



Industrial - Off Highway

ISO 4406 - Iso Cleanliness Specification Recommendation of New Lubricants

Always follow Chevron's ISOCLEAN Certified Lubricant Product Guidelines.

Oil Cleanliness Specification ISO D 4406 (1999) Maximum Allowed Cleanliness Code								
Major Off Highway OEMs	Engine ** Follow Chevron Specifications	Mechanical Transmission	Electronic Transmission	Hydraulic	Differentials, Wheels and Axles	Other(1)	Comments	Source Reference
Caterpillar	<p>Fill Oils >4µ No Spec/16/13 Filter with no finer than a 12 micron filter and the oil should be 68°F or 20°C or higher.</p>	<p>Fill Oils >4µ No Spec/16/13</p> <p>Roll Off Oils >4 µ No Spec/21/17</p>	<p>Fill Oils >4µ No Spec /16/13</p> <p>Roll Off Oils >4µ no Spec/18/15</p>	<p>Fill Oils >4 No Spec /16/13 Roll Off Oils >4µ No Spec/18/15</p>		<p>Fill Oils >4µ No Spec/16/13</p> <p>Roll Off Oils >4µ No Spec/18/15 Note: this applies ONLY to 700 series haul rigid frame haul trucks model 777 and higher</p>	<p>Fuel Cleanliness Spec. ISO 18/16/13</p> <p>Cat specs no code for the >4 micron section of ISO D 4406 for lubricating oils.</p> <p>FILL OIL standards are those used for complete compartment fill.</p> <p>ROLL OFF OIL standards are the those for oils in a system after maintenance or invasive repair, i.e.: in service cleanliness.</p> <p>*Re Engine Oil, no Roll Off standard exists.</p> <p>For filtering engine oil, use a filter no finer than 12 microns and the oil should be 68°F or 20°C or higher.</p>	Caterpillar Service Engineering Bulletin SEBU 6250-19 dated Jan 2014
John Deere Hydraulic Excavators	<p>For Premium Plus 50 II SAE 14W/40, 10W/30, 0W/40 only >4µ- no spec/19/14 on new oil only</p>	<p>N/A - propulsion is via hydraulic pump and track motors</p>	<p>N/A</p>	<p>Sealed Excavator Hydraulics using HN46 Zinc Free oil Normal ≤23/21/16 Abnormal >23/21/16 Critical > >4µ No spec/22/17</p> <p>Sealed Excavator Hydraulics using mixed HN46 Normal ≤ >4µ No Spec/17/14 Report Only Abnormal > >4µ No Spec/22/17 Report Only Critical Not Established</p>	<p>N/A - propulsion is via hydraulic pump and track motors</p>		<p>The Standards reported for Deere seem to be rather high. Deere Excavators are built by Hitachi who has a standard of 17/15/13 for Hitachi brand Excavators</p>	<p>For Engine Oil John Deere publication 50017 1/6/2014</p> <p>For Hydraulic Oil John Deere publication RES 10060 8/22/2011 .</p>
John Deere Excluding Excavators Cleanliness depends on the type system	<p>For Premium Plus 50 II SAE 14W/40, 10W/30, 0W/40 only >4µ- no spec/19/14 on new oil only</p>	<p>Sealed Hydrostatic Trans using Engine oil Normal ≤23/17/14 Abnormal >23/17/14 Critical >4 no spec/20/17</p>	<p>N/A</p>	<p>Unsealed Hydraulics BHL, MG, 4WDL, Skidders, Tracked or wheel Feller Bunchers using Engine oil or HyGard not mixed Normal ≤22/18/15 Abnormal 23/19/16 Critical ≥>4µ No Spec/21/18</p>				<p>For FF Hydraulic Oil John Deere publication RES 10060 8/22/2011</p>
	<p>For Premium Plus 50 II SAE 14W/40, 10W/30, 0W/40 only -/19/14 on new oil only</p>	<p>Sealed Hydrostatic Trans using Mixed Oil Normal ≤ >4µ no spec/22/16 Abnormal > >4µ No Spec /22/16 Critical Not Established</p>	<p>N/A</p>	<p>Unsealed Hydraulics BHL, MG, 4WDL, Skidders, Tracked or wheel Feller Bunchers using Mixed Engine oil & HyGard Normal ≤ >4µ No Spec/21/16 Report only Abnormal > >4µ No Spec/21/16 Report only Critical Not Established</p>				



