

PRODUCT DATA

TFC 400 SERIES TRANSMISSION FLUIDS

PRODUCT DESCRIPTION

Castrol TFC 400 Series transmission fluids is a range of lubricants especially formulated to satisfy the requirements of Allison C4 (SAE 10, 30 and 40 only), Caterpillar TO-4[#], and Komatsu Micro clutch. The **Castrol TFC 400 Series** is available in five viscosity variants:

Castrol TFC Grade	Viscosity Grade SAE
410	10W-20, 80W
430	30, 85W
440	40, 85W-90
450	50, 85W-90
460	60, 85W-140

[#] Allison no longer recommend any C4 fluids for use in any on-highway transmissions.

The **Castrol TFC 400 Series** of transmission fluids are suitable for use in a range of other transmissions, torque converters and marine gears including those of ZF, Clark and Borg Warner. For the full range of recommendations, see our Lubrication Reference Guide.

PRODUCT APPLICATION

The **Castrol TFC 400 Series** are recommended for automatic, powershift or manual transmissions where Allison C2, C3 or C4, Caterpillar TO-2 or TO-4, Komatsu Micro clutch, API GL1, 2 & 3 or (CF) engine oils are specified. The **Castrol TFC Series** are also suitable for use in hydraulic systems where the appropriate SAE grades are specified. **Castrol TFC 450** supersedes CRB 50 and ST 90 in heavy duty truck transmission applications. **Castrol TFC 460** is recommended for use in some Caterpillar final drives, and only in equipment which is involved in continuous operation; this being due to the lengthy start-up procedures specified by Caterpillar when using SAE 60 oils.

PRODUCT APPLICATION CONTINUED

		*Ambient Temperature Range On-Highway		*Ambient Temperature Range Off-Highway	
		Min	Max	Min	Max
TFC 410	Allison transmissions, off-highway applications only. Clark transmissions ZF TE-ML03 Converter Transmission ZF TE-ML04 Marine Gears BW 5,6,7; BMK 50, 80, 100 ZF TE-ML06 Tractor Transmissions ZF TE-ML14 Automatic & Powershift transmissions – Commercial Vehicles	-15	35	-15 -20 -5 -5 -5	+35 +30 +40 +40 +40
		Powershift, Manual		Hydrostatic	
	Caterpillar Transmissions and Winches Caterpillar Hydraulic Systems Caterpillar Hoist, Torque Converter and Brake System for Off-Highway Trucks Komatsu Transmissions	-15 -20	+15 +10	-15 -15 -15	+40 +45 +50 +40
		*Ambient Temperature Range On-Highway		*Ambient Temperature Range Off-Highway	
		Min	Max	Min	Max
TFC 430	Allison transmissions, off-highway applications only. Clark transmissions Volvo Manual Transmission ZF TE-ML03 Converter Transmission	+10	+50	+10 0 -15	+50 +40 +40
	ZF TE-ML04 Marine Gears BW 10 to BW 2057 and variants, S, BK and BWK			Oil sump temp. Oil sump temp.	>80°C >80°C
	ZF 14, Z 20 BW 3500			-5 -5	+40 +40

PRODUCT APPLICATION CONTINUED

		*Ambient Temperature Range On-Highway		*Ambient Temperature Range Off-Highway	
		Min	Max	Min	Max
TFC 430		Powershift, Manual		Hydrostatic	
	Caterpillar Transmissions and Winches Caterpillar Hydraulic Systems Caterpillar Final Drive	0	+35	+10	+50
		-25	+25	+10	+50
	Komatsu Transmissions Komatsu Final Drive	0	+40		
		-10	+40		

		*Ambient Temperature Range On-Highway		*Ambient Temperature Range Off-Highway	
		Min	Max	Min	Max
TFC 440	Allison transmissions , off-highway only Clark transmissions			+15	+50
				+15	+50
	ZF TE-ML04 Marine Gears BW 10 to BW 2057 and variants, S, BK and BWK			Oil sump temp. Oil sump temp.	>80°C >80°C
	ZF 14, Z 20			+10	+40
TFC 450	Allison transmissions	Not recommended – too viscous			
	Heavy Duty Truck Transmissions; e.g. Eaton, Dana, Spicer, Volvo, etc. Ambient Temperature Range °C	0	+50		
		Powershift, Manual		Hydrostatic	
	Caterpillar Powershift, Manual Transmissions and Winches Caterpillar Final Drive (where TO-4 recommended)	+10	+50	Not recommended	
	Komatsu Final Drive	-15	+50		
	0	+50			
TFC 460	Caterpillar Final Drives and Differentials (where TO-4 recommended) Heavy Duty Truck Transmissions; e.g. Eaton, Dana, Spicer, Volvo, etc. Ambient Temperature Range °C	-10	+50	Not recommended - Too viscous	

Consult your equipment manual for exact model requirements regarding the correct viscosity.

