
Seq I		-	-	-
Seq II		-	-	-
Seq III		-	-	-
Pour Point, °C	ASTM D97	-42	-39	-36
Total Base Number, mg KOH/g	ASTM D2896B	10	10	10

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES PREMIUM LA 10W-40, 15W-40

**FULLY SYNTHETIC  
SUPER HIGH PERFORMANCE  
DIESEL ENGINE OIL (SHPD)**

**BULWARK HERCULES PREMIUM LA** oils are synthetic blend, Super High-Performance Diesel engine oils (SHPD) designed to meet latest ACEA requirements and more challenging OEM specifications for Euro 6 commercial diesel vehicles equipped with EGR, SCR & NOx reduction systems and with diesel particulate filters (DPF).

**BULWARK HERCULES PREMIUM LA 10W-40 and 15W-40** are manufactured using optimized combination of synthetic base oils with premium additives to provide proven & reliable long drain interval and all year-round performance. Recommended for use with Ultra Low Sulphur Diesel (ULSD) in turbo-charged high speed 4-stroke diesel engines deployed in off-highway and on-highway applications including the mining & construction industry, where ACEA E9 & API CJ-4 oils are specified.

#### PERFORMANCE LEVEL\*

- API CJ-4/SN
- ACEA E9-16
- MB 228.31
- MTU Type 2.1
- CAT ECF-3
- Cummins CES 20081
- Volvo VDS 4, Mack EO -O PP &, Renault RLD-3
- Detroit DDC93K218
- Deutz DQC III-10 LA; Ford WSS-M2C171-F1

#### KEY BENEFITS

- Lower maintenance costs from minimized piston crown deposits.
- Low viscosity ensures improved oil circulation and reduced friction at start-up and maximum lubricity at higher operating temperatures.
- Excellent oxidation stability & BN retention ensure negligible oil degradation and improves oil service life in turn providing longer drain intervals.
- Lower oil consumption due to high shear stable VI improvers and low volatile synthetic base fluids.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-40	15W-40
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.862	0.871
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.12	14.52
Viscosity Index	ASTM D2270	159	144
Cold Cranking Viscosity, mPa-s	ASTM D5293	4080 at -25°C	5810 at -20°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	24,800 at -30°C	27,800 at -25°C
Sulphated Ash, %	ASTM D874	0.72	0.72
Flash Point, COC, °C	ASTM D92	246	242
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-42	-39
Total Base Number, mg KOH/g	ASTM D2896B	7.85	7.85

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES LD 10W-40

**SYNTHETIC TECHNOLOGY  
LONG DRAIN  
DIESEL ENGINE OIL (SHPD)**

**BULWARK HERCULES** oils are synthetic technology blend, long drain Super High-Performance Diesel engine oils (SHPD) designed to meet latest ACEA requirements and more challenging OEM specifications for Euro 4 & 5 compliant diesel vehicle equipped with EGR, SCR & NOx reduction systems. Not recommended for engines with diesel particulate filters (DPF).

**BULWARK HERCULES LONG DRAIN 10W-40** is manufactured using optimized combination of synthetic and mineral base oil with premium additives to provide proven & reliable long drain interval and all year-round performance. Recommended for use in naturally aspirated and turbo-charged high speed 4-stroke diesel engines deployed in off-highway and on-highway applications including the mining & construction industry, where ACEA E4, E7 & API CI-4 oils are specified.

#### PERFORMANCE LEVEL\*

- API CI-4/SL
- ACEA E4, E7-16
- MB 228.5, 228.3; DETROIT DDC93K215
- MAN M3275; MACK EO-N; DQC III-18;
- VOLVO VDS-3; RENAULT RLD-2; MTU TYPE 2
- Cummins CES 20076/77/78
- JASO DH-1; GLOBAL DHD-1
- ACEA A3/B3, A3/B4-16; MB 229.1

#### KEY BENEFITS

- Lower maintenance costs from minimized piston crown deposits and prevents damage to bore.
- SAE 10W-40 multi-grade viscosity ensures improved oil circulation and reduced friction at start-up and maximum lubricity at higher operating temperatures.
- Excellent oxidation stability & BN reserves ensure negligible oil degradation and improves oil service life in turn providing Longer drain intervals.
- Lower oil consumption due to high shear stable VI improvers and low volatile synthetic base fluids.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-40
Density @ 29.5°C, Kg/m3	ASTM D4052	0.859
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.90
Viscosity Index	ASTM D2270	162
Cold Cranking Viscosity at -25°C, mPa-s	ASTM D5293	5180
Borderline Pumping Viscosity at -30°C, mPa-s	ASTM D4684	27,800
Sulphated Ash, %	ASTM D874	1.38
Flash Point, COC, °C	ASTM D92	242
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-42
Total Base Number, mg KOH/g	ASTM D2896B	12.85

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES LD 15W-40 CI-4/CI-4 PLUS

**SYNTHETIC TECHNOLOGY  
LONG DRAIN  
DIESEL ENGINE OIL (SHPD)**

**BULWARK HERCULES LD** oils are synthetic technology blend, high performance, heavy duty commercial vehicle engine oils specifically formulated for use in Diesel engines fitted with EGR systems and turbochargers. They provide superior lubrication performance, excellent protection in challenging operating environments and offer lower oil consumption benefits through extended drain interval.

**BULWARK HERCULES LD 15W-40** oils are especially suitable for use on heavy duty long-haul trucks, buses and off-highway and stationary equipment used in mining, construction and similar extreme heavy-duty applications, where an API CI-4 or CI-4 Plus level performance is required.

#### PERFORMANCE LEVEL\*

- API CI-4 / CI-4 PLUS/SL
- ACEA E4, E7-16; ACEA A3/B3, A3B4-16;
- MB 228.5; 228.3; 229.1; VOLVO VDS 3; RLD-2; MTU Type 2;
- MAN M3275; DETROIT DDC93K215; MACK EO-N;
- CUMMINS CES 20076/77/78; DEUTZ DQC III - 18;
- CAT ECF-1a, ECF-2; JASO DH-1; GLOBAL DHD-1;

#### KEY BENEFITS

- High level of detergency provides excellent piston & engine cleanliness.
- Provides extended drain interval with lower rate of oil consumption.
- Better deposit control due to low ash technology.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	15W-40
Density @ 15°C, Kg/m3	ASTM D4052	0.875
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.85
Kinematic Viscosity @ 40°C cSt Viscosity Index	ASTM D7042	100.1
Viscosity Index (min)	ASTM D2270	140
Flash Point, COC, °C (min)	ASTM D92	234
Pour Point °C (max)	ASTM D97	-36
TBN Mg KOH/g	ASTM D2896	11.0
CCS @-20°C, m.Pa.S	ASTM D5293	5600

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES PREMIUM MA 15W-40 CJ-4/CI-4 Plus

**SUPER ULTRA HIGH PERFORMANCE  
DIESEL ENGINE OIL (SUHPD) - MINERAL**

**BULWARK HERCULES PREMIUM MA 15W-40** oils are high quality mineral blend, Super High-Performance Diesel engine oils (SHPD) designed to meet latest ACEA requirements and more challenging OEM specifications for Euro 6 commercial diesel vehicles equipped with EGR, SCR & NOx reduction systems and with diesel particulate filters (DPF).

**BULWARK HERCULES PREMIUM MA 15W-40** oils are manufactured using high quality base oils with premium additives to provide proven & reliable long drain interval and all year-round performance. Recommended for use with Ultra Low Sulphur Diesel (ULSD) in turbo-charged high speed 4-stroke diesel engines deployed in off-highway and on-highway applications including the mining & construction industry, where ACEA E9-16 & API CJ-4 oils are specified.

#### PERFORMANCE LEVEL\*

- CJ-4/CI-4 PLUS/SN; ACEA E9-16; MB 228.31;
- MTU TYPE 2.1; CAT ECF-3; CUMMINS CES 20081;
- VOLVO VDS 4; MACK EO-O PP & RENAULT RLD-3;
- DETROIT DDC93K218; DEUTZ DQC III-18 LA; Ford WSS-M2C171-F1

#### KEY BENEFITS

- Lower maintenance costs from minimized piston crown deposits.
- High VI ensures improved oil circulation and reduced friction at start-up and maximum lubricity at higher operating temperatures.
- Excellent oxidation stability & BN retention ensure negligible oil degradation and improves oil service life in turn providing Longer drain intervals.
- Reduced oil consumption due to shear stable VI improvers and low volatile hydro-processed base fluid.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	15W-40
Density at 29.5 °C, kg/m3	ASTM D4052	0.872
Kinematic Viscosity at 40°C, mm2/s	ASTM D445	100.1
Kinematic Viscosity at 100°C, mm2/s	ASTM D445	13.85
Viscosity Index	ASTM D2270	140
Flash Point COC, °C	ASTM D92	242
Pour Point, °C	ASTM D97	-39
TBN Mg KOH/g	ASTM D2896	7.70
CCS @-20°C, m.Pa.S	ASTM D5293	4890

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES HD 15W-40, 20W-50

**PREMIUM HEAVY-DUTY  
MINERAL DIESEL ENGINE OIL (HDDEO)**

**BULWARK HERCULES HD** oils are high performance, heavy duty multi-grade mineral diesel engine oils of the latest generation. They are specifically designed to lubricate a wide range of diesel engines equipped with EGR, SCR & NOx reduction systems requiring API CI-4 or ACEA E7 performance requirements and more challenging OEM specifications.

**BULWARK HERCULES HD 15W-40 and 20W-50** are manufactured using premium hydrocracked mineral base stocks and high-performance additives to provide reliable and superior all year-round performance. It is recommended for use in naturally aspirated and turbo-charged high speed 4-stroke diesel engines without diesel particulate filters (DPF) deployed in commercial road transport and off highway applications, where standard drain interval API CI-4 oils are specified.

#### PERFORMANCE LEVEL\*

- API CI-4, CH-4/SL
- ACEA E7-16; MB 228.3; MAN M3275; MTU TYPE 2,
- VOLVO VDS-3; RENAULT RLD-2; ALLISON C4; CUMMINS CES 20076/77/78
- GLOBAL DHD-1; MACK EO-N/EO-M Plus; DQC III-18;
- CAT ECF-1a; DETROIT DDC93K215; ACEA A3/B3, A3/B4-16

#### KEY BENEFITS

- High performance hydrocracked base oil and balanced metallic detergent/dispersant additive reduces maintenance costs and maintain excellent engine cleanliness in all service conditions.
- Improved BN reserves and acid neutralizing additives supports use of diesel with varying Sulphur content and provides optimum engine protection.
- Preserves the oil performance and stays in grade till the end of service life as a result of excellent and optimized combination of additive & shear stable VI Improver.

#### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	15W-40	20W-50
Density @ 29.5°C, Kg/m3	ASTM D4052	0.878	0.8850
Kinematic Viscosity @ 100°C cSt	ASTM D445	14.52	18.5
Viscosity Index	ASTM D2270	142	127
Cold Cranking Viscosity at -15°C, mPa-s	ASTM D5293	6480	8460
Borderline Pumping Viscosity at -20°C, mPa-s	ASTM D4684	28,800	39,000
Sulphated Ash, %	ASTM D874	1.20	1.25
Flash Point, COC, °C	ASTM D92	236	246
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-39	-27
Total Base Number, mg KOH/g	ASTM D2896B	10.35	10.5

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES MULTI 15W-40, 20W-50

## MULTI-GRADE MINERAL DIESEL ENGINE OIL

**BULWARK HERCULES MULTI** series oils are superior multi-grade mineral diesel engine oils specially designed to lubricate a wide range of 4-stroke naturally aspirated and turbocharged diesel engines requiring API CF-4 or lower performance requirements usually older fleet of light, medium and heavy-duty commercial vehicles.

**BULWARK HERCULES MULTI 15W-40 and 20W-50** are manufactured using superior hydrocracked mineral base stocks and high-performance additives to provide excellent anti-oxidation, anti-wear properties and reliable all year-round performance. Recommended for use in older generation diesel engines which are widely used on road transport and off-road equipment.

