

MARINE SERIES

Diesel Engine Oils for Marine Use

As marine engines have progressed in recent years in the areas of high output and low fuel consumption, the requirements for the performance of a lubricant have become stricter.

The MARINE SERIES lineup consists of three types of oils: C Series (cylinder oil), S Series (system oil) and T series (trunk-piston engine oil). The numbers following the letter C, S, or T in the name of each oil type represent the oil's base number and SAE viscosity grade

(1) MARINE C1005

● Features

1. Optimal as a cylinder lubricant for use in new generation cross-head diesel engines using high-sulfur fuels

MARINE C1005 is an optimal cylinder oil, which has high base number of 100, for highly efficient turbocharging, high-output engine such as Mark 8 from MAN Energy Solutions, Win GD(Wartsila) and J-ENG which use high-sulfur fuel oil (sulfur content:0.5 to 3.5%) and also same type of new generation engines.

2. Outstanding acid-neutralizing and anti-wear properties

If cylinder oil of base number 70 is used for new Mark 8 engine with high-sulfur fuel, low temperature corrosion may occur at low load operation. To avoid the risk of corrosion, MARINE C1005 is formulated to have base number of 100mgKOH/g. It also maintains the insides of cylinders clean and keeps wear on liner rings and other components to a minimum, enabling it to operate over a long period of time between overhauls with high detergent and dispersion capabilities, excellent acid-neutralizing capability, and outstanding oil spreading performance and anti-wear property.

●Typical Properties of MARINE C Series Oil

	C1005	C705	C405	C255
SAE viscosity grade	50	50	50	50
Appearance	Brown liquid	Brown liquid	Brown liquid	Brown liquid
Density (15°C)	g/cm ³ 0.954	0.936	0.918	0.908
Flash point (COC)	°C 240	264	264	290
Kinematic viscosity (40°C)	mm ² /s 216	226	236	233
(100°C)	mm ² /s 20.5	20.5	20.5	20.5
Viscosity index	111	106	101	102
Pour point	°C -15.0	-12.5	-12.5	-12.5
Base number (perchloric acid method)	mgKOH/g 100	70	40	25
Packaging	BK, D/M			

Note: The values of typical properties are subject to change based on revisions of the product without notification. (June 2015)

(2) MARINE C705

● Features

1. Optimal as a cylinder lubricant for use in cross-head diesel engines

MARINE C705 demonstrates superior performances using high-viscosity heavy fuel oil in large high-supercharged, high-output engines such as those from MAN Energy Solutions, Win GD (Wartsila) and J-ENG.

2. Outstanding acid-neutralizing and anti-wear properties

With high detergent and dispersion capabilities, excellent acid-neutralizing capability, and outstanding oil spreading performance and anti-wear property, MARINE C705 keeps the insides of cylinders clean and keeps wear on liner rings and other components to a minimum, enabling it to operate over a long period of time between overhauls.

(3) MARINE C405

● Features

1. Optimal as a cylinder lubricant for use in cross-head diesel engines using low-sulfur fuels

MARINE C405 is an optimal cylinder oil when using marine diesel fuel or low-sulfur heavy fuel (sulfur content : less than 0.5%).

2. Outstanding acid-neutralizing and anti-wear properties

MARINE C405 indicates high detergent and dispersion capabilities, excellent acid-neutralizing capability, outstanding oil spreading performance and anti-wear property, while holding down the base number to 40mgKOH/g, because the high base number of MARINE C705 becomes superfluous when low-sulfur-fuel is used. It maintains the insides of cylinders clean and keeps wear on liner rings and other components to a minimum, enabling it to operate over a long period of time between overhauls.

3. Approval from main engine licenser

MARINE C405 is approved by main engine licenser, MAN Energy Solutions, Win GD (Wartsila) and J-ENG, as diesel engine oil for low-sulfur heavy fuel.

(4) MARINE C255

● Features

1. Optimal as a cylinder lubricant for use in cross-head diesel engines using very low- sulfur fuels

MARINE C255 is an optimal cylinder oil when using marine diesel fuel or very low-sulfur heavy fuel (sulfur content : less than 0.1%).

2. Outstanding acid-neutralizing and anti-wear properties

MARINE C255 indicates high detergent and dispersion capabilities, excellent acid-neutralizing capability, outstanding oil spreading performance and anti-wear property, while holding down the base number to 25mgKOH/g. It maintains the insides of cylinders clean and keeps wear on liner rings and other components to a minimum, enabling it to operate over a long period of time between overhauls.

