

## Pentosin FFL-4

### Double Clutch Transmission Fluid for GETRAG

#### Description

**Pentosin FFL-4** is a special fully synthetic transmission fluid, which has been exclusively developed for the application in the new double clutch transmission (DCT) designed by GETRAG. This transmission is a highly developed, complex high tech aggregate which puts extremely demanding requirements onto the transmission fluid.

**Pentosin FFL-4** has been completely newly developed to satisfy the high demand and was adjusted together with GETRAG to comply with the various challenging specific DCT-performance requirements. In order to ensure perfect DCT-operation it

should therefore by all means be avoided that **Pentosin FFL-4** is being mixed with any other transmission fluid during service.

#### Approvals

BMW EU: 83 22 2 148 578  
83 22 2 148 579  
BMW USA: 83 22 0 440 214  
83 22 2 147 477

#### Classification

The product is not classified as dangerous.

Pentosin FFL-4		Typical Data	
	Unit	Result	Method
Appearance		bright and clear	DIN 10964
Density at 15 °C	kg/m <sup>3</sup>	842	DIN EN ISO 12185
Kinematic Viscosity at 100 °C	mm <sup>2</sup> /s	7,0	DIN EN ISO 3104
Kinematic Viscosity at 40 °C	mm <sup>2</sup> /s	34,7	DIN EN ISO 3104
Viscosity Index		168	DIN ISO 2909
Dynamic Viscosity at -40 °C	mPa*s	7400	ASTM D2983
Flash Point COC	°C	220	DIN EN ISO 2592
Pour Point	°C	-54	ISO 3016
Evaporation Loss 1h at 200 °C	mass %	3	DIN 51 581-1
Taper Roller Bearing Test, shear loss (192 h)	%	6,5	CEC-L-45-A-99
Taper Roller Bearing Test, Viscosity after Shear (192 h)	mm <sup>2</sup> /s	6,8	CEC-L-45-A-99
FZG Wear Test A/16.6/90 // A/16.6/120	Failure Load Stage	>12 // >12	DIN ISO 14635-1
FZG Pitting PT (C/9/90) average out of 3 tests	h	201	FVA IV

While handling lubricants the relevant safety rules have to be taken into account. For more detailed information please see the current safety data sheet for this product.

This product may not be available at all locations. For more information, please call us at +49 4103-9134-0 or visit us at [www.pentosin.com](http://www.pentosin.com)  
Due to continual product research and development, the information contained herein is subject to change without notification. Typical data may vary slightly.