### PERFORMANCE LEVEL\*

- API CF-4, CF
- ACEA E2-96; MB 228.1; MAN 270; MTU Type 1 (15W-40)

### KEY BENEFITS

- High anti-oxidation and dispersant properties
- Reduced oil consumption, wear and noise level (in older high mileage and worn engines) during severe operation conditions.
- Excellent protection against wear & corrosion.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	15W-40	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.889	0.892
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.72	18.90
Viscosity Index	ASTM D2270	136	127
Cold Cranking Viscosity, mPa-s	ASTM D5293	6400 at -20°C	8850 at -15°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	27,800 at -25°C	42,800 at -20°C
Sulphated Ash, %	ASTM D874	1.30	1.30
Flash Point, COC, °C	ASTM D92	236	252
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-36	-27
Total Base Number, mg KOH/g	ASTM D2896B	10.1	10.1

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES SAE 40, SAE 50

## MINERAL DIESEL ENGINE OIL

**BULWARK HERCULES** series oils are superior mono-grade mineral diesel engine oils specially designed to lubricate a wide range of 4-stroke naturally aspirated diesel engines requiring API CF-4 or lower performance requirements usually older fleet of light, medium and heavy-duty commercial vehicles.

**BULWARK HERCULES SAE 40 and SAE 50** are manufactured using superior paraffinic mineral base oils and high-performance additives to provide excellent anti-oxidation, anti-wear properties and reliable all year-round performance. Recommended for use in diesel engines which are widely used on road transport and off-road equipment, where mono grade lubricants are required.

### PERFORMANCE LEVEL\*

- API CF-4, CF-2, CF

### KEY BENEFITS

- High anti-oxidation and dispersant properties
- Reduced oil consumption, wear and noise level (in older high mileage and worn engines) during severe operation conditions.
- Excellent protection against wear & corrosion.
- Higher viscosity base oils help maintain oil pressure at all driving conditions.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	40	50
Density @ 29.5 °C, Kg/m <sup>3</sup>	ASTM D4052	0.894	0.898
Kinematic Viscosity @ 100°C cSt	ASTM D7042	15.50	19.50
Viscosity Index	ASTM D2270	97	95
Sulphated Ash, %	ASTM D874	1.40	1.40
Flash Point, COC, °C	ASTM D92	248	260
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Pour Point, °C	ASTM D97	-18	-15
Total Base Number, mg KOH/g	ASTM D2896B	12.0	12.0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES CNG 15W-40, 20W-50

## CNG/LNG GAS ENGINE OIL

**BULWARK HERCULES CNG** oils are high performance medium and heavy-duty commercial vehicle engine oils specifically designed for CNG/LNG trucks, buses and also small to medium size generators running on CNG as fuel. These oils provide excellent protection in challenging operating environment and offer extended drain interval.

**BULWARK HERCULES CNG** oils come in two SAE Grades and suitable for use on LNG/CNG fueled light, medium and heavy-duty trucks, waste collection trucks, Linehaul trucks, oil field equipment including medium load CNG generators and off-road equipment.

### PERFORMANCE LEVEL\*

- API CF-4
- ACEA E2-96; MB 228.1; MAN 270; MTU Type 1

### KEY BENEFITS

- Reduced deposits provide excellent piston & engine cleanliness.
- Long drain oil intervals even under high stress combustion cycles.
- Good tappet and liner wear performance and protection in alternative fuel engines.
- Low ash containing additives effectively control deposit formation

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	CNG 15W-40	CNG 20W-50
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.875	0.890
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.22	18.25
Kinematic Viscosity @ 40°C cSt Viscosity Index	ASTM D7042	104.8	160.1
Viscosity Index (min)	ASTM D2270	138	127
Flash Point, COC, °C (min)	ASTM D92	238	246
Pour Point °C (max)	ASTM D97	-36	-27
TBN Mg KOH/g	ASTM D2896	6.4	6.4
CCS °C m.Pa.S	ASTM D5293	6150 (@-20°C)	8900 (@-15°C)

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES CNG LA 10W-40

## LOW ASH COMPRESSED NATURAL GAS ENGINE OIL

**BULWARK HERCULES CNG LA** oils are extreme low ash gas engine lubricants designed for medium and heavy-duty commercial vehicles running on CNG and other natural gas as fuel. Specially made from superior low Sulphur base stocks and advanced additive package for gas engines, these oils resist wear under extreme operating conditions. Their high viscosity index (HVI) provides additional protection against start-stop mode and high temperature operating conditions.

**BULWARK HERCULES CNG LA** oils are suitable for use on gas fueled engines (CNG, LPG and other natural gas), which include passenger cars and light, medium & Heavy commercial vehicles.

### PERFORMANCE LEVEL\*

- API CI-4
- ACEA E6/E7-12; JASO DH-2; MB 228.51, MB 226.9;
- MAN M3477, M3271-1; VOLVO VDS-3; RENAULT RLD-2;
- MTU Type 3.1, DEUTZ DQC-III-10 LA,
- CUMMINS CES 20076/77, MACK EO-N

### KEY BENEFITS

- Single oil for fleet owners with CNG, dual fuel and gasoline vehicles.
- Special Low ash additives and dispersants extend oil performance/service life.
- Good nitration resistance protects from CNG related valve deposits.
- Excellent thermal and oxidation stability.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	CNG LA 10W-40
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.8675
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.95
Kinematic Viscosity @ 40°C cSt Viscosity Index	ASTM D7042	96.52
Viscosity Index (min)	ASTM D2270	147
Flash Point, COC, °C (min)	ASTM D92	242
Pour Point °C (max)	ASTM D97	-39
TBN Mg KOH/g	ASTM D2896	7.38
CCS @-20°C, m.Pa.S	ASTM D5293	4900

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HERCULES LPG 20W-50

## LPG GAS ENGINE OIL

**BULWARK HERCULES LPG** oils are gas engine lubricants designed for light and medium duty commercial vehicles running on LPG as fuel. Made from hydrocracked base stocks and advanced additive packages for gas engines, these oils resist wear under extreme operating conditions. Their high viscosity provides additional protection against wear during start-stop mode and operating under high temperature conditions.

**BULWARK HERCULES LPG** oils are suitable for use on gas fueled engines (LPG and Petrol), which include passenger cars and light commercial vehicles. They can be also used on four-stroke gasoline engines of portable power generators where a conventional passenger car motor oils are specified.

### PERFORMANCE LEVEL\*

- API SM/SL/SJ

### KEY BENEFITS

- Single oil for fleet owners with dual fuel - LPG and gasoline engine vehicles
- Special additives and ashless dispersants provide longer oil service life
- Excellent oxidation resistance protects the engine from valve deposits.
- Excellent thermal stability provides protection for older and high mileage vehicles

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	CNG 20W-50
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.8897
Kinematic Viscosity @ 100°C cSt	ASTM D7042	18.95
Kinematic Viscosity @ 40°C cSt Viscosity Index	ASTM D7042	172.6
Viscosity Index (min)	ASTM D2270	124
Flash Point, COC, °C (min)	ASTM D92	248
Pour Point °C (max)	ASTM D97	-24
TBN Mg KOH/g	ASTM D2896	7.80
CCS @-15°C, m.Pa.S	ASTM D5293	8650

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# TRACTOR OIL 15W-40

## SUPER TRACTOR OIL UNIVERSAL (STOU)

**BULWARK TRACTOR OILS** are superior multi-grade multi-function oils specifically designed to lubricate most parts (engines included - up to API CG-4) on farm machinery - especially the tractors from most manufacturers requiring STOU (Super Tractor Oil Universal) Oils.

**BULWARK TRACTOR OIL SAE 15W-40** is suitable to use on most farm equipment – gasoline and diesel engines, transmission, clutch units, wet brakes, hydraulic systems, mechanical final drives and power take-offs especially on tractors. It has improved extreme pressure properties which provide superior protection against wear. Resistance to oxidation and thermal degradation is outstanding and ensures protection against sludge and varnish deposits & resists foaming. It also performs well in 4WD manual transmissions. However, it is not suitable for use on equipment with heavily loaded drives where the manufacturers specify EP oils of API GL-5.

### PERFORMANCE LEVEL\*

- API CG-4, API GL-4, CATERPILLAR: TO-2
- John Deere J20C, J20D, J27; API CF-4, MB 227.1, ACEA E3;
- Ford M2C86B, M2C86C; Ford M2C134D;
- JJ Case MS-1204,1206,1207,1209; CNH MAT 3525, 3526;
- Massey ferguson M1135, M1139, M1143, M1144, M1145;
- CAT TO-2; Allison C-4; ZF TE-ML 06A, 06B, 06C, 07B;
- Ford M2C159B, M2C159C; Eaton M2950S, I-280-S

### KEY BENEFITS

- Anti-wear protection & multi-grade performance - suitable for all year use
- Higher detergency and excellent dispersant properties keep the engine cleaner and free from sludge's and deposits in severe applications
- Special friction modifier component allows smooth operation minimizes squawk and chatter in wet brake systems and PTOs
- Reduces wear of gears, pumps and hydraulic valves
- High level of oxidation resistance and lubricant stability ensures longer oil life
- Provides efficient engagement of power take off clutches, thereby minimizing wear
- Excellent protection against corrosion & rust formation

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	15W-40
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.878
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.30
Viscosity Index	ASTM D2270	139
Cold Cranking Viscosity at -20°C, mPa-s	ASTM D5293	5300
Sulphated Ash, %	ASTM D874	1.30
Flash Point, COC, °C	ASTM D92	232
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Pour Point, °C	ASTM D97	-39
Total Base Number, mg KOH/g	ASTM D2896B	10.70

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

## POWER-TRANS (UTTO) 10W, 30, 50

**MULTI-FUNCTION OILS (MFO)  
(UTTO, CONSTRUCTION & OFF-HIGHWAY)**

**BULWARK POWER-TRANS** oils are high-performance heavy-duty transmission oil formulated with highly refined paraffinic base oils to provide best in class performance and protection meeting or exceeding the TO-4 specifications. It optimizes the performance of gear boxes, power transmission and final drive while maximizing the protection in high-pressured hydraulic systems.

**BULWARK POWER-TRANS** oils are recommended for use on applications such as heavy-duty earth moving equipment deployed on off-highway and construction industry to improve wear protection, friction control, thermal and shear stability and corrosion protection.

### PERFORMANCE LEVEL\*

- API GL-4; Allison C-4; CAT TO-4, TO-2;
- Eaton M2950S, I-280-S; ZF TE-ML-03, 07D, 07F

### KEY BENEFITS

- Excellent pumpability, oxidation stability provides good service life in high pressure service.
- Excellent protection against corrosion of both steel and yellow metals.
- Excellent oil film thickness and protection at varying operational temperatures.
- Special foam suppressant improves lubrication and minimizes wear by reducing foaming and aeration

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W	30	50
Specific Gravity @ 15 °C	ASTM D1298	0.871	0.885	0.898
Kinematic Viscosity @ 40 °C mm <sup>2</sup> /s	ASTM D445	38	95.3	212.4
Kinematic Viscosity @ 100 °C mm <sup>2</sup> /s	ASTM D445	6.272	10.49	18.61
Viscosity Index	ASTM D2270	113	98	97
Flash Point, COC, °C	ASTM D92	216	232	252
Pour Point °C	ASTM D97	-39	-18	-18
TBN mg KOH/g	ASTM D2896	8.1	8.1	8.1
Foaming Tendency/Foam Stability	ASTM D892			
At 24 °C ml		0/0	0/0	0/0
At 94 °C ml		10/0	10/0	10/0
At 24 °C ml (after test at 94 °C)		0/0	0/0	0/0
Color	ASTM D1500	L2.0	L3.0	L3.5

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

## POWER-TRANS MULTI 10W-30, 10W-40, 15W-40

**MULTI-FUNCTION OILS (MFO)  
(UTTO, CONSTRUCTION & OFF-HIGHWAY)**

**BULWARK POWER-TRANS MULTI** oils are high-performance heavy-duty transmission lubricants formulated with Semi-synthetic or hydro treated base oils to provide best in class performance and protection meeting or exceeding the major UTTO OEM specifications. It optimizes the performance and protection of gear boxes, power transmission, final drive and hydraulic systems.

**BULWARK POWER-TRANS MULTI** lubricants are recommended for use on applications such as heavy-duty earth moving equipment deployed on off-highway and construction industry to improve wear protection, friction control, thermal and shear stability and corrosion protection.