3. Approval from main engine licenser

MARINE C255 is approved by main engine licenser, MAN Energy Solutions and J-ENG, as diesel engine oil for very low-sulfur heavy fuel.

(5) MARINE C504

● Features

1. Optimal as a cylinder lubricant for use in trunk-piston diesel engines

MARINE C504 demonstrates superior performances as cylinder oil for use in large and medium-sized trunk-piston engines. MARINE C504 is the best to use for trunk-piston engines made by Hanshin Diesel using heavy fuel oil.

2. Outstanding anti-corrosive and detergent properties

MARINE C504, which prevents corrosion and wear in engine parts and has outstanding detergent and dispersive properties, helps prevent adhesion of pistons and cylinders due to deposits including combustion products and unburned hydrocarbons. It prolongs the life of engine parts.

(6) MARINE S20, MARINE S30

● Features

1. Oils exclusively for use in cross-head engine systems

MARINE S contains carefully selected antioxidants, detergents and dispersants, exclusively for use in cross-head engine systems. It features outstanding thermal resistance and water resistance in addition to high levels of acid-neutralization and soot dispersancy characteristics.

2. Outstanding detergent and dispersive properties

MARINE S maintains outstanding detergent and dispersive properties when it is mixed with cylinder drip oil and its viscosity and base number are increased. It prolongs the life of engine parts.

(7) MARINE T303, T304, T403, T404, T504

● Features

1. High-base-number engine oil for trunk-piston engines

MARINE T demonstrates outstanding performances in trunk-piston engines for use with heavy fuel oil. MARINE T has high base number (30-50 BN) and demonstrates outstanding acid-neutralizing property and detergency.

● Typical Properties of MARINE C 504

SAE viscosity grade		40
Appearance		Dark brown liquid
Density (15°C)	g/cm ³	0.928
Flash point (COC)	°C	240
Kinematic viscosity (40°C)	mm ² /s	157
	(100°C)	mm ² /s
Viscosity index		98
Pour point	°C	-10.0
Base number (perchloric acid method)	mgKOH/g	50
Packaging		BK, D/M

Note: The values of typical properties are subject to change based on revisions of the product without notification. (August 2013)

● Typical Properties of MARINE S Series Oil

	S20	S30
SAE viscosity grade	20	30
Appearance	Yellow liquid	Yellow liquid
Density (15°C)	g/cm ³ 0.884	0.895
Flash point (COC)	°C 242	268
Kinematic viscosity (40°C)	mm ² /s 71.4	109
	(100°C)	mm ² /s 9.03
Viscosity index	100	96
Pour point	°C -15.0	-12.5
Base number (perchloric acid method)	mgKOH/g 7	7
Packaging	BK, D/M, P/L	

Note: The values of typical properties are subject to change based on revisions of the product without notification. (August 2013)

2. Outstanding anti-wear property and good water resistance

MARINE T helps prevent corrosion and wear in engine parts. It also has good water separation and water-resistant properties.

MARINE T is used as oil in mid-to high-speed trunk-piston diesel engines and as system oil in large, low-speed diesel engines. With medium and low base numbers (20, 13 BN), it demonstrates outstanding acid-neutralizing and detergency. MARINE T

helps prevent corrosion, ring stick and wear in engine parts, keeps engines clean, and provides smooth lubrication.

●Typical Properties of MARINE T Series Oil

		T303	T304	T403	T404	T504
SAE viscosity grade		30	40	30	40	40
Appearance		Brown liquid	Auburn liquid	Auburn liquid	Brown liquid	Dark brown liquid
Density (15°C)	g/cm ³	0.905	0.907	0.907	0.913	0.919
Flash point (COC)	°C	260	262	242	258	256
Kinematic viscosity (40°C)	mm ² /s	91.0	137	92.0	133.5	129.4
	(100°C)	mm ² /s	10.9	14.4	11.2	14.4
Viscosity index		105	104	107	106	108
Pour point	°C	-15.0	-15.0	-12.5	-12.5	-12.5
Base number (perchloric acid method)	mgKOH/g	30	30	40	40	50
Packaging		BK, D/M, P/L		D/M	BK, D/M	

Note: The values of typical properties are subject to change based on revisions of the product without notification. (August 2013)

(8) MARINE T203, T204, T102, T103, T104

● Features

1. Mid-base-number engine oil for trunk-piston engines

MARINE T is used as oil in mid-to high-speed trunk-piston diesel engines and as system oil in large, low-speed diesel engines.