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John Deere Harvesters/Forwarders	For Premium Plus 50 II SAE 14W/40, 10W/30, 0W/40 only >4µ- no spec/19/14 on new oil only		N/A	<p>New Harvesters/Forwarders Series D & E with by pass filtration up to 10 hours using AW 46 Normal ≤ 20/16/13 Abnormal > 20/16/13 Critical Not Established</p> <p>New Harvesters/Forwarders Series D & E with by pass filtration over 100 hours using AW 46 Normal ≤ 19/15/12 Abnormal > 22/17/14 Critical ≥ >4µ No Spec /18/15</p> <p>Harvesters/Forwarders Series D Without By Pass Filtration using AW 46 Normal ≤ 19/17/14 Abnormal > 19/17/14 Critical ≥ >4µ No Spec /20/17</p>				
<p>Fiat-Hitachi. This JV was founded in 1986 to produce excavators in Italy. It ended in 2001 and became Fiat Kobelco.</p> <p>Fiat-Kobelco The JV relationship between Fiat and Kobelco was ended in 2012 and Kobelco now operates independently under their own name</p>	These machines are no longer produced and the Joint Ventures between Fiat, Hitachi and Kobelco that produced them has been closed. Suggest that the cleanliness standards for KOBELCO are used. See below.							
Grove Cranes, Div of Manitowoc	None	None	N/A	19/17/14 for both FF and In service oil	None		Applies to all Grove hydraulic models, Truck Mounted Cranes, Rough Terrain Cranes and "Yard Boss" cranes. Spec confirmed with Grove Crane. Tech support 12/4/2014	Grove Spec# 6829006444 and must meet John Deere JDM J20C
Hitachi Excavators	None	None	N/A	17/15/13 for fill and in service oils for excavators.	N/A - propulsion is via hydraulic pump and track motors			Hitachi Contamination Control Filter System Handbook made by Pall Filter. Hitachi Corporate declined to provide information.
Hitachi Haul Trucks (Formerly Euclid -Hitachi)				>4µ No Spec/17/14 for hydraulic systems in rigid frame haul trucks common hydraulic hoist, steering and brake cooling circuit				Hitachi Construction Truck Manufacturing Bulletin #35202



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Kobelco	None	N/A	N/A	19/17/14	N/A - propulsion is via hydraulic pump and track motors		Kobelco specs indicate NAS class 8 or cleaner. This is equivalent to ISO 19/17/14	Kobelco US General Service Manager G Lumpkins
Komatsu				>4μ No Spec/21/16				Komatsu Bulletin "Hydraulic System Cleanliness Criteria" #AA97093 dated 12/9/2012
Liebherr - Mining Haul Trucks	-----No applicable ISO cleanliness standards-----							Engineer Mike Melton, Liebherr, Newport News, Va 12/2/20144
Liebherr- Hydraulic Excavators								
McNeilus Ready Mix Truck Hydraulics including Standard, Bridge Formula and Front Discharge				21/18/13 as of 11/2013 see Notes			Has established a stricter target of 17/14/12 to be adopted perhaps in 2015.	Sr Chief Engineer - Controls on 11/20/2014, at McNeilus Co., Dodge Center, Minnesota.
McNeilus - Waste Trucks				18/15/13 as of 11/2013 See Notes			Has established a stricter target of 17/14/12 to be adopted perhaps in 2015	Sr Chief Engineer - Controls on 11/20/2014, at McNeilus Co., Dodge Center, Minnesota.
Putzmeister - concrete pumps	None	None	N/A	≤ 20/18/13	None		Markets a dehydrating filter called 45 DR Dehydrator-Filter for oil system cleanliness & dryness	Putzmeister Technical Customer Service Department Sturtevant, WI 53177 USA 12/2/2014
Schwing	None	None	N/A	≤ 20/18/15 In Service, Both New Machine delivery and Factory Fill spec 18/16/13	None		Applies to Truck mounted pumps, stationary pump and mixer truck hydraulic systems	Schwing America Tech Service Manager, Jeff Popa, Schwing America Inc. 5900 Centerville Road, St Paul Mn. 55127
Volvo CE see comments							Volvo CE is currently preparing cleanliness standards, per engineering staff in Eskilstuna, Switzerland	
Volvo BM (since 1995 renamed Volvo CE)							See Volvo CE section above	