### PERFORMANCE LEVEL\*

- API GL-4, John Deere J20C, J20D, Allison C-4, ZF TE-ML-03C
- Eaton M2950S, I-280-S; Ford M2C86B, M2C86C;
- Ford M2C134D; JI Case MS-1204, 1206, 1207, 1209; CNH MAT 3525, 3526;
- Massey ferguson M1135, M1143, M1145;
- Cat TO-2; VOLVO VCE 97303 (WB 101); JCMAS HK P -041;

### KEY BENEFITS

- Excellent pumpability, oxidation stability provides good service life in high pressure service.
- Excellent protection against corrosion of both steel and yellow metals.
- Excellent oil film thickness and protection at varying operational temperatures.
- Special foam suppressant improves lubrication and minimizes wear by reducing foaming and aeration

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	10W-30	10W-40	15W-40
Specific Gravity @ 15 °C	ASTM D1298	0.867	0.872	0.879
Kinematic Viscosity @ 40 °C mm <sup>2</sup> /s	ASTM D445	68.50	100.3	106.4
Kinematic Viscosity @ 100 °C mm <sup>2</sup> /s	ASTM D445	10.48	14.08	14.30
Viscosity Index	ASTM D2270	140	143	137
Flash Point, COC, °C	ASTM D92	218	236	238
Pour Point °C	ASTM D97	-39	-39	-33
TBN mg KOH/g	ASTM D2896	8.3	8.3	8.3
Foaming Tendency/Foam Stability	ASTM D892			
At 24 °C ml		0/0	0/0	0/0
At 94 °C ml		10/0	10/0	10/0
At 24 °C ml (after test at 94 °C)		0/0	0/0	0/0
Color	ASTM D1500	L2.0	L2.5	L3.0
CCS, m.Pa.S	ASTM D943	4600@-20°C	5100@-20°C	5890@-15°C

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk



# ANCILLARIES

## AUTOMATIC TRANSMISSION FLUIDS

- ATF IID
- ATF IIIH
- ATF T-IV
- ATF CVT

## SYNTHETIC TRANSMISSION OILS

- TRANSMISSION GL-5 75W-90

## MINERAL TRANSMISSION OILS

- TRANSMISSION GL-5 80W-90
- TRANSMISSION GL-5 85W-140
- TRANSMISSION GL-4 90EP
- TRANSMISSION GL-4 140EP

## HYDRAULIC FLUIDS

- HYDRAULIC HVLP 32, 46, 68, 100 (HVI)
- HYDRAULIC HL 32, 46, 68, 100
- HYDRAULIC HM 32, 46, 68, 100
- HYDRAULIC HFC 46 (FRH)
- HYDRAULIC HFDU 46 (FRH SYNTHETIC)

# ATF IID

## AUTOMATIC TRANSMISSION FLUIDS

**BULWARK ATF IID** lubricants are Synthetic Technology, Automatic Transmission Fluids (ATF) designed for use in automatic or semi-automatic transmissions and torque converters of passenger cars, light commercial vehicles, industrial vehicles and other applications, where the manufacturer recommends use of an ATF with GM DEXRON - IID performance level.

**BULWARK ATF IID** is suitable for use in manual gear boxes where an ATF fluid is recommended. It is also suitable for use in hydrostatic transmissions, power steering, hydraulic systems when a fluid type GM DEXRON - IID is required.

### PERFORMANCE LEVEL\*

- GM DEXRON® IID
- FORD MERCON
- ALLISON C-4
- CAT TO-2

### KEY BENEFITS

- High viscosity index and excellent viscosity retention in operation.
- Excellent thermal stability and resistance to oxidation.
- Excellent pour point.
- Provides smoother and improved gear shifting

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	II D
Density @ 15 °C Kg/m3	ASTM D4052	0.867
Kinematic Viscosity @ 100°C cSt	ASTM D7042	7.25
Viscosity Index	ASTM D2270	165
Pour Point, °C	ASTM D97	-39
Flash Point, COC, °C	ASTM D92	206
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Color ASTM	ASTM D1500	L7.5
Color Appearance		Red
Brookfield Viscosity at -40 °C, mPa.s	ASTM D2983	24,000

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# ATF IIIH

## AUTOMATIC TRANSMISSION FLUIDS

**BULWARK ATF IIIH** lubricants are Synthetic Automatic Transmission Fluids manufactured using high quality synthetic base oils and special additives that limit oil degradation caused by high operating temperatures while providing extended life to fluid and transmission components.

**BULWARK ATF IIIH** is designed for use in modern automatic transmission and power transmission systems where GM Dexron® IIIH and Ford Mercon® fluids are specified or required.

**IMPORTANT NOTE:** This fluid is not recommended where a type F (Ford) lubricant is required, hence should not be used.

### PERFORMANCE LEVEL\*

- GM DEXRON® IIIH
- FORD MERCON
- ALLISON C-4
- ALLISON TES 389

### KEY BENEFITS

- High viscosity index and excellent viscosity retention in operation.
- Excellent thermal stability and resistance to oxidation.
- Excellent pour point.
- Provides smoother, improved gear shifting and enhanced clutch life.
- Contains anti-swelling properties that protects seals during high temperature
- Compatible with all seal material.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	III H
Density @ 15 °C Kg/m3	ASTM D4052	0.843
Kinematic Viscosity @ 100°C cSt	ASTM D7042	7.55
Viscosity Index	ASTM D2270	195
Pour Point, °C	ASTM D97	-54
Flash Point, COC, °C	ASTM D92	202
Foam Stability	ASTM D892	
Seq I	ASTM D892	0/0
Seq II		0/0
Seq III		0/0
Color ASTM	ASTM D1500	L7.5
Color Appearance		Red
Brookfield Viscosity at -40 °C, mPa.s	ASTM D2983	10,800

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# ATF T-IV

## AUTOMATIC TRANSMISSION FLUIDS

**BULWARK ATF T-IV** is a high quality all weather Automatic Transmission fluid for use in passenger cars. This fluid is designed especially for use in a wide range of Japanese Automatic Transmission (including those installed on European cars) taking into account the extreme performance requirements of the leading manufacturers of equipment.

**BULWARK ATF T-IV** is recommended for service in most cars both within warranty and in post-warranty period of operation. It is intended for use in automatic transmissions, where the manufacturer requires compliance with Japanese standards (JASO). This product cannot be used in power steering application. In addition, **BULWARK ATF T-IV** has a low viscosity dependence on operating temperature, excellent antioxidant properties, chemically neutral to seal materials and is not affected by foaming. Improved anti-corrosion properties provide reliable protection to transmission parts and components.

### PERFORMANCE LEVEL\*

- TOYOTA T-IV;
- Ford Mercon, GMIIID & IIE; GM IIIG; GM IIHH;
- HONDA ATF Z1; JASO M315 1A (13);
- MITSUBISHI SP II & III; MOPAR +3; MOPAR +4;
- NISSAN MATIC CDJ; TASA; ZF TE-ML 09; ZF TE-ML 11A, 11B
- NISSAN MATIC D, NISSAN MATIC J,

### KEY BENEFITS

- Specifically developed for requirements of Japanese cars
- Demonstrates stable anti-friction properties and smoothness of gear change without vibration.
- It has an excellent thermo-oxidative stability and retains its properties even in the case of extended drain period
- Increases the service life of frictional parts.
- Offers excellent pumpability at low temperatures

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	ATF T-IV
Appearance	Visual	Clear Red Liquid
Color	ASTM D1500	6.5
Density at 20 °C, kg/m <sup>3</sup>	ASTM D4052	0.836
Kinematic Viscosity at 40°C, mm <sup>2</sup> /s	ASTM D445	32.53
Kinematic Viscosity at 100°C, mm <sup>2</sup> /s	ASTM D445	7.05
Viscosity Index	ASTM D2270	187
Flash Point COC, °C	ASTM D92	226
Pour Point, °C	ASTM D97	-54
Brookfield Viscosity at -40°C, mPa.s	ASTM D2983	8600

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# ATF CVT

## AUTOMATIC TRANSMISSION FLUIDS

**BULWARK ATF CVT** is a high quality universal Continuously Variable transmission fluid. This fluid was designed to meet toughed demands of CVT's manufactured by world's leading OEMs. **BULWARK CVT** is suitable for service fills in wide range of vehicles from North American, European and Asian manufacturers within warranty and post warranty periods.

**BULWARK ATF CVT** is recommended for continuously variable transmissions where NS-2, SP-III fluids and other CVT fluids are needed or previous performance levels are required

### PERFORMANCE LEVEL\*

- TOYOTA TC; VOLKSWAGEN /AUDI G 052 180, G052 516
- MB 236.20 MINI ELZ 799;
- FORD CVT 30, FORD CVT 23; FORD MERCON C;
- NISSAN NS-2 & NS 3; PUNCH POWERTRAIN CVTF EX-1, CVT-PPT, EZL 799A;
- SUBARU CVTF, SUBARU NS-2; SUZUKI CVT GREEN 1& 2; SUZUKI NS-2, TC;
- DAIHATSU CVTF DFE, CVTF-DC; DODGE/JEEP NS-2; DODGE/JEEP CVTF+4;
- GM CVT HONDA HFC-2; HONDA HMMF;
- HYUNDAI/KIA SP-III; HYUNDAI GENUINE CVTF;
- MITSUBISHI CVTF-DIAQUEEN J1 & J4; MITSUBISHI CVTF DIAQUEEN SP-III;

### KEY BENEFITS

- Possesses optimal antifriction properties and provides smooth shifting without vibration
- Possesses excellent thermal oxidative stability and maintains all properties at high level even in case of extended drain interval
- High Viscosity Index demonstrates improved lubrication and low temperature fluidity
- Specially developed in respect of variators' unique design characteristics and hard-working conditions
- **BULWARK CVT** fluid also demonstrates excellent antifoam properties, it doesn't have any negative impact on seal materials.
- Improved anticorrosion properties protect all equipment components reliably.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	ATF T-IV
Appearance	Visual	Transparent Red
Density at 20 °C, kg/m <sup>3</sup>	ASTM D4052	0.842
Kinematic Viscosity at 40°C, mm <sup>2</sup> /s	ASTM D445	33.15
Kinematic Viscosity at 100°C, mm <sup>2</sup> /s	ASTM D445	7.21
Viscosity Index	ASTM D2270	190
Flash Point COC, °C	ASTM D92	228
Pour Point, °C	ASTM D97	-54
Brookfield Viscosity at -40°C, mPa.s	ASTM D2983	12,760

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# TRANSMISSION GL-5 75W-90

## TRANSMISSION OIL - SYNTHETIC

**BULWARK TRANSMISSION GL-5** is a high-quality synthetic transmission oil designed for use in differentials, manual transmissions, axles, transfer cases and other automotive gear boxes. It is blended with high quality synthetic base oils providing outstanding gear synchronizing and lubrication of bearings together with excellent extreme pressure and cold flow properties.

**BULWARK TRANSMISSION GL-5 75W-90** multi-grade synthetic gear lubricant is suitable for use in transmission systems of passenger cars, light, medium and heavy commercial vehicles operating under wide range of temperature and operating conditions requiring the use of synthetic, 75W-90, API GL-5 gear oils.

**IMPORTANT NOTE:** This oil is not recommended for use in manual gearboxes with brass synchronizers.

### PERFORMANCE LEVEL\*

- API GL-5/MT-1;
- MAN 342 M2(160,000KM DRAIN); MIL-L-2105D;
- ZF-TE-ML 05A, 7A, 12E, 16B C&D, 17B, 19B, 21A

### KEY BENEFITS

- Trouble-free performance
- Increased load-carrying capability with outstanding protection against low-speed/high torque wear.
- Excellent thermal and oxidation stability helps extend gear and bearing life.
- Excellent rust and corrosion protection help reduce wear and prolongs component life.
- Good anti-foam characteristics maintain film-strength for reliable lubrication at varying speeds.
- Provides excellent low temperature protection.
- Enhanced friction reduction properties improve fuel economy.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	75W-90
Density @ 15 °C Kg/m <sup>3</sup>	ASTM D4052	0.857
Kinematic Viscosity @ 100°C cSt	ASTM D7042	15.10
Viscosity Index	ASTM D2270	180
Pour Point, °C	ASTM D97	-54
Flash Point, COC, °C	ASTM D92	228
Foam Stability	ASTM D892	
Seq I		0/0
Seq II		0/0
Seq III		0/0
Brookfield Viscosity at -54 °C, mPa·s	ASTM D2983	40,800

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# TRANSMISSION GL-5 80W-90, 85W-140

## TRANSMISSION OILS - MINERAL

**BULWARK TRANSMISSION GL-5** is a series of high-quality multi-grade transmission oils designed for use in differentials, manual transmissions and other automotive gear boxes. They are blended with high quality mineral paraffinic base oils providing outstanding gear protection and lubrication of bearings together with excellent extreme pressure and good cold flow properties.