With medium and low base numbers (20,

13 BN), it demonstrates outstanding acid-neutralizing and detergency. MARINE T helps prevent corrosion, ring stick and wear in engine parts, keeps engines clean, and provides smooth lubrication.

●Typical Properties of MARINE T Series Oil

		T203	T204	T102	T103	T104
SAE viscosity grade		30	40	20	30	40
Appearance		Brown liquid	Brown liquid	Brown liquid	Brown liquid	Brown liquid
Density (15°C)	g/cm ³	0.899	0.902	0.892	0.894	0.898
Flash point (COC)	°C	250	258	240	258	262
Kinematic viscosity (40°C)	mm ² /s	95.0	139.2	57.5	97.9	146.3
	(100°C)	mm ² /s	11.0	14.4	7.86	11.5
Viscosity index		102	101	100	100	99
Pour point	°C	-22.5	-22.5	-25.0	-22.5	-22.5
Base number (perchloric acid method)	mgKOH/g	20	20	13	13	13
Packaging		BK, D/M, P/L				

Note: The values of typical properties are subject to change based on revisions of the product without notification. (August 2013)

2. Extend the life of engine parts

properties.

MARINE T prevents ring-sticking and carbon deposition due to the performance of heavy-duty(HD) type diesel engine oil. It has also good water separation and water-resistant



Handling Precautions

▼ Follow these precautions when handling this product.

MARINE C1005, MARINE C705, MARINE C504, MARINE S30, MARINE S20, MARINE T404, MARINE T403, MARINE T304, MARINE T303, MARINE T204, MARINE T203, MARINE T104, MARINE T103, MARINE T102

Composition :	Base Oil, Additives
Precautionary pictograms:	Not applicable
Signal word:	Not applicable
Hazard Statement:	Not applicable
Precautionary Statements:	
Prevention	<ul style="list-style-type: none">• Do not handle until all safety precautions have been read and understood.• Wear protective gloves/protective clothing/eye protection/face protection.• Do not allow the eyes to become exposed to the product. Do not swallow the product.• Wash hands thoroughly after handling.• Do not eat, drink or smoke when using this product.
Response	<ul style="list-style-type: none">• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.• IF ON SKIN: Wash with plenty of soap and water.
Storage	<ul style="list-style-type: none">• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.• Containers that have been opened must be tightly sealed.
Disposal	<ul style="list-style-type: none">• Dispose of contents/container in accordance with local/regional/national/international regulations.• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.



Handling Precautions

▼ Follow these precautions when handling this product.

MARINE C405, MARINE C255

Composition :	Base Oil, Additives
Precautionary pictograms:	
Signal word:	Warning
Hazard Statement:	May cause allergic skin reaction
Precautionary Statements:	<ul style="list-style-type: none">• Do not handle until all safety precautions have been read and understood.• Wear protective gloves/protective clothing/eye protection/face protection.• Do not allow the eyes to become exposed to the product. Do not swallow the product.• Contaminated work clothing should not be allowed out of the workplace.• Avoid breathing dust/fume/gas/mist/vapours/spray.• Wash hands thoroughly after handling.• Do not eat, drink or smoke when using this product.
Prevention	
Response	<ul style="list-style-type: none">• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.• IF ON SKIN: Wash with plenty of soap and water.• Take off contaminated clothing and wash before reuse.• If skin irritation or a rash occurs: Get medical advice/attention.
Storage	<ul style="list-style-type: none">• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.• Containers that have been opened must be tightly sealed.
Disposal	<ul style="list-style-type: none">• Dispose of contents/container in accordance with local/regional/national/international regulations.• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.



Handling Precautions

▼ Follow these precautions when handling this product.

MARINE T504

Composition :	Base Oil, Additives
Precautionary pictograms:	
Signal word:	Warning
Hazard Statement:	Causes skin irritation
Precautionary Statements:	<ul style="list-style-type: none">• Do not handle until all safety precautions have been read and understood.• Wear protective gloves/protective clothing/eye protection/face protection.• Do not allow the eyes to become exposed to the product. Do not swallow the product.• Wash hands thoroughly after handling.• Do not eat, drink or smoke when using this product.
Prevention	
Response	<ul style="list-style-type: none">• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.• IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.• If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.• IF ON SKIN: Wash with plenty of soap and water.• Take off contaminated clothing and wash before reuse.• If skin irritation occurs : Get medical advice/attention.
Storage	<ul style="list-style-type: none">• The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.• Containers that have been opened must be tightly sealed.
Disposal	<ul style="list-style-type: none">• Dispose of contents/container in accordance with local/regional/national/international regulations.• If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.