Allison have withdrawn approval of all C4 fluids for all on-highway transmission applications.

*** NOTE: Ambient Temperature Range Explanation**

The minimum means the lowest recommended start-up temperature.
The maximum means the highest expected ambient (air) temperature.

If expected ambient temperature range is wider than for any nominated viscosity grade, use the closest higher viscosity grade and allow at least 5-10 minutes for warm-up.



PRODUCT FEATURES & BENEFITS

The extensive testing required for Allison C4, Caterpillar TO-4 and Komatsu Micro clutch fluids has shown that **Castrol TFC 400 Series** achieves excellent performance results in terms of:

Features

- Oxidation stability
- Excellent friction performance with more than ten different friction material combinations.
- Power steering pump wear protection.
- Rust and corrosion protection.
- Copper corrosion protection.
- Clutch plate life.
- Seal compatibility on the four major types of elastomers:
 - Nitrile, polyacrylate, silicone, fluoroelastomer (viton)

Benefits

- Maintains high temperature performance and transmission cleanliness during service life.
- Ensures smooth, positive changes with enhanced friction material durability.
- Long pump life.
- Protects highly polished and finished surfaces.
- Extended thrust and plain bearing life.
- Proven compatibility with friction material binders and adhesives assists in increasing service life of clutch plates and wet brakes. Most benefit will be achieved when these products are used from now.
- Helps oil seals remain serviceable and so minimises oil leaks.

TYPICAL CHARACTERISTICS

Grade	Viscosity @ 100 °C	Viscosity @ 40 °C	Pour Point °C	ISO Viscosity	Viscosity Grade SAE	Allison Rating #	API Rating	Caterpillar Rating
TFC 410	7.3 cSt	49 cSt	-27	46	10W/20 80W	C4 SAE 10	GL 1, 2, 3 & CF	TO-4
TFC 430	11.5 cSt	105 cSt	-24	100	SAE 30 85W	C4 SAE 30	GL 1, 2, 3 & CF	TO-4
TFC 440	14.7 cSt	147 cSt	-21	150	SAE 40 85W/90	C4 SAE 40	GL 1, 2, 3 & CF	TO-4
TFC 450	19.0 cSt	215 cSt	-20	220	SAE 50 85W/90	*C4 Friction	GL 1, 2, 3 & CF	TO-4
TFC 460	25.0 cSt	297 cSt	-15	320	SAE 60 85W/140	*C4 Friction	GL 1, 2, 3 & CF	TO-4

The above data is typical and does not constitute a specification.

* Too viscous for automatic transmission application.

Allison no longer recommend any C4 fluids for use in any on-highway transmissions.

PERFORMANCE LEVELS

Castrol TFC 400 Series lubricants are recommended for use where the following performance levels are specified:

- Allison C4, C3 or C2 – off-highway only
 - Caterpillar TO-4 or TO-2
 - API GL1, GL2 or GL3
 - API CF, CD *
 - Komatsu Micro Clutch
 - JI Case MS 1210
 - Massey Ferguson M1110
 - ZF TE – ML 03 p2; 04 p2; 06 p2 and 14 p4.
- For transmission and hydrostatic application. Only for short term or intermittent engine application. The sulfated ash of all TFC 400 grades is approximately 1.6%.

HEALTH, SAFETY & ENVIRONMENT

The **Castrol TFC 400 Series** is considered non-hazardous according to Worksafe. However, in line with safe handling practices, it is recommended that the handling instructions outlined in the Castrol Material Safety Data sheet be followed.

Spillage

- Small:** Soak up using an inert mineral adsorbent such as Castrol MOP and dispose of in the appropriate manner.
- Large:** Corrective action usually dictated by individual company safety procedures. Immediate containment and subsequent removal is essential.
- Disposal:** Oily materials must not be allowed to enter groundwater, watercourses, sewerage or drainage systems. Refer to local Waste Disposal Authority for legal requirements.

Product Removal

- Bare Metal Surfaces:** Remove with Castrol solvent cleaners or water based degreasers.
- Hand Cleaning:** Use any of the Castrol range of hand cleaners, e.g. CareClean Plus.
- Other Surfaces:** Contact the Castrol Technical Advice Line on 1300 557 998.

Although all reasonable care has been taken to ensure that the information contained in this publication is accurate as at the time of printing, such information is nevertheless liable to variation in the event of changes occurring subsequent to the date of printing it: the blend formulation, methods of storage, or due to the improper handling or application of any of the products referred to, or in the requirements of any specification or approval relating to any of the products.

For more information contact: Castrol Lubricants (A Business Division of BP Australia Pty Limited - ABN 53 004 085 616)
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