**BULWARK TRANSMISSION GL-5 80W-90 and 85W-140** are superior multi-grade mineral gear lubricants designed to use in drive axles of passenger cars, light, medium and heavy commercial vehicles operating under wide range of temperature and operating conditions. Not recommended for use in manual gearboxes with brass synchronizers.

### PERFORMANCE LEVEL\*

- API GL-5
- MAN 342 M2(160,000KM DRAIN); MIL-L-2105D;
- ZF-TE-ML 05A, 7A, 12E, 16B C&D, 17B, 19B, 21A

### KEY BENEFITS

- Trouble-free performance.
- Increased load-carrying capability with outstanding protection against low-speed/high torque wear.
- Excellent thermal and oxidation stability helps extend gear and bearing life.
- Excellent rust and corrosion protection help reduce wear and prolongs component life.
- Good anti-foam characteristics maintain film-strength for reliable lubrication at varying speeds.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	80W-90	85W-140
Density @ 15 °C Kg/m <sup>3</sup>	ASTM D4052	0.887	0.898
Kinematic Viscosity @ 100°C cSt	ASTM D7042	15.50	25.70
Viscosity Index	ASTM D2270	101	97
Pour Point, °C	ASTM D97	-33	-27
Flash Point, COC, °C	ASTM D92	232	244
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0
Brookfield Viscosity, mPa·s	ASTM D2983	84,000 at -26°C	98,000 at -12 °C

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# TRANSMISSION GL-4 90 EP, 140 EP

## TRANSMISSION OILS - MINERAL

**BULWARK TRANSMISSION GL-4** is a series of high-quality mono-grade transmission oils designed for use in differentials, manual transmissions and other automotive gear boxes. They are blended with high quality mineral paraffinic base oils providing outstanding gear protection and lubrication of bearings together with excellent extreme pressure properties.

**BULWARK TRANSMISSION GL-4 90 EP and 140 EP** oils are high quality mineral paraffinic gear lubricants designed to use in drive axles of passenger cars, light, medium and heavy commercial vehicles requiring the use of API GL-4 performance.

### PERFORMANCE LEVEL\*

- API GL-4

### KEY BENEFITS

- Trouble-free performance
- Increased load-carrying capability with outstanding protection.
- Excellent thermal and oxidation stability helps extend gear and bearing life.
- Excellent rust and corrosion protection help reduce wear and prolongs component life.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	90 EP	140 EP
Density @ 15 °C Kg/m <sup>3</sup>	ASTM D4052	0.890	0.903
Kinematic Viscosity @ 100°C cSt	ASTM D7042	16.14	26.50
Viscosity Index	ASTM D2270	96	95
Pour Point, °C	ASTM D97	-15	-15
Flash Point, COC, °C	ASTM D92	236	250
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HYDRAULIC HVLP 32, 46, 68, 100

## PREMIUM HYDRAULIC FLUIDS (HVI)

**BULWARK HYDRAULIC HVLP** oils are high viscosity index anti-wear hydraulic fluids formulated with highly shear stable viscosity index improvers. Their superior low temperature properties help maintain viscosity in a wider temperature range than conventional anti-wear hydraulic fluids. In addition, their excellent filterability and demulsification properties provide wear protection for hydraulic pumps and motors, excellent oxidation resistance and thermal stability at high temperatures minimize deposit formation while providing longer service life. They protect hydraulic system components against rust and corrosion.

**BULWARK HYDRAULIC HVLP** oils are recommended for use on mobile and static hydraulic applications of industrial and other equipment, hydraulic cranes and lifts, loaders, reach trucks, forklifts, excavators, dumpers, loading ramps, and tailboards. In some instances, recommended for use on hydraulic systems of metalworking machines, or circulation systems of industrial machinery, where HVLP fluids meeting DIN 51524 Part 3 are specified.

### PERFORMANCE LEVEL\*

- DIN 51524-3(HV), DIN 51524-2(HM); ISO 11158 (HM,HV);
- ASTM D 6158 (HM,HV); SAE MS 1004 (HM,HV);
- BOSCH REXROTH RE 90220; JCMAS P041 HK HYDR. SPECS.;
- ANSI/AGMA 9005-E02-RO; GM LS-2; AIST 126,127; SEB 181222;
- Parker (Denison) HF-0, HF-1, HF-2(HM,HV);
- EATON M-2950-S and I-286-S3; MAG P68, P69, P70 (HM,HV);

### KEY BENEFITS

- Excellent demulsibility
- Very good corrosion protection to steel and yellow metals
- High ageing and oxidation stability
- Good Anti wear protection
- Very good hydrolytic stability
- Low foaming and excellent air release

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68	100
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.860	0.864	0.866	0.869
Kinematic Viscosity @ 100°C cSt	ASTM D7042	6.12	7.83	10.60	13.81
Kinematic Viscosity @ 40° C cSt	ASTM D7042	31.4	44.5	66.6	94.56
Viscosity Index (min)	ASTM D2270	146	147	148	148
Flash Point, COC, °C (min)	ASTM D92	220	224	226	232
Pour Point °C (max)	ASTM D97	-39	-39	-39	-39

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HYDRAULIC HL 32, 46, 68, 100

## ANTI-WEAR HYDRAULIC FLUID

**BULWARK HYDRAULIC HL** series is formulated with highly refined paraffinic base oils and provide excellent anti-wear protection, oxidation, corrosion inhibition and demulsibility, as well as aeration and foam suppression. In general, hydraulic systems due to the nature of their operation, experience accelerated wear and need to be protected by super clean, high quality anti-wear hydraulic oils.

**BULWARK HYDRAULIC HL** are high quality, anti-wear fluids available in ISO VG 32, 46, 68 and 100 and recommended for use on applications such as hydraulic systems with vane, piston or gear-type pumps, especially where typical pressure range at source exceeds 700psi. They can also be used to lubricate lightly loaded reciprocating compressors.

### PERFORMANCE LEVEL\*

- DIN 51524-2
- ISO 11158 L-HM, HV
- ASTM D 6158 HM, HV
- Eaton-Vickers 35VQ25A for M-2950-S (Mobile) and I-286-S (Stationary),
- Parker Hannifin (Denison) HF-0, HF-1, HF-2.
- Cincinnati Machine P-68, P-69, P-70.
- AFNOR NF E 48-603 HM, HV

### KEY BENEFITS

- All BULWARK hydraulic grades meet the requirements of leading hydraulic system manufacturers
- Excellent oxidation stability provides good service life in high pressure service.
- Excellent protection against corrosion of both copper and steel
- Minimum viscosity change over a wide temperature range.
- The special foam suppressant minimizes both foaming and aeration problems.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68	100
Specific Gravity @ 15 °C	ASTM D4052	0.881	0.882	0.886	0.889
Kinematic Viscosity @ 40 °C cSt	ASTM D445	31.50	46.00	65.10	98.70
Viscosity Index	ASTM D2270	124	124	122	120
Flash Point, COC, °C	ASTM D92	226	228	234	246
Pour Point, °C	ASTM D97	-33	-30	-30	-27
TAN mg KOH/g	ASTM D974	0.42	0.42	0.42	0.42
Foaming Tendency/Foam Stability	ASTM D892				
Seg I		0/0	0/0	0/0	0/0
Seg II		0/0	0/0	0/0	0/0
Seg III		0/0	0/0	0/0	0/0
Color	ASTM D1500	L1.0	L1.5	L2.0	L2.5
Oxidation (TOST)	ASTM D943	>3000	>2500	>2500	>2000

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits may be expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HYDRAULIC HM 32, 46, 68, 100

## STANDARD HYDRAULIC FLUIDS

**BULWARK HYDRAULIC HM** series is formulated with paraffinic base oils and provide anti-wear protection, oxidation, corrosion inhibition and demulsibility.

**BULWARK HYDRAULIC HM** are high quality, anti-wear fluids available in ISO VG 32, 46, 68 and 100 and recommended for use in light and medium duty automotive & industrial applications. They can also be used in light loaded reciprocating compressors and in gearboxes where non-EP lubricants are required.

### PERFORMANCE LEVEL\*

- DIN 51524-1
- ISO 11158 L-HM
- ASTM D 6158 HM

### KEY BENEFITS

- Good oxidation stability provides good service life in high pressure service.
- Excellent protection against corrosion of both copper and steel
- Minimum viscosity changes over a wide temperature range.
- The special foam suppressant minimizes both foaming and aeration problems.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68	100
Specific Gravity @ 15 °C	ASTM D4052	0.884	0.886	0.889	0.892
Kinematic Viscosity @ 40 °C cSt	ASTM D445	32.0	45.40	66.90	99.30
Viscosity Index	ASTM D2270	96	95	95	95
Flash Point, COC, °C	ASTM D92	218	224	226	236
Pour Point, °C	ASTM D97	-24	-18	-18	-15
TAN mg KOH/g	ASTM D974	0.62	0.62	0.62	0.62
Foaming Tendency/Foam Stability	ASTM D892				
Seg I		0/0	0/0	0/0	0/0
Seg II		0/0	0/0	0/0	0/0
Seg III		0/0	0/0	0/0	0/0
Color	ASTM D1500	L1.5	1.5	L2.0	L2.5
Oxidation (TOST)	ASTM D943	>1200	>1200	>1200	>1200

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits may be expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HYDRAULIC HFC 46

## FIRE RESISTANT HYDRAULIC FLUID - FRH

**BULWARK HYDRAULIC HFC** is a Water-Glycol based Fire-resistant Hydraulic Fluid containing glycol, high molecular weight polyglycol and superior additives. Its high-water content and additive properties help in minimizing accidental ignition possibilities and fire hazards when the fluid contacts with elevated temperature sources in hydraulic systems operating under severe and high-pressure conditions.

**BULWARK HYDRAULIC HFC 46** is most suitable in hydraulic systems operating under extreme conditions and environment that is subject to fire hazards in metallurgical (pressure die-casting machines, scale removal units, forging presses), glass production equipment and similar other industries.

### PERFORMANCE LEVEL\*

- ISO L-HFC (ISO 12922)
- HS-C DIN 51502

### KEY BENEFITS

- Inherent resistance to fire hazards
- Excellent anti-wear properties helping extend component life
- Long fluid life due to high oxidation resistance
- It has excellent heat transfer property, low pour point, antifoam performance that along with anti-wear component provide standard pump life in systems operating under pressure or overloaded conditions.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	1.08
Kinematic Viscosity @ 40° C cSt	ASTM D7042	45.1
Pour Point °C (max)	ASTM D97	-50
pH	ASTM D1293	9.8
Copper Corrosion (24hrs @50° C)	ISO 2160	1b

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# HYDRAULIC HFDU 46

## SYNTHETIC (POE BASED) FIRE-RESISTANT HYDRAULIC FLUID

**BULWARK HYDRAULIC HFDU** is a synthetic polyol-ester based high performance fire-resistant hydraulic fluid. It is formulated for providing advanced protection to all hydraulic applications with fire hazards and use of petroleum or Hydrocarbon based hydraulic fluids would be potentially unsafe. Its excellent stability enables itself to prolong the life of the fluid and fire-resistant properties. It also helps to prevent or reduces the formation of sludge or deposits in the equipment while in service.

**BULWARK HYDRAULIC HFDU 46** is most suitable for use on hydraulic systems used as part of industrial machinery, oil-drilling equipment & other applications such as mining equipment, machine tools, extrusion or sliding and roller bearings, furnace and fire doors, etc. in iron and steel works, rolling mills and forging industries, over a wide thermal application range.

