

INDUSTRIAL OILS

USER GUIDE



ISO Classification

What is ISO?

International Organization for Standardization (ISO) is a private NGO that has been founded in 1987 with its headquarters in Geneva. ISO members are national bodies of standardization from over 110 countries amongst which also Romania. Romania's representation in ISO is done by ASRO – the Romanian Association of Standardization, a public non-profit organization.

The ISO 3348 viscosity classification

ISO classification is recommended specifically for industrial applications. The reference temperature is of 40°C and it represents the operating temperature in machinery. Each subsequent Viscosity grade (VG) within the classification has approximately a 50% higher viscosity, whereas the minimum and maximum values of each grade ranges $\pm 10\%$ from the mid point. For example, ISO VG 22 refers to a viscosity grade of 22 cSt $\pm 10\%$ at 40°C. The viscosity at different temperatures can be calculated using the viscosity at 40°C and the viscosity index (VI), which represents the temperature dependency of the lubricant.

DIN Classification

Deutsches Institut für Normung e.V. (DIN) is the German organization responsible for quality classifications. It was founded in 1972 and is part of the TÜV Rheinland group as of 2005.

ISO 3348 Viscosity grades	Kinematic viscosity @ 40°C [mm ² /cSt]		
	Middle value	Minimum	Maximum
ISO VG 2	2,2	1,98	2,42
ISO VG 3	3,2	2,88	3,52
ISO VG 5	4,6	4,14	6,06
ISO VG 7	6,8	6,12	7,48
ISO VG 10	10	9,0	11,0
ISO VG 15	15	13,5	16,5
ISO VG 22	22	19,8	24,2
ISO VG 32	32	28,8	35,2
ISO VG 46	46	41,4	50,6
ISO VG 68	68	61,2	74,8
ISO VG 100	100	90	110
ISO VG 150	150	135	165
ISO VG 220	220	198	242
ISO VG 320	320	288	352
ISO VG 460	460	414	506
ISO VG 680	680	612	748
ISO VG 1000	1000	900	1100
ISO VG 1500	1500	1350	1650

HYDRAULIC OILS

ISO 6743-4 CLASSIFICATION OF HYDRAULIC BASE OILS

ISO-HH Mineral oils without inhibitors

ISO-L-HH Mineral oils with corrosion inhibitors

ISO-L-HL Superior quality oils used in oil circulation systems and in hydraulic circuits. They are obtained from paraffinic base oils with antioxidant and antirust additives

ISO-L-HM Oils used in all types of hydraulic systems formulated from paraffinic base oils formulated with anti-wear, antirust, and antioxidant additives

ISO-L-HR HL type oils with a high viscosity index

ISO-L-HV Specially formulated oils to be used in hydraulic systems that require fluids with a high viscosity index and a low pouring point

ISO-L-HG HM type oils with shock absorption properties

ISO-L-HS Synthetic oils

DIN 51524 CLASSIFICATIONS

DIN 51524 Part 1 multipurpose oil that contains antioxidation and anticorrosion additives

DIN 51524 Part 2 HL standard hydraulic oil that contains H oil and anticorrosion additives (ISO-HL)

DIN 51524 Part 2 HLP standard hydraulic oil that contains HL oil and EP additives (ISO HM)

DIN 51524 Part 3 HVLP(HVI) High index viscosity hydraulic oil that is compatible with hydraulic systems that work in a variety of climates and temperatures (ISO HV)

DIN 51524 HLPD High performance hydraulic oil, based on mineral base oil with EP cleaning additives, which emulsify with water and are recommended to be used in interior hydraulic systems and the lubrication of bearings (ISO-L-HM)

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INDUSTRIAL GEAR OILS

ISO 3448 CLASSIFICATION

CKB Mineral base oil that contains antioxidant, antirust and antifoaming additives

CKC CKB mineral base oils that contains anti-wear and extreme pressure additives

CKD CKC type base oil that can be used in high temperatures with a high degree of thermal and oxidation stability

CKE CKB type oil with a low friction coefficient

CKS Oil with anticorrosive and antifriction additives that can be used in extreme temperatures with a high degree of oxidation stability

CKT CKS type oil used in heavy-duty applications

CKG Grease with anti-wear properties that can be used in high-pressure applications

CKH bituminous oil with antirust properties

CKJ CKH type oil with anti-wear properties that can be used in high-pressure applications

CKL Greases with good thermal stability and anti-wear, antirust additives that can be used in high-pressure applications

CKM Heavy-duty oils with antirust properties

DIN 51517 CLASSIFICATION

DIN 51517 Partea 1 - C - Oil without additives used to lubricate through immersion

DIN 51517 Partea 2 - CL - Industrial gear oil enhanced with anticorrosion, anti-wear, antirust and anti-oxidation additives

DIN 51517 Partea 3 - CLP - Industrial gear oil with very good anticorrosion and anti-wear properties characteristic to friction points for continuous use and lubrication through immersion

TURBINE OIL

ISO DP 6743/5 CLASSIFICATION FOR STEAM TURBINES

ISO-L-TSA - highly refined mineral base oil that contains rust and oxidation inhibitors

ISO-L-TSE - TSA type oil for heavy-duty use

ISO-L-TSD - Oil based on phosphate esters that are fire retardant

ISO DP 6743/5 CLASSIFICATION FOR GAS TURBINES

ISO-L-TGA - Highly refined mineral base oil that contains rust and oxidation inhibitors

ISO-L-TGB - Highly refined mineral base oil that contains rust and oxidation inhibitors for turbines working at high temperatures

ISO-L-TGE - TGA type oil for heavy-duty use

ISO-L-TGF - TGB type oil for turbines that work heavy-duty at high temperatures

ISO-L-TGCH - Polyalphaolefin based turbine oil

ISO-L-TGCE - Ester based synthetic turbine oil

DP 6743/5 CLASSIFICATION FOR TURBINES WITH COMBINED CYCLES

ISO-L-TGSB - highly refined oil that contains rust and oxidation inhibitors that work at high temperatures

ISO-L-TGSE - TGSB type oils for heavy-duty use that works at high temperatures

DIN 51515 CLASSIFICATION

DIN 51515 Partea 1 - L-TD - Oil for turbines operating at normal temperatures

DIN 51515 Partea 2 - L-TG - Oil for turbines operating at high temperatures

COMPRESSOR OIL

ISO 6743 -3A CLASSIFICATION

ISO-L-DAA - Selected paraffinic-based oil for lubricating air compressors with antioxidant, antirust and anti-wear additives

ISO-L-DAB - Polyalphaolefin based oil for piston compressors enhanced with antioxidant, antirust, anti-wear additives that operate in medium loads

ISO-L-DAG - Selected paraffinic-based oil specially formulated for the lubrication of air compressors with antioxidant, antirust and anti-wear additives

ISO-L-DAH - Polyalphaolefin based synthetic oil specially formulated for the lubrication of air compressors with antioxidant, antirust and anti-wear additives

DIN 51506 CLASSIFICATION

DIN 51506 VBL Oil for compressors operating at temperatures of up to 140°C

DIN 51506 VCL Oil for compressors operating at temperatures of up to 160°C

DIN 51506 VDL Oil for compressors operating at temperatures of up to 220°C