

# Marine DEF

## Marine Grade Diesel Exhaust Fluid



### Features & Benefits

- Meets ISO 18611-1:2014
- Non-toxic, non-polluting, non-hazardous and non-flammable
- Reduces harmful emissions
- Increases fuel efficiency

### Typical Results

Test	Units	Typical	Min	Max
Urea Content	% (m/m)	40.1	39.0	41.0
Density at 20°C	kg/L	1.1142	1.050	1.177
Refractive Index at 20°C	-	1.3958	1.3934 <sup>1</sup>	1.3982 <sup>2</sup>
Alkalinity (as Ammonia)	% (m/m)	<0.1	-	0.5
Biuret	% (m/m)	0.3	-	0.8
Aldehydes	mg/kg	1.3	-	100
Insoluble matter	mg/kg	2.6	-	50
Phosphates	mg/kg	0.3	-	1
Calcium	mg/kg	<0.1	-	1
Iron	mg/kg	<0.1	-	1
Copper	mg/kg	<0.1	-	1
Zinc	mg/kg	<0.1	-	1
Chromium	mg/kg	<0.1	-	1
Nickel	mg/kg	<0.1	-	1
Aluminum	mg/kg	<0.1	-	1
Magnesium	mg/kg	<0.1	-	1
Sodium	mg/kg	<0.1	-	1
Potassium	mg/kg	<0.1	-	1
Identity (FTIR)	-	Identical to reference	-	-

<sup>1</sup> Minimum Refractive Index based on 0.0% Biuret  
<sup>2</sup> Maximum Refractive Index based on 0.8% Biuret

**IRVING MARINE DEF** (Diesel Exhaust Fluid) is a 40% Aqueous Urea Solution (AUS 40) manufactured with high purity urea mixed with quality electro deionized (EDI) water designed to meet the specifications of ISO 18611-1:2014 for NO<sub>x</sub> emissions of large diesel engines on ships.

**IRVING MARINE DEF** is produced to exceed the quality characteristics defined in ISO 18611-1. Typical results of the contaminants analysed are far lower than the maximum set out by the ISO standard. Typical results are within the stringent quality specification outlined in ISO 22241-1:2019 for DEF contaminants.

**IRVING MARINE DEF** is certified as a Marine Diesel Exhaust Fluid by the American Petroleum Institute.

### Sizes & Order Codes

Size	Code
Bulk	B0103101

[www.irvingoil.com/lubricants](http://www.irvingoil.com/lubricants)  
**1.800.574.5823**

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals. Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 04-10-19.

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### ISO 18611-3:2014 - Shelf Life as a Function of Storage Temperature

Constant Ambient Storage Temperature (°C)	Minimum Shelf Life (Months)
0 – 25	18
<30	12
<35	6
>35	Possible significant loss of shelf life: check every batch before use

NOTE: The main factors taken into account to define the shelf life in this table are the ambient storage temperature and the initial alkalinity of AUS 40. The difference in evaporation between vented and non-vented storage containers is an additional factor.

Never store Marine DEF in direct sunlight.

**Table Reference:**

International Organization for Standardization. (2014). Ships and marine technology – Marine NOx reduction agent AUS 40 – Part 3: Handling, transportation, and storage (ISO Standard No. 18611-3:2014). Retrieved from <https://www.iso.org/obp/ui/#iso:std:iso:18611:-3:ed-1:v1:en>

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