### PERFORMANCE LEVEL\*

- ISO 6743/4 HFD U
- DIN 51502 HS-D

### KEY BENEFITS

- Offers excellent protection through its fire resistance properties,
- Reduces wear and provides longer service life
- Excellent anti-corrosion properties in relation to ferrous and non-ferrous metals make up a good hydraulic circuit
- Exceptional high natural viscosity index constantly adapts to the changing temperature range in the application and provides good performances at low temperatures.
- Classified as "Non-Toxic" and "Bio-Degradable" product

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.956
Kinematic Viscosity @100°C cSt	ASTM D7042	9.23
Kinematic Viscosity @ 40° C cSt	ASTM D7042	46.3
Viscosity Index (min)	ASTM D2270	186
Flash Point, COC, °C (min)	ASTM D92	>280
Pour Point °C (max)	ASTM D97	-39
Demulsibility @54 ° C (minutes)	ASTM D1400	15
Copper Corrosion @100°C (3hrs)	ASTM D130	1a
Appearance	Visual	Pale Yellow
Auto Ignition Point, COC, °C (min)	ASTM D92	>400

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# INDUSTRIAL OILS AND SPECIALTY FLUIDS

## INDUSTRIAL GAS ENGINE OILS

- iGAS-OIL 40 LA
- iGAS-OIL 40 LONG LIFE

## RAIL ROAD ENGINE OILS

- LOCO-G4 - 13
- LOCO-G4 - 17

## INDUSTRIAL GEAR OILS

- iGEAR CLP 68, 100, 150, 220, 320, 460
- iGEAR-SYNTH 150, 220, 320, 460, 680, 1000

## OPEN GEAR LUBRICANTS

- iGEAR OG 100HD, 150HD, 250HD

## COMPRESSOR OILS

- iCOMP-VDL 32, 46, 68, 100, 150, 220
- iCOMP-SYNTH VDL 32, 46, 68, 100

## REFRIGERATION OILS

- iCOMP-RF NH 32, 46, 68

## TURBINE OILS

- iTURBINE TDG 32, 46, 68

## BRAKE FLUIDS

- BRAKE FLUID DOT 3
- BRAKE FLUID DOT 4

## COOLANTS

- COOLANT 30
- COOLANT 50
- COOLANT 6580
- COOLANT LONG LIFE

## GREASES

- GREASE MP2
- GREASE MP3
- GREASE EPO - EXTREME PRESSURE
- GREASE EP2 - EXTREME PRESSURE
- GREASE EP3 - EXTREME PRESSURE
- GREASE HT2 - LITHIUM COMPLEX HT
- GREASE HT3 - LITHIUM COMPLEX HT
- GREASE WR - CALCIUM SULPHONATE



# iGAS-OIL 40 LA

## HIGH PERFORMANCE LOW ASH GAS ENGINE OIL

**BULWARK iGAS-OIL 40 LA** is a mineral gas engine oil meant for use in high performance industrial gas engines. It is formulated using advanced low ash additive technology for superior performance and high output naturally aspirated and turbo-charged gas engines deployed in stationary applications.

**BULWARK iGAS-OIL 40 LA** is specially developed in accordance with requirements of the world leading gas engine manufacturers such as GE Jenbacher (Type 4, 6, 2 and 3 engines), Perkins, Caterpillar, Deutz and others. This product is highly recommended for naturally aspirated and turbocharged gas engines in stationary applications running on natural gas, or associated petroleum gas etc.

### PERFORMANCE LEVEL\*

- GE-Jenbacher TA 1000-1109 series 2,3,4 (ver. A, B);
- GE-Jenbacher TA 1000-1109 series 6, (ver. C, E,F);
- WARTSILA 175SG, 220SG, 50SG, 34SG, 28SG & 25SG;
- WARTSILA 50DF, 34DF, 32DF & 20DF;
- man M 3271-2; PERKINS Engine series 4000;
- Caterpillar 3300, 3400, 3500, 3600 series (SEBU 6400);
- MTU BR 4000; MTU MLT 5074, A001061/29E (Category 1);
- CUMMINS QSV 81G, 91G, 60G; Guasdor FGLD, SFGLD
- Waukesha; MWM TR 0199-99-2105

### KEY BENEFITS

- Improved nitration control helps oil maintains its performance at all times.
- Excellent oxidation stability reduces deposit formation.
- Reduced oil thickening provides improved lubrication and reduce engine wear.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	iGAS-OIL 40 LA
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.889
Kinematic Viscosity @ 100° C mm <sup>2</sup> /s	ASTM D445	13.4
Kinematic Viscosity @ 40° C cSt Viscosity Index	ASTM D445	130.4
Viscosity Index	ASTM D2270	97
Total Base Number, mg KOH/g	ASTM D2896B	5.6
Sulphated Ash, %	ASTM D874	0.44
Flash Point, COC, °C	ASTM D92	258
Pour Point °C	ASTM D97	-21

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits may be expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iGAS-OIL 40 LONG LIFE

## HIGH PERFORMANCE EXTENDED LIFE LOW ASH GAS ENGINE OIL

**BULWARK iGAS-OIL 40 LL** is a long drain low ash, semi synthetic gas engine oil meant for use in high performance industrial gas engines. It is formulated superior performance semi synthetic base oil and advanced low ash additive for high output naturally aspirated and turbo-charged gas engines deployed in stationary applications.

**BULWARK iGAS-OIL 40 LL** is specially developed in accordance with requirements of the world leading gas engine manufacturers such as GE Jenbacher, Perkins, Caterpillar, Deutz and others. This product is recommended for all naturally aspirated, turbocharged with or without SCR and Pilot injection gas engines in stationary applications running on sweet or dry natural gas, or associated petroleum gas and mixture of low-sulphur organic or lean gas.

### PERFORMANCE LEVEL\*

- GE-Jenbacher TA 1000-1109 series 2,3,4 (ver. A, B);
- GE-Jenbacher TA 1000-1109 series 6, (ver. C, E,F);
- WARTSILA 175SG, 220SG, 50SG, 34SG, 28SG & 25SG;
- WARTSILA 50DF, 34DF, 32DF & 20DF; man M 3271-2;
- PERKINS Engine series 4000;
- Caterpillar 3300, 3400, 3500, 3600 series (SEBU 6400);
- MTU BR 4000; MTU MLT 5074, A001061/29E (Category 1);
- CUMMINS QSV 81G, 91G, 60G;
- Guasdor FGLD, SFGLD
- Waukesha; MWM TR 0199-99-2105

### KEY BENEFITS

- Excellent nitration control helps oil maintains its performance and provides extended service life.
- Synthetic base oils Improve oxidation stability and reduces deposit formation.
- Reduced oil thickening provides excellent lubrication, film thickness and reduce engine wear.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	iGAS-OIL 40 LL
Density @ 15°C, Kg/m <sup>3</sup>	ASTM D4052	0.870
Kinematic Viscosity @ 100° C mm <sup>2</sup> /s	ASTM D445	13.32
Kinematic Viscosity @ 40° C cSt Viscosity Index	ASTM D445	116.2
Viscosity Index	ASTM D2270	110
Total Base Number, mg KOH/g	ASTM D2896B	5.6
Sulphated Ash, %	ASTM D874	0.41
Flash Point, COC, °C	ASTM D92	262
Pour Point °C	ASTM D97	-27

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits may be expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# LOCO G4-13, G4-17

## HIGH PERFORMANCE ZINC-FREE RAIL-ROAD DIESEL ENGINE OILS

**BULWARK LOCO G4** series oils are high performance, high alkaline diesel engine lubricants formulated with hydro-treated mineral base oils and proven zinc-free additive technology that provides corrosion protection and decreasing of sludge formation in locomotive engines. Non-chlorinated formulation of BULWARK LOCO G4 oils help significantly reduce maintenance costs.

**BULWARK LOCO G4** oils are high quality zinc-free railroad engine oils designed for locomotive engines running on diesel fuel and exceeds latest lubricating oil classification systems requirements such as LMOA Generation V and GE Generation IV Long Life. These products provide unsurpassed engine cleanliness, soot handling, and oil filter life in later models of EMD and GE engines in a wide range of railroad, inland marine and stationary engine applications.

### PERFORMANCE LEVEL\*

- API CF/CF-2;
- General Electric (GE) Generation IV Long Life;
- LMOA Generation V;
- Caterpillar (Pass in CAT 3600s Caterpillar Micro-oxidation test)

### KEY BENEFITS

- Excellent corrosion resistance improves engine service life, helping reduce costs
- Improved engine oil efficiency leads to cost savings and extended oil filter life due to excellent ring and liner wear protection
- High TBN protects against acid formation and engine damage when running on high-sulphur fuels
- High Alkalinity, ml controls corrosive ring and liner wear, reducing maintenance time
- Extended oil drain intervals ensure low oil consumption in modern engines and reduces down time.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	LOCO G4-13 SAE 40	LOCO G4 -17 SAE 40
Density @ 20°C, Kg/m3	ASTM D4052	0.8903	0.8906
Kinematic Viscosity @ 100° C mm2/s	ASTM D445	13.5	14.1
Kinematic Viscosity @ 40° C cSt Viscosity Index	ASTM D445	133.2	143.3
Viscosity Index	ASTM D2270	96	95
Total Base Number, mg KOH/g	ASTM D2896B	13.8	17.2
Flash Point, COC, °C	ASTM D92	258	254
Pour Point °C	ASTM D97	-20	-20

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iGEAR CLP 68, 100, 150, 220, 320, 460

## INDUSTRIAL GEAR OILS - MINERAL

**BULWARK iGEAR CLP OILS** are high quality gear lubricants for heavy loaded industrial gearboxes and bearings. These oils are manufactured using carefully selected high viscosity Index base oils with advanced sulphur-phosphorus extreme pressure additives. Its optimal ratio of EP properties and anti-friction protection capabilities allow using these oils effectively in various components and gear units of industrial equipment.

**BULWARK iGEAR CLP OILS** are recommended for industrial gearboxes and units with steel gears, where EP oils are required. The applications also include bearings, wheel, worm and screw gears in different industrial equipment, as well as oil circulation and mist and splash lubricating systems.

### PERFORMANCE LEVEL\*

- DIN 51517-3 CLP
- ANSI/AGMA 9005-E02 (EP)
- ISO 12925-1 CKD
- US Steel 224

### KEY BENEFITS

- Excellent EP properties and anti-friction capabilities allow using these oils on various applications and components of industrial equipment
- Provides protection to wide range of gear boxes industrial equipment.
- The formula provides excellent low temperature fluidity and exceptional resistance to degradation at high temperatures.
- Prevents welding, scuffing and galling of the gear teeth at their contact points.
- Provide exceptional oil life and deposit control and resistance to thermal/oxidative and chemical degradation.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	68	100	150	220	320	460
Density at 29.5 kg/m3	ASTM D4052	0.887	0.888	0.891	0.893	0.898	0.904
Kinematic viscosity at 40°C, cSt	ASTM D445	67.1	99.7	146.5	216.1	326.4	464.2
Kinematic viscosity at 100°C, cSt	ASTM D445	8.61	11.24	14.43	18.69	24.45	31.1
Viscosity Index	ASTM D2270	99	98	96	96	96	97
Flash Point, COC, °C	ASTM D92	232	242	246	256	262	270
Pour Point, °C	ASTM D97	-24	-24	-24	-21	-18	-18
Form Tendency/ Form Stability	ASTM D892						
Seg I		0/0	0/0	0/0	0/0	0/0	0/0
Seg II		0/0	0/0	0/0	0/0	0/0	0/0
Seg III		0/0	0/0	0/0	0/0	0/0	0/0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iGEAR-SYNTH 150, 220, 320, 460, 680, 1000

## INDUSTRIAL GEAR OILS - SYNTHETIC

**BULWARK iGEAR SYNTH** series oils are premium quality synthetic (PAO) industrial gear oils specially formulated for providing advanced protection and extended oil life to gears and bearings operating under extreme service conditions. They help in achieving trouble-free operation, minimum down time, uninterrupted productivity and lower maintenance costs. They are manufactured using advanced high-performance additive system to provide additional protection against scuffing and high level of resistance against micro pitting fatigue.

**BULWARK iGEAR SYNTH** oils come in several ISO viscosity grades and recommended to use in modern and highly loaded gear boxes used in the paper, steel, oil, textile, lumber and cement industries, where protection to gear boxes and optimum oil life is essential.

### PERFORMANCE LEVEL\*

- AGMA EP 9005-E02 (ISO 150, 220, 320, 460, 680)
- DIN 51517-3 (CLP)
- ISO 12925-1 Type CKD (ISO 150, 220, 320,460,680)
- ISO 12925-1 Type CKT (ISO 150, 220, 320,460,680)

### KEY BENEFITS

- Excellent protection from micro pitting fatigue wear
- High level of resistance to scuffing wear
- Resistance to rust, corrosion and degradation at high temperatures
- Higher viscosity index
- Excellent shear stability and seat compatibility

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	150	220	320	460	680	1000
Kinematic Viscosity @40 °C cSt	ASTM D7042	148	214	316	448	636	958
Kinematic Viscosity @100 °C cSt	ASTM D7042	22.2	30.1	40.2	53.5	70.6	93.4
Viscosity Index (Min)	ASTM D2270	178	182	181	185	189	187
Flash Point °C (min)	ASTM D92	238	242	248	258	256	248
Pour Point °C (max)	ASTM D97	-39	-39	-39	-36	-36	-36
4 Ball EP Test – Well Load Kgf	ASTM D2783	200	200	200	200	200	200
4 Ball EP Test – Load Wear Index Kgf	ASTM D2783	51	51	51	51	51	51

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iGEAR OG 100HD, 250HD, 800HD

## OPEN GEAR LUBRICANTS

**BULWARK iGEAR-OG** series of products are Open Gear Lubricants formulated to use on many types of open gears, chains, flexible coupling, gears and sliding surfaces of drag line shovels, wire ropes and similar applications. It minimizes wear and provides shock load protection during variety of operations.

