

Balmerol[®] Protogear AM Series

Micropitting Resistant Gear Oil

Technical Data Sheet

Product Description:

Balmerol Protogear AM Series gear oils are extra high performance, micropitting resistant gear oils with excellent load carrying and extreme pressure properties. Today's modern generation gearboxes operate under severe conditions, have higher power densities and run at higher temperatures, at times leading to microscopic wear known as micropitting. Balmerol Protogear AM Series gear oils are formulated to resist gear failures due to micropitting. Balmerol Protogear AM Series gear oils are fortified with unique Micropitting Resistant additives, Antioxidants and Rust & Corrosion Inhibitors.

Balmerol Protogear AM Series **meets** the following specifications:

- DIN 51517 Part 3 , CLP
- AGMA 9005-E02
- U.S. STEEL 224
- David Brown (S1.53.101)
- Flender (Siemens)

Features & Benefits:

Micropitting resistant characteristics	Resisting gear, bearing & seal failures from initial stage, leading to lower unscheduled downtime
Lower Deposit formation and superior Oxidation & Thermal stability	Clean performance even during high temperature operation and also ensuring longer oil drain interval
Very good anti-foam characteristics	Better protection of equipment from foaming related failures (excessive oxidation, cavitations), as well as better house keeping
Very good Rust protection & Demulsibility characteristics	Easily sheds off water from the oil and ensures better component protection

Balmerol Protogear AM Series helps reduce costly gear and bearing failures, leading to lower Maintenance cost and higher Productivity.

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Applications / Recommendations:

Balmerol Protogear AM Series gear oils are recommended for use in enclosed industrial gears with splash / circulation lubrication, heavily loaded plain and rolling contact slow speed bearings and gear couplings where operating or bulk oil temperatures are upto 100 deg. C. It is especially suitable for bevel and spur gears working under heavy / shock loads.

Balmerol Protogear AM Series gear oils are compatible with metallic, as well as elastomeric seal materials.

Typical Properties:

Balmerol Protogear AM				
Properties	Protogear AM 68	Protogear AM 100	Protogear AM 150	Protogear AM 220
ISO VG Grade	68	100	150	220
Viscosity, ASTM D 445				
cst @ 40°C	69	102	152	224
cst @ 100°C	8.8	11.4	15	19.2
Viscosity Index, ASTM D 2270	100	98	98	97
Pour Point, °C ASTM D 97	-18	-18	-18	-12
Flash Point, °C ASTM D 92	> 230	> 230	> 230	> 230
Copper Strip Corrosion, ASTM D 130, 3 hrs @ 100°C	1b	1b	1b	1b
Rust Characteristics, ASTM D665 ASTM D 665/A	Pass	Pass	Pass	Pass
FZG Micropitting Damage (FVA 54), Load Stage/ Endurance Test, GFT Class	-	10/ High	10/ High	10/ High
FE 8 bearing wear test, DIN 51819 - Stage 1	8	8	8	5
FZG Test (A/8.3/90), Fail Stage, DIN 51354	12 pass	12 pass	12 pass	12 pass
Four Ball EP Test (Weld Point) Kg, ASTM D 2596	200	200	250	250
Foam Sequence, ASTM D 892				
Sequence I	0/0	0/0	0/0	0/0
Sequence II	10/0	10/0	10/0	10/0
Sequence III	0/0	0/0	0/0	0/0
Demulsibility at 82°C time to 40/37/3, Minutes, ASTM D 1401	15	15	15	20

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Balmerol Protogear AM				
Properties	Protogear AM 320	Protogear AM 460	Protogear AM 680	Protogear AM 1000
ISO VG Grade	320	460	680	1000
Viscosity, ASTM D 445				
cst @ 40°C	318	454	682	1000
cst @ 100°C	24.2	30.1	38.4	49
Viscosity Index, ASTM D 2270	97	95	93	93
Pour Point, °C ASTM D 97	- 9	-6	-3	0
Flash Point, °C ASTM D 92	> 230	> 230	> 230	> 230
Copper Strip Corrosion, ASTM D 130, 3 hrs @ 100°C	1b	1b	1b	1b
Rust Characteristics, ASTM D665	Pass	Pass	Pass	Pass
ASTM D 665/A				
FZG Micropitting Damage (FVA 54), Load Stage/ Endurance Test, GFT Class	10/ High	10/ High	10/ High	10/ High
FE 8 bearing wear test, DIN 51819 - Stage 1	5	5	5	5
FZG Test (A/8.3/90), Fail Stage, DIN 51354	12 pass	12 pass	12 pass	12 pass
Four Ball EP Test (Weld Point) Kg, ASTM D 2596	250	250	250	250
Foam Sequence, ASTM D 892				
Sequence I	0/0	10/0	10/0	10/0
Sequence II	10/0	20/0	20/0	20/0
Sequence III	0/0	10/0	10/0	10/0
Demulsibility at 82°C time to 40/37/3, Minutes, ASTM D 1401	20	25	25	max 30

Health and Safety:

Balmerol Protogear AM Series oils are not expected to produce adverse effects on health when used for the intended application and the recommendations provided in the Material Safety Data Sheet (MSDS) are followed. For MSDS please contact your local Balmer Lawrie Marketing / Technical Service team.

For Further Information, contact:

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