

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 engines such as MAN Energy Solutions Mark 8 or later, Win GD (Wartsila) and J-ENG, which use high-sulfur fuel oil (sulfur content: 0.5 to 3.5%).

2. Outstanding acid-neutralizing and anti-wear properties

If cylinder oil of base number 70 is used for Mark 8 or later 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 100 mgKOH/g. It has high detergent and dispersion capabilities, excellent acid-neutralizing capability, outstanding oil spreading performance and anti-wear property so that it can maintain the insides of cylinders clean and keep wear on liner rings and other components to a minimum, enabling operation over a long period of time between overhauls.

● 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 0.953	0.936	0.918	0.908
Flash point (COC)	°C 274	284	276	294
Kinematic viscosity (40°C)	mm ² /s 233	237	235	234
(100°C)	mm ² /s 20.7	20.5	20.6	20.6
Viscosity index	104	101	102	103
Pour point	°C -32.5	-30.0	-12.5	-12.5
Base number (perchloric acid method)	mgKOH/g 97.8	68.7	41.2	25.4
Packaging	BK, D/M			

Note: The values of typical properties are subject to change based on revisions of the product without notification. (January 2023)

(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 operation 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 40 mgKOH/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 operation over a long period of time between overhauls.

3. Approval from main engine licensor

MARINE C405 is approved as Category I diesel engine oil for low-sulfur heavy fuel by main engine licensor, MAN Energy Solutions.

(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 25 mgKOH/g, because the high base number of MARINE C705 or C405 becomes superfluous when very 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 operation over a long period of time between overhauls.

(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 is exclusively for use in heavy-duty (HD) type cross-head engine systems, containing carefully selected antioxidants, detergents and dispersants. It features outstanding thermal resistance and water resistance in addition to high levels of acid-neutralization and soot dispersibility.

2. Outstanding detergent and dispersive properties

MARINE S maintains outstanding detergent and dispersive properties even when it is mixed with cylinder drip oil and its viscosity and base number increase. 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 T30X, T40X and T504 demonstrate outstanding performances in trunk-piston engines for use with heavy fuel oil. They have high base number (30-50 BN) and demonstrate 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	0.920
Flash point (COC)	°C	262
Kinematic viscosity	(40°C) mm ² /s	149
	(100°C) mm ² /s	15.1
Viscosity index		102
Pour point	°C	-15.0
Base number (perchloric acid method)	mgKOH/g	52.7
Packaging		BK, D/M

Note: The values of typical properties are subject to change based on revisions of the product without notification. (January 2023)

● 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 0.887	0.892
Flash point (COC)	°C 256	274
Kinematic viscosity	(40°C) mm ² /s 68.0	108
	(100°C) mm ² /s 8.89	11.9
Viscosity index	104	99
Pour point	°C -15.0	-20.0
Base number (perchloric acid method)	mgKOH/g 7.3	7.2
Packaging	BK, D/M, P/L	

Note: The values of typical properties are subject to change based on revisions of the product without notification. (January 2023)

2. Outstanding anti-wear property and good water resistance

MARINE T30X, T40X and T504 help prevent corrosion, wear, ring-sticking and carbon deposition in engine parts. They also have good water separation and water-resistant properties.

●Typical Properties of MARINE T Series Oil

		T303	T304	T403	T404	T504
SAE viscosity grade		30	40	30	40	40
Appearance		Brown liquid	Brown liquid	Brown liquid	Brown liquid	Dark brown liquid
Density (15°C)	g/cm ³	0.902	0.907	0.905	0.913	0.919
Flash point (COC)	°C	262	274	240	264	256
Kinematic viscosity (40°C)	mm ² /s	95.0	142	80.2	138	130
	(100°C)	mm ² /s	11.4	14.8	10.5	14.7
Viscosity index		107	104	115	106	108
Pour point	°C	-20.0	-17.5	-17.5	-15.0	-12.5
Base number (perchloric acid method)	mgKOH/g	30.3	30.3	41.7	40.5	50.2
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. (January 2023)

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

● Features

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

MARINE T20X and T10X are 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 (20BN,13BN), they demonstrate outstanding acid-neutralizing and detergency. They help prevent corrosion and wear in engine parts, keeps engines clean, and provides smooth lubrication.

2. Extend the life of engine parts

MARINE T20X and T10X prevent ring-sticking and carbon deposition due to the performance of heavy-duty (HD) type diesel engine oil. They have also good water separation and water-resistant properties.

●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	0.897	0.902	0.889	0.893	0.896
Flash point (COC)	°C	264	274	248	262	272
Kinematic viscosity (40°C)	mm ² /s	99.3	140	57.6	103	139
	(100°C)	mm ² /s	11.6	14.4	7.96	11.7
Viscosity index		105	101	104	101	101
Pour point	°C	-25.0	-22.5	-25.0	-25.0	-25.0
Base number (perchloric acid method)	mgKOH/g	20.4	20.4	12.9	13.1	13.3
Packaging		BK, D/M, P/L				

Note: The values of typical properties are subject to change based on revisions of the product without notification. (January 2023)



Handling Precautions

▼ Follow these precautions when handling this product.

MARINE C1005, MARINE C705

Composition :	Base Oil(s), Additives
Hazard pictograms:	
Signal word:	Danger
Hazard Statement:	May damage fertility or the unborn child. Toxic to aquatic life with long lasting effects.
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.• Avoid release to the environment.• Obtain special instructions before use.• 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/doctor.• 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.• IF exposed or concerned: Get medical advice/attention.• Collect spillage.
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.• Store locked up.
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.

MARINE C405, MARINE S30, MARINE S20

Composition :	Base Oil(s), Additives
Hazard pictograms:	Not applicable
Signal word:	Not applicable
Hazard Statement:	Not applicable
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/doctor. • 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.

MARINE C255

Composition :	Base Oil(s), Additives
Hazard pictograms:	
Signal word:	Warning
Hazard Statement:	May cause an allergic skin reaction. Harmful to aquatic life Harmful to aquatic life with long lasting effects.
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. • Avoid release to the environment. • 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/doctor. • 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. • If skin irritation or a rash occurs: Get medical advice/attention. • Take off contaminated clothing and wash it before reuse.
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.

MARINE C504

Composition :	Base Oil(s), Additives
Hazard pictograms:	
Signal word:	Danger
Hazard Statement:	May damage fertility or the unborn child.
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. • Obtain special instructions before use. • 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/doctor. • 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. • IF exposed or concerned: 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. • Store locked up.
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.

MARINE T303, MARINE T304, MARINE T403, MARINE T404, MARINE T504,
 MARINE T203, MARINE T204, MARINE T102, MARINE T103, MARINE T104

Composition :	Base Oil(s), Additives
Hazard pictograms:	
Signal word:	Warning
Hazard Statement:	Causes serious eye irritation May cause an 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.
Response	<ul style="list-style-type: none"> • IF SWALLOWED: Immediately call a POISON CENTER/doctor. • 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. • If skin irritation or a rash occurs: Get medical advice/attention. • IF IN EYES: Rinse cautiously with water for several minutes. • Remove contact lenses, if present and easy to do. Continue rinsing. • If eye irritation persists: Get medical advice/attention. • Take off contaminated clothing and wash it before reuse.
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.