**BULWARK iGEAR-OG** lubricants come in 3 variants and are recommended for use on many types of open gears, wire ropes, and other equipment involving ropes and open gears such as docks, construction, harbours, waterways, railways and mining equipment including girth and pinion gears on rod and ball mills, rack and pinion gears on shovel dipsticks, swing and pinion gears on top of the lower frame of shovels and draglines, which are sometimes served with an automatic lubrication system. These lubricants can be applied by brush, by swab, heated sump or pump or by automatic lubrication systems as well.

**Important Note:** For ease of application store at room temperature above 15°C. For the first time, check compatibility with the grease applied previously and if necessary, purge previous grease prior to application.

### PERFORMANCE LEVEL\*

- DIN 51502 OGOE-5
- ISO 6743-9 L-XABHA0

### KEY BENEFITS

- Viscous lubricants formulated with an asphaltic base and diluted with a non-chlorinated solvent for easy application
- Provide high film strength coating on gear teeth
- The lubricant provides tacky and tenacious lubricant films on open gears operating under severe shock and load conditions
- Can also be used to lubricate chains, sprockets, wire rope, and cables

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	100HD	250HD	800HD
Thickener Type		Asphaltic		
Appearance & Texture		Tacky, Black semi solid		
Viscosity @20°C with Diluent	ASTM D445	103	267	837
Flash Point, COC, °C	ASTM D92	270	282	298
Pour Point °C	ASTM D97	-6	-6	-6
Color	Visual	Black	Black	Black
Operating Temperature, °C		-5 to +80		
Worked Penetration at 25°C, 1/10 mm	ASTM D217	355-385	0/0	0/0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iCOMP VDL 32, 46, 68, 100, 150, 220

## COMPRESSOR OILS - MINERAL

**BULWARK iCOMPRESSOR VDL OILS** are high quality mineral compressor oils designed to meet the latest lubricant requirements for modern oil-filled high-power air and/or natural gases screw, rotary and piston type compressors from leading manufacturers working on light as well as heavy duty operations. They are manufactured using premium quality solvent refined base stocks and highly effective additive packages to ensure good protection against oxidation, wear, foaming and possess good seals compatibility. The oils also help to reduce sludge formation in compressor discharge lines.

**BULWARK iCOMPRESSOR VDL OILS** possess excellent performance capabilities enabling compressor operation over wide operating temperature range in severe conditions. Suitable for use in air and/or natural gases screw, rotary and piston type compressors with maximum temperature of final compression stage up to 220°C (at fitting) and in circulation systems operating at elevated temperatures. Also recommended in circulation systems for lubrication of plain and rolling bearing. A wide range of ISO viscosity grades (ISO VG 32-220) helps in choosing an optimal solution for various compressors considering their operating conditions and duty cycle as per OEM recommendations.

**Note: This product can be used as Zinc Free Hydraulic Oils in certain applications**

### PERFORMANCE LEVEL\*

- DIN 51506 (VDL)
- ISO 6743

### KEY BENEFITS

- Suitable for use in multiple type compressors – air, natural gas, screw, rotary & piston type of compressors
- Excellent protection against oxidation, wear and foaming
- Possesses excellent seal compatibility

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68	100	150	220
Density at 29.5°C kg/m <sup>3</sup>	ASTM D4052	0.878	0.878	0.882	0.887	0.891	0.897
Kinematic viscosity at 100°C, cSt	ASTM D445	5.25	6.81	8.64	11.62	14.95	19.17
Kinematic viscosity at 40°C, cSt	ASTM D445	30.75	46.7	68.2	107.8	159.1	227.7
Flash Point, COC, °C	ASTM D92	224	232	242	246	248	262
Pour Point, °C	ASTM D97	-39	-39	-36	-30	-27	-27
Form Tendency/ Form Stability	ASTM D892						
Seg I		0/0	0/0	0/0	0/0	0/0	0/0
Seg II		0/0	0/0	0/0	0/0	0/0	0/0
Seg III		0/0	0/0	0/0	0/0	0/0	0/0
Copper Corosion (3hrs at 100°C)	ASTM D130	1a	1a	1a	1b	1b	2a

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iCOMP-SYNTH VDL 32, 46, 68, 100

## COMPRESSOR OILS - SYNTHETIC

**BULWARK iCOMP-SYNTH VDL** series oils are premium quality compressor oils based on high quality synthetic base stocks and advanced additive package ensuring good protection against oxidation, wear and foaming and possess good seals compatibility. Their Sulphur-free and ashless anti wear additives and the synthetic base stocks mean that these oils are suited to heavy duty and prolonged use in the latest high-performance equipment. They are also suitable for use at widely varying temperatures and exceeds mineral compressor oils in every respect.

**BULWARK iCOMP-SYNTH VDL** oils are primarily developed for use in heavy-duty screw compressors, turbo compressors and hydraulic systems. They can also be used for many kinds of gearboxes and converters. By using these high performing oils, it is possible to substantially lengthen the cleaning and oil change intervals. The product is highly economical and offers trouble free operation with low running and maintenance costs.

PS: Please pay special attention to the changeover guidelines – available upon request

### PERFORMANCE LEVEL\*

- DIN 51506;
- DIN 51506 VBL, VDL; ISO 6743-3

### KEY BENEFITS

- Offer outstanding ageing resistance, minimal residue formation,
- Good seal compatibility, extremely low pour point, low evaporation tendency and excellent foaming behavior.
- These oils also help reduce sludge formation in compressor discharge lines

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	iCOMP - SYNTH VDL			
		32	46	68	100
Density at 15°C, kg/m <sup>3</sup>	ASTM D4052	0.856	0.856	0.859	0.860
Kinematic Viscosity at 40°C, mm <sup>2</sup> /s	ASTM D445	31.21	46.11	67.32	94.60
Kinematic Viscosity at 100°C, mm <sup>2</sup> /s	ASTM D445	6.13	8.03	10.56	13.47
Viscosity Index	ASTM D2270	149	147	145	143
Flash Point COC, °C	ASTM D92	224	224	228	238
Pour Point, °C	ASTM D97	-39	-39	-39	-39
Tribological properties on four-ball machine: Wear scar diameter (1h, 196 N, 20°C), mm	ASTM D2266	0.30	0.34	0.37	0.38
Seg II		0/0	0/0	0/0	0/0
Seg III		0/0	0/0	0/0	0/0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iCOMP-RF NH 32, 46, 68, 100

## REFRIGERATION COMPRESSOR OILS

**BULWARK iCOMP-RF NH** series lubricants are premium quality refrigeration compressor oils formulated from naphthenic oils specially for use in refrigeration compressors using Ammonia (R717) as cooling medium.

**BULWARK iCOMP-RF NH** products come in four ISO viscosity grades and recommended to use in refrigeration compressors and other Industrial and domestic cooling/chilling applications including air conditioning systems. They are also suitable to use on other applications requiring low temperatures fluidity.

**Caution:** These oils are not suitable to use with hydrofluorocarbons (HFC) such as R-134A.

### KEY BENEFITS

- Excellent foam resistance
- Reduced varnish and sludge deposit formation
- Increased lubricity and reduced wear
- Light in color

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68	100
Density @15 °C g/ml	ASTM D1298	0.892	0.897	0.902	0.906
Kinematic Viscosity @40 °C cSt	ASTM D7042	30.5	44.3	66.8	95.6
Kinematic Viscosity @40 °C cSt	ASTM D7042	4.61	5.63	7.05	8.58
Neutralization Value mg/KOH/g		<0.05	<0.05	<0.05	<0.05
Flash Point °C (min)	ASTM D92	192	204	216	220
Pour Point °C (max)	ASTM D97	-24	-24	-21	-18

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# iTURBINE TDG 32, 46, 68

## INDUSTRIAL TURBINE OILS

**BULWARK iTURBINE TDG OILS** are high quality conventional turbine oils that combine excellent aging stability at higher operating temperatures, excellent air release, quick water separation and excellent corrosion inhibition. These oils are free from Zinc, chlorine, PCB and PCT.

**BULWARK iTURBINE TDG OILS** can be used on steam and gas turbines and several other applications including circulation & bearing lubrication system or hydraulics (with Zinc & Zinc-Free) or light & medium duty Industrial gear & Bearing Oils operating under severe conditions.

**Note:** These turbine oils are not suitable to use if the OEM recommends use of turbine oils with extreme pressure (EP) and anti-wear properties. Please send us your enquiry with OEM specifications for such high-performance Turbine oils, which are available with BULWARK only on a subject to enquiry basis.

### PERFORMANCE LEVEL\*

- DIN 51515-1 TD
- SIEMENS TLV 901304

### KEY BENEFITS

- Multi-use product and provides excellent aging stability
- Excellent air release and quick water separation & corrosion inhibition
- Zinc free product.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	32	46	68
Density at 15°C, kg/m <sup>3</sup>	ASTM D4052	0.878	0.880	0.883
Viscosity at 40 °C, cSt	ASTM D445	32.07	46.78	66.34
Viscosity at 100°C, cSt	ASTM D445	5.37	6.83	8.51
Pour point, °C	ASTM D97	-24	-24	-21
Flash point COC, °C	ASTM D92	228	232	238
Viscosity Index	ASTM D2270	100	100	98
Air release at 50°C, Minute	ASTM D3427	2	2	3
Oxidation (TOST)	ASTM D943	>2200	>2000	>1800
Form Tendency/Form Stability	ASTM D892			
Seg I		0/0	0/0	0/0
Seg II		0/0	0/0	0/0
Seg III		0/0	0/0	0/0
Water Separability at 54 °C	ASTM D1401			
Time for Separation, min		8	10	12
Volume of layer (oil - water - emulsion), ml		42-38-0	42-38-0	42-38-0
Copper Corrosion (3 hrs at 100 °C)	ASTM D130	1b	1b	1b

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# BRAKE FLUID DOT 3

## BRAKE & CLUTCH FLUID

**BULWARK BRAKE FLUID DOT 3** is a superior quality glycol ether-based fluid with advanced corrosion inhibitors suitable for use in disc and drum brakes and hydraulic clutch systems where a non-petroleum-based DOT 3 fluid is specified and provides extended service life. It is not recommended where DOT 4, Super DOT 4 or DOT 5 brake fluids are specified.

### DIRECTIONS TO USE

The brake fluid is hygroscopic and must be stored in tightly sealed containers. After removal of brake fluid, the containers must be closed immediately. **BULWARK BRAKEFLUID DOT 3** has a shelf life of at least three years when stored in original closed, airtight containers at temperatures of maximum 40 °C.

### PERFORMANCE LEVEL\*

- SAE J 1703
- FMVSS 116 DOT 3

### KEY BENEFITS

- Product contains multi-metal corrosion inhibitors which gives engine excellent protection for ferrous & non-ferrous metals.
- Universal use, widely compatible with other DOT 3 brake fluids.
- Provides extended service life.
- Minimal swelling of rubber components.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	DOT 3
Appearance	Visual	Clear & Bright
Density @ 29.5°C	ASTM D 4052	1.018
Viscosity @ 100°C, cSt	ASTM D 445	2.0
Viscosity @ 40°C, cSt	ASTM D 445	1275
WERBP, °C	ASTM D 1120	148
Boiling Point, °C	ASTM D 1120	255

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# BRAKE FLUID DOT 4

## BRAKE & CLUTCH FLUID

**BULWARK BRAKE FLUID DOT 4** is a premium quality glycol ether & borate ester-based fluid with advanced corrosion inhibitors recommended for use in brake systems specifically for modern braking systems with electronic control systems such combined with ABS, ASC and ESP/DSC. Its Low viscosity and higher boiling point provide better braking efficiency.

### DIRECTIONS TO USE

The brake fluid is hygroscopic and must be stored in tightly sealed containers. After removal of brake fluid, the containers must be closed immediately. **BULWARK BRAKEFLUID DOT 4** has a shelf life of at least three years when stored in original closed, airtight containers at temperatures of maximum 40 °C.

### PERFORMANCE LEVEL\*

- SAE J 1704, 1703
- FMVSS 116 DOT 4

### KEY BENEFITS

- Extremely low viscosity at low temperatures
- Product contains multi-metal corrosion inhibitors which gives engine excellent protection for ferrous & non-ferrous metals.
- Compatible with other DOT 4 brake fluids.
- Exceptional lubricity performance and thermal stability provides extended service life.
- Superior elastomer compatibility.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	DOT 4
Appearance	Visual	Clear & Bright
Density @ 29.5°C	ASTM D 4052	1.07
Viscosity @ 100°C, cSt	ASTM D 445	2.0
Viscosity @ 40°C, cSt	ASTM D 445	1100
WERBP, °C	ASTM D 1120	160
Boiling Point, °C	ASTM D 1120	265
Flash Point, °C	ASTM D 92	124

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COOLANT 30

**STANDARD ENGINE COOLANT**  
PRE-DILUTED - READY TO USE  
DO NOT ADD WATER

**BULWARK COOLANTS** are premium quality, long-life performance cooling agents for the cooling system. They are designed with Ethylene Glycol, highly de-ionized water and contains multi-metal corrosion inhibitors which gives engine excellent protection against rust and corrosion. They protect against freezing, overheating, cavitation and provide extended service life.

**BULWARK COOLANT 30** is recommended for round the year use in cooling systems of Cars, Trucks, LCV'S, Tractors Earthmovers and stationary engines. Its anti-rust, anti-corrosion additive components developed to meet the requirements of modern gasoline and light duty diesel engines provide corrosion protection to all the engine components and minimizes the engine damage by raising the boiling point of diluted coolant.

### DIRECTIONS TO USE

This product is a ready to use pre-mixed fluid hence should not be diluted further with water. It is recommended to top up with same pre-mixed coolant, in extreme emergency refilling the radiator by adding equal amounts of distilled or demineralized water to the concentrate is possible.

Available as 30% Premix in 1L, 4L, 5L and 205L Drums

### PERFORMANCE LEVEL\*

- JIS K 2234
- ASTM D3306

### KEY BENEFITS

- Product contains multi-metal corrosion inhibitors which gives engine excellent protection against rust and corrosion.
- Protects against freezing, overheating and cavitation.
- Provides extended service life

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	30%
COLOR		GREEN
Density @15°C	ASTM D4052	1.031
Boiling Point, °C (Undiluted)	ASTM D1120	106
Freezing Point, °C	ASTM D3321	-20
Reserve Alkalinity	ASTM D1121	6.5
Ph vol. % in water		8.2

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COOLANT 50

**PREMIUM ENGINE COOLANT**  
PRE-DILUTED - READY TO USE  
DO NOT ADD WATER

**BULWARK COOLANTS** are premium quality, long-life performance cooling agents for the cooling system. They are designed with Ethylene Glycol, highly de-ionized water and contains multi-metal corrosion inhibitors which gives engine excellent protection against rust and corrosion. They protect against freezing, overheating, cavitation and provide extended service life.

**BULWARK COOLANT 50** is recommended for round the year use in cooling systems of Cars, Trucks, LCV'S, Tractors Earthmovers and stationary engines. Its anti-rust, anti-corrosion additive components developed to meet the requirements of modern gasoline and light duty diesel engines provide corrosion protection to all the engine components and minimizes the engine damage by raising the boiling point of diluted coolant.

### DIRECTIONS TO USE

This product is a ready to use pre-mixed fluid hence should not be diluted further with water. It is recommended to top up with same pre-mixed coolant, in extreme emergency refilling the radiator by adding equal amounts of distilled or demineralized water to the concentrate is possible.

Available as 50% Premix in 1L, 4L, 5L and 205L Drums

### PERFORMANCE LEVEL\*

- JIS K 2234
- ASTM D3306

### KEY BENEFITS

- Product contains multi-metal corrosion inhibitors which gives engine excellent protection against rust and corrosion.
- Protects against freezing, overheating and cavitation.
- Provides extended service life

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	50%
COLOR		GREEN
Density @15°C	ASTM D4052	1.065
Boiling Point, °C (Undiluted)	ASTM D1120	110
Freezing Point, °C	ASTM D3321	-36
Reserve Alkalinity	ASTM D1121	6.9
Ph vol. % in water		8.5

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COOLANT 6580

**PREMIX OAT COOLANT (BS 6580)**  
DO NOT ADD WATER

**BULWARK COOLANT 6580** is high performance, ethylene glycol based ready-to-use anti-freeze / anti-boil coolant with highly de-ionized water and state of the art Organic Acid inhibitors. It is nitrite, amine, silicate, borate & phosphate free. Its anti-rust, anti-corrosion additive components are developed to meet the requirements of modern light, medium and heavy duty on-road vehicles & stationary engines having closed loop coolant circulation systems

**BULWARK COOLANT 6580** is designed for use in all light, heavy-duty and stationary engines requiring OAT coolant/antifreeze.

### DIRECTIONS TO USE

This product is a ready to use pre-mixed fluid hence should not be diluted further with water. It is recommended to top up with same pre-mixed coolant, in extreme emergency refilling the radiator by adding equal amounts of distilled or demineralized water to the concentrate is possible.

Available in 205L Drums

### PERFORMANCE LEVEL\*

- BS 6580
- ASTM D3306

### KEY BENEFITS

- Excellent protection from corrosion
- Long Service Life
- Improved Heat Transfer capabilities
- Compatible with non-metallic cooling system components
- Excellent solubility and stability in soft and hard water

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	COOLANT 6580
Density at 20°C kg/m3	ASTM D4052	1.116
Freezing point, °C	ASTM D3321	-36
Reserve Alkaline, ml	ASTM D1121	1.8
Equilibrium boiling point, °C (min)	ASTM D1120	116
pH	ASTM DE70	8.0
Foaming Tendency, ml	ASTM D4921	20

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# COOLANT LONG LIFE

**PREMIX OAT SF EXTENDED LIFE COOLANT**  
READY TO USE (DO NOT ADD WATER)

**BULWARK COOLANT LONG LIFE** is ready-to-use anti-freeze/anti-boil cooling fluid with highly de-ionized water and Hybrid Organic Acid corrosion inhibitors. It is NAP, silicates free and contains a mix of inhibitors developed to give the highest protection to engine components made of Ferrous and Aluminum such as radiators, engine blocks, heads & water pumps of modern light, medium and heavy duty on-road vehicles & stationary engines having closed loop coolant circulation systems.

**BULWARK COOLANT LONG LIFE** is designed for use in all light, heavy-duty and stationary engines requiring HOAT coolant/antifreeze and where OEM has recommended the use of long-life coolants.

### DIRECTIONS TO USE

This product is a ready to use pre-mixed fluid hence should not be diluted further with water. It is always recommended to top up with the same pre-mixed coolant, except in extreme emergency situation, when refilling the radiator by adding equal amounts of distilled or demineralised water to the existing concentrate is possible/allowed.

Available in 205L Drums

### PERFORMANCE LEVEL\*

- ASTM D3306, ASTM D4656, ASTM 4985;
- CAT GCM34; MAK; MWM 0199-99-2091/12; MB 312.0;
- Jenbacher TA 1000-0200; Holden; Detroit DFS93K217;
- Waukesha; GEC Alstom; Hyundai; Liebherr; Menag; MTU MTL 5049;
- Bergen Engines 2.13.01; MAN 248; MAN B&W AG D36 5600;
- WArtsila 32-9011; SACM Diesel DLP 799861;
- New Sulzer Diesel TR 1508-10/94; Porsche; MAN B&W A/S

### KEY BENEFITS

- Excellent protection from corrosion
- Extended Long Service Life
- Improved Heat Transfer capabilities
- Compatible with non-metallic cooling system components

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	COOLANT 6580
Density at 20°C kg/m3	ASTM D4052	1.067
Freezing point, °C	ASTM D3321	-37
Reserve Alkaline, ml	ASTM D1121	6.0
Equilibrium boiling point, °C (min)	ASTM D1120	114
pH	ASTM E70	8.7
Foaming Tendency, ml	ASTM D4921	12

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk



# GREASE MP 2,3

## MULTI-PURPOSE LITHIUM GREASE

**BULWARK GREASE MP** series is multi-purpose, light duty lithium greases produced from paraffinic base oils, lithium thickener and oxidation & corrosion inhibitors for use in automotive and industrial applications where mild EP or Non-EP greases are required. They come in two consistencies – NLGI 2 and NLGI 3.

**BULWARK GREASE MP** series is recommended for use in general bearings, shaft joints, ball joints, water pump bearings and similar other applications. They can be used with normal operating temperature up to 100°C

### PERFORMANCE LEVEL\*

- DIN 51502;
- NLGI 2; KP2K-10; ISO 6743-9/ L-XACEA 2 (MP2)
- NLGI 3; KP3K-10; ISO 6743-9/ L-XACEA 3 (MP3)

### KEY BENEFITS

- Resistance to water wash out, retain grease in place in wet environments
- Protect metal surface from rust and corrosion in moist environments.
- Prevent dust and dirt from reaching into the moving parts.
- Good oxidation and thermal stability.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	MP2	MP3
Consistency	NLGI	2	3
Thickener Type		Lithium	Lithium
Color	Visual	Amber	Amber
Operating Temperature, °C		10 to 100	10 to 100
Worked Penetration at 25°C, 1/10 mm	ASTM D217	265-295	220-250
Dropping Point, °C	ASTM D566	190	190
Base Oil Viscosity at 40 °C, cSt	ASTM D445	180	180
Copper Strip Corrosion, 24h, 100°C	ASTM D4048	2a	2a
4-Ball, Scar Dia, mm	ASTM D2266	0.65	0.65

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GREASE EP 0,2,3

## EXTREME PRESSURE LITHIUM GREASE

**BULWARK GREASE EP** series is a multi-purpose, extreme pressure grease produced from high quality paraffinic base oils and specialty lithium thickener. These greases are fortified with high performance additives for improving performance and operating under severe friction conditions.

**BULWARK GREASE EP** series is recommended for use in automotive, industrial and mining applications such as rolling and sliding bearings, hub bearings and lubrication of the components made of non-ferrous metals, wheel bearings, shaft joints, ball joints, water pump bearings and other applications where use of NLGI #2 or NLGI #3 class of lubricant with EP properties is recommended.

**BULWARK GREASE EP** series have good tribological features and can operate within a wide temperature service range from -10 °C to +120 °C under varying loads, and while in contact with water and wet environment conditions. These greases are formulated to provide good thermal and structure stability during use or in storage, hence have soft consistency and smooth structure.

### PERFORMANCE LEVEL\*

- DIN 51502;
- NLGI 0; KPK -10; ISO 6743-9; L-XACEB 0 (EP0)
- NLGI 2; KP2K-10; ISO 6743-9; L-XACEB 2 (EP2)
- NLGI 3; KP3K-10; ISO 6743-9; L-XACEB 3 (EP3)

### KEY BENEFITS

- Prevents sticking and seizure of components.
- Protect metal surface from rust and corrosion in moist environments.
- Excellent EP properties extend service life.
- Good anti-corrosion properties, resistance to water wash out, retain grease in place in wet environments.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	EP 0	EP 2	EP 3
Consistency	NLGI	0	2	3
Thickener Type		Lithium	Lithium	Lithium
Color	Visual	Straw Brown	Straw Brown	Straw Brown
Operating Temperature, °C		-10 to +120	-10 to +120	-10 to +120
Worked Penetration at 25°C, 1/10 mm	ASTM D217	355-385	265-295	220-250
Dropping Point, °C	ASTM D566	>180	>200	>200
Base Oil Viscosity at 40 °C, cSt	ASTM D445	120	180	180
Copper Strip Corrosion, 24h, 100°C	ASTM D4048	1b	1b	1b
4-Ball, Scar Dia, mm	ASTM D2266	0.55	0.45	0.45
4-Ball, Weld Load, Kg	ASTM D2596	280	250	250

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GREASE HT 2,3

## HIGH TEMPERATURE LITHIUM COMPLEX GREASE

**BULWARK GREASE HT** series is a high temperature, multi-purpose EP grease based on complex lithium soap, highly refined mineral oil offering good stability to oxidation. These greases contain high-performance, Anti-wear (AW), extreme pressure (EP), anti-corrosion and anti-oxidation additives. Along with their excellent tribological features, they can operate under heavy mechanical loads and even while in frequent contact with water.

**BULWARK GREASE HT** is recommended to use in wheel bearings of the passenger and commercial vehicles, bearings of industrial fans, electric motors, couplings, clutches, shafts, compressors, pumps and other industrial equipment. Also suitable for use in centralized lubrication systems in construction, mining, lumbering, and agricultural machinery where use of HT grease with NLGI #2 or 3 class is recommended.

**BULWARK GREASE HT** service temperature ranges from -20 up to +160°C., comes in brown color and has moderate soft consistency and homogeneous structure. This grease can be applied manually with brush or spatula, as well as through individual lubrication system at the temperatures down to -20°C.

### PERFORMANCE LEVEL\*

- DIN 51502;
- NLGI 2; KP2P-20; ISO 6743-9; L-XBEHB 2 (HT2)
- NLGI 3; KP3P-20; ISO 6743-9; L-XBEHB 3 (HT3)

### KEY BENEFITS

- Excellent high-temperature properties with very good anti-corrosion properties.
- Excellent load carrying capacity at low temperatures.
- Resistance to shock and vibrational loads.
- High water resistance, excellent adhesion and long-term service life.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	HT2	HT3
Consistency	NLGI	2	3
Thickener Type		Lithium Complex	Lithium Complex
Color	Visual	D. Brown	D. Brown
Operating Temperature, °C		-20 to +160	-20 to +160
Worked Penetration at 25°C, 1/10 mm	ASTM D217	265-295	220-250
Dropping Point, °C	ASTM D2265	>250	>250
Base Oil Viscosity at 40 °C, cSt	ASTM D566	200	200
Copper Strip Corrosion, 24h, 100°C	ASTM D4048	1b	1b
4-Ball, Scar Dia, mm	ASTM D2266	0.35	0.35
4-Ball, Weld Load, Rgf	ASTM D2596	400	400

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# GREASE WR

## EXTREME PRESSURE CALCIUM SULFONATE GREASE

**BULWARK GREASE WR & OG** series is a multi-purpose, extreme pressure grease produced from high viscosity index base oils and complex calcium sulfonate thickener. These greases are fortified with high performance additives for improved adhesive performance with higher water resistance in extreme wet operating conditions.

**BULWARK GREASE WR** series is recommended for use in industrial, mining and energy applications such as wire ropes, general and heavy-duty open gears including marine applications where use of NLGI 0.5 and 2.5 class of lubricant with EP properties is recommended.

**BULWARK GREASE WR** series have good tribological features and can operate within a wide temperature service range from -20 to +160 °C under varying loads, and while in contact with water and wet environment conditions. These greases are formulated to provide good thermal and structure stability during use or in storage, hence have soft consistency and smooth structure.

### PERFORMANCE LEVEL\*

- NLGI 1.5; DIN 51502;
- KP1.5R-20; ISO 6743-9; L-XBGFB (1.5)

### KEY BENEFITS

- Superior Penetration and lubrication of inner core steel in cables and wire ropes
- Protect metal surface from rust and corrosion in moist environments.
- Excellent EP properties extend service life.
- Good anti-corrosion properties, resistance to water wash out, retain grease in place in wet environments.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	WR	WR
Consistency	NLGI	0.5	2.5
Thickener Type		Calcium Sulfonate	Calcium Sulfonate
Color		Light Brown	Light Brown
Operating Temperature, °C	Visual	-20 to +160	-20 to +160
Dropping Point, °C		>240	>240
Base Oil Viscosity at 40 °C, cSt	ASTM D2265	240	240
Copper Strip Corrosion, 24h, 100°C	ASTM D445	1b	1b
4-Ball, Scar Dia	ASTM D4048	0.35	0.35
4-Ball, Weld Load	ASTM D2266	280	280

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

CLASSIC PRODUCTS

# CLASSIC PC 10W-40\*, 15W-40, 20W-40 & 20W-50

## MULTI-GRADE PETROL ENGINE OIL

**BULWARK CLASSIC PC** range oils are standard multi-grade motor oils suitable for use in older engines of passenger cars, light commercial trucks and vans. The product is manufactured using high quality base stocks and proven additive packages to provide the best anti-wear protection and all-round superior performance.

**BULWARK CLASSIC PC** series are recommended for use during all-season operations in gasoline engines of cars from Japanese, American, European and Korean manufacturers.

### PERFORMANCE LEVEL\*\*

- API SG/SF/SD/SC/SB

### KEY BENEFITS

- High anti-oxidation and better dispersant properties
- Minimizes wear and noise level (especially in older and worn engines) during extreme operational conditions.
- Good protection against corrosion.
- Higher BN reserves

### TYPICAL CHARACTERISTICS\*\*\*

Properties	Test Methods	10W-40*	15W-40	20W-40	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.876	0.882	0.888	0.891
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.76	13.90	13.96	17.76
Viscosity Index	ASTM D2270	142	130	124	121
Cold Cranking Viscosity, mPa-s	ASTM D5293	6080 at -25°C	6480 at -20°C	8680 at -15°C	9080 at -15°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	43,800 at -30°C	48,800 at -25°C	47,800 at -20°C	51,100 at -20°C
Sulphated Ash, %	ASTM D874	1.25	1.25	1.25	1.25
Flash Point, COC, °C	ASTM D92	242	244	246	252
Foam Stability	ASTM D892				
Seq I		0/0	0/0	0/0	0/0
Seq II		0/0	0/0	0/0	0/0
Seq III		0/0	0/0	0/0	0/0
Pour Point, °C	ASTM D97	-42	-33	-27	-27
Total Base Number, mg KOH/g	ASTM D2896B	6.20	6.20	6.20	6.20

\* Synthetic Technology

\*\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# CLASSIC MC 10W-40\*, 10W-50\*, 15W-50, 20W-40 & 20W-50

## MULTI-GRADE 2 & 3-WHEELER ENGINE OIL

**BULWARK CLASSIC MC** range oils are standard multi-grade 4T oils suitable for use in older engines of 2 & 3-wheeler vehicles, which includes scooters, motorcycles and 3-wheeler auto rickshaws. The product is manufactured using high quality base stocks and proven additive packages to provide the best anti-wear & clutch protection and all year-round superior performance.

**BULWARK CLASSIC MC** oils are recommended for use during all-season operations in gasoline engines of 2 & 3-wheeler vehicles, where API SG/SF/SD/SC/SB performance with one of the above viscosities are specified.

### PERFORMANCE LEVEL\*\*

- API SG/SF/SD/SC/SB

### KEY BENEFITS

- High anti-oxidation and better dispersant properties
- Minimizes wear and noise level (especially in older and worn engines) during extreme operational conditions.
- Good protection against corrosion.
- Improved Clutch performance.

### TYPICAL CHARACTERISTICS\*\*\*

Properties	Test Methods	10W-40*	10W-50*	15W-50	20W-40	20W-50
Density @ 29.5°C, Kg/m <sup>3</sup>	ASTM D4052	0.876	0.886	0.882	0.888	0.891
Kinematic Viscosity @ 100°C cSt	ASTM D7042	13.76	17.30	13.90	13.96	17.56
Viscosity Index	ASTM D2270	142	146	130	124	121
Cold Cranking Viscosity, mPa-s	ASTM D5293	6080 at -25°C	5980 at -25°C	6480 at -20°C	8680 at -15°C	9080 at -15°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	43,800 at -30°C	46,900 at -30°C	48,800 at -25°C	47,800 at -20°C	51,100 at -20°C
Sulphated Ash, %	ASTM D874	1.25	1.25	1.25	1.25	1.25
Flash Point, COC, °C	ASTM D92	242	254	244	246	252
Foam Stability	ASTM D892					
Seq I		0/0	0/0	0/0	0/0	0/0
Seq II		0/0	0/0	0/0	0/0	0/0
Seq III		0/0	0/0	0/0	0/0	0/0
Pour Point, °C	ASTM D97	-42	-42	-33	-27	-27
Total Base Number, mg KOH/g	ASTM D2896B	6.20	6.20	6.20	6.20	6.20

\* Synthetic Technology

\*\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# CLASSIC CT 10W-40\*, 15W-40, 20W-40, 20W-50 & 20W-60

## MULTI-GRADE DIESEL ENGINE OIL

**BW CLASSIC CT** range oils are standard multi-grade diesel engine oils suitable for use in older engines of passenger cars, light & heavy commercial trucks and vans. The product is manufactured using high quality base stocks and proven additive packages to provide the best anti-wear protection and all-round superior performance.

**BW CLASSIC CT** oil series are recommended for use during all-season operations in diesel engines of cars, trucks & other off-road equipment's from Japanese, American, European and Korean manufacturers.

### PERFORMANCE LEVEL

- API CE/CD/CC/CB

### KEY BENEFITS\*\*

- Improved anti-oxidation and better dispersant properties
- Minimizes wear and noise level (especially in older and worn engines) during extreme operational conditions.
- Good protection against corrosion
- Higher BN reserves to fight acid formation.

### TYPICAL CHARACTERISTICS\*\*\*

Properties	Test Methods	10W-40*	15W-40	20W-40	20W-50	20W-60
Density @ 29.5°C, Kg/m3	ASTM D4052	0.876	0.882	0.888	0.891	0.891
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.76	14.90	14.96	18.76	18.76
Viscosity Index	ASTM D2270	140	131	122	120	120
Cold Cranking Viscosity, mPa-s	ASTM D5293	6180 at -25°C	6680 at -20°C	8980 at -15°C	9180 at -15°C	9180 at -15°C
Borderline Pumping Viscosity, mPa-s	ASTM D4684	45,800 at -30°C	49,800 at -25°C	44,800 at -20°C	43,100 at -20°C	43,100 at -20°C
Sulphated Ash, %	ASTM D874	1.45	1.45	1.45	1.45	1.45
Flash Point, COC, °C	ASTM D92	244	246	248	256	256
Foam Stability	ASTM D892					
Seq I		0/0	0/0	0/0	0/0	0/0
Seq II		0/0	0/0	0/0	0/0	0/0
Seq III		0/0	0/0	0/0	0/0	0/0
Pour Point, °C	ASTM D97	-42	-33	-27	-27	-27
Total Base Number, mg KOH/g	ASTM D2896B	8.20	8.20	8.20	8.20	8.20

\* Synthetic Technology

\*\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

# CLASSIC MONO SAE 40, 50

## MONO-GRADE DIESEL ENGINE OIL

**BW CLASSIC MONO** range oils are standard mono-grade diesel engine oils suitable for use in older engines of passenger cars, light & heavy commercial trucks and vans. The product is manufactured using high quality base stocks and proven additive packages to provide the best anti-wear protection and all-round superior performance.

**BW CLASSIC MONO** oil series are recommended for use during all-season operations in diesel engines of cars, trucks & other off-road equipment's from Japanese, American, European and Korean manufacturers.

### PERFORMANCE LEVEL\*

- API CE/CD/CC/CB

### KEY BENEFITS

- Improved anti-oxidation and better dispersant properties
- Minimizes wear and noise level (especially in older and worn engines) during extreme operational conditions.
- Good protection against corrosion
- Higher BN reserves to fight acid formation.

### TYPICAL CHARACTERISTICS\*\*

Properties	Test Methods	40	50
Density @ 29.5°C, Kg/m3	ASTM D4052	0.887	0.890
Kinematic Viscosity @ 100°C cSt	ASTM D7042	14.36	18.16
Viscosity Index	ASTM D2270	96	97
Sulphated Ash, %	ASTM D874	1.45	1.45
Flash Point, COC, °C	ASTM D92	248	258
Foam Stability	ASTM D892		
Seq I		0/0	0/0
Seq II		0/0	0/0
Seq III		0/0	0/0

\* Performance levels indicated may include licensed API specs or specs that our products meet or exceed

\*\* Typical Characteristics are typical values. Minor variations within the permissible tolerance limits maybe expected on the final product.

#### STORAGE

All packages should be stored under cover. Where outside storage is unavoidable, drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 60°C, exposed to hot sun or freezing conditions.

This data sheet and the information it contains is believed to be accurate as of the date of printing. However, no warranty or representation, express or implied, is made as to its accuracy or completeness. Data provided is based on standard tests under laboratory conditions and is given as a guide only. Users are advised to ensure that they refer to the latest version of this data sheet. It is the responsibility of the user to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations. Material Safety Data Sheets are available for all our products and should be consulted for appropriate information regarding storage, safe handling, and disposal of the product. No responsibility is taken by either Bulwark International UK Ltd or its subsidiaries for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from hazards inherent in the nature of the material. All products, services and information supplied are provided under our standard conditions of sale. Please consult our local representative if you require any further information.

Bulwark International UK Ltd, 34 Woodland Road, Sawston, CB22 3DU, United Kingdom. info@bulwarkauto.co.uk

