BV - FO TBTS ISO 8217

Fioul TBTS 380 Cst – 15 février 2026

En février 2026, le laboratoire indépendant et accrédité Bureau Veritas a analysé un échantillon de fioul lourd TBTS 380 amélioré avec la **Technologie des Enzymes XBEE**. L'analyse démontre que ce carburant pour les moteurs VLSFO 380 est en conformité avec la norme ISO 8217:2017.

Conclusions :

Les essais ont été réalisés après incorporation d'une dose volumétrique de 1/4000 de l'additif XBEE, suivie d'une période de conservation de l'échantillon à température constante de deux semaines. L'échantillon additivé par la technologie XBEE est conforme aux limites fixées par les spécifications techniques de la norme ISO 8217:2017.

Analyses	Normes	Sans XBEE	Avec XBEE	Unités	Limites
Densité à 15°C	ASTM D 4052	960.8	961.0	kg/m³	991.00 max
Résidu de carbone MCC	ASTM D 4530	8.7	9.0	% (m/m)	18.00 max
Viscosité à 50°C	ASTM D 445	133.1	140.5	mm²/s	-
Point éclair	ASTM D 93	98.0	97.5	°C	60 min
Soufre	EN ISO 8754	0.50	0.49	% (m/m)	1.50 max
Cendres	ASTM D 482	0.029	0.033	% (m/m)	0.10 max
Teneur en eau	ASTM D 95	0.15	0.15	% v/v	0.50 max
Point d'écoulement	ASTM D 97	-3	-3	°C	30 max
Acidité	ASTM D 664	0.11	0.15	mgKOH/g	2.5 max
Sulfure d'hydrogène (H2S)	IP 570-Proc. A	<0.60	<0.60	mg/kg	2.00 max
CCAI	Ref. Annex F	834	833	quotation	870.00 max
Sédiments totaux par filtration	ISO 10307-2	0.02	<0.01	% (m/m)	0.10 max
Aluminium (Al) + Silicone (Sl)	IP 501	44	39	mg/kg	60 max
Sodium (Na)	IP 501	23	19	mg/kg	100 max
Calcium (Ca)	IP 501	13	13	mg/kg	30 max
Zinc (Zn)	IP 501	5	5	mg/kg	15 max
Vanadium (Va)	IP 501	10	10	mg/kg	350 max
Phosphore	IP 501	6	6	mg/kg	15 max

Annexes

Rapports originaux

Bureau Veritas Commodities Antwerp NV
Romeynsweel 14
2030 Antwerp
Belgium

T: +32 (0)3 546 08 88
E: labco@bureauveritas.com
commodities.bureauveritas.com

Certificate of Analysis

Our ref	**BEANT-25-11573-XXV1999883**	Asset	**Submitted Sample**
Location	**Not specified**	Seals	**None**
Product	**VLSFO 380**	Packed	**Plastic**
Reference id	**XBEE**	Submitted by	**Ourselves**
Sample received	**13-02-2026**	End of analysis	**06-03-2026**
Subject	**Submitted samples**		
Sample from	**Sample as received**		

Test	Method	Unit	Result
Density at 15 °C (a)	ASTM D4052	kg/m^3	960.8
Micro Carbon Residue	ASTM D4530	% m/m	8.7
Viscosity at 50 °C (a)	ASTM D445	mm^2/s	133.1
Flash Point PM - Proc. B (a)	ASTM D93	Deg C	98.0
Sulphur (EDF) (a)	EN ISO 8754	% m/m	0.50
Ash Content	ASTM D482	% m/m	0.029
Water by Distillation	ASTM D95	% v/v	0.15
Pour Point	ASTM D97	Deg C	-3
Acid number	ASTM D664	mg KOH/g	0.11
Hydrogen Sulphide	IP 570 - Proc. A	mg/kg	<0.60
CCAI	ref Annex F		834
Total Sediments - Potential	ISO 10307-2	% m/m	0.02
Metals	IP 501	-	-
Vanadium (V) - ICP	-	mg/kg	10
Sodium (Na) - ICP	-	mg/kg	23
Aluminium (Al) - ICP	-	mg/kg	24
Silicon (Si) - ICP	-	mg/kg	20
Aluminium + Silicon (Al+Si)	-	mg/kg	44
ULO metals content (a)	-	-	free of
_Zinc (Zn) - ICP	-	mg/kg	5
_Phosphorus (P) - ICP	-	mg/kg	6
_Calcium (Ca) - ICP	-	mg/kg	13

Unless specified, the latest version at our disposal of the test methods has been used.
The results relate only to the items tested.

AUTHORIZATION

Cynthia Bresseleers (Submitted Analysis Coordinator)

Certified to ISO 9001
Trade Register Antwerp 333.309
VAT nr. BE 0465.326.123

All tests marked by (a) are accredited by BELAC ref. 486-TEST ISO/IEC 17025

Bureau Veritas Commodities Antwerp NV
Romeynsweel 14
2030 Antwerp
Belgium

T: +32 (0)3 546 08 88
E: labco@bureauveritas.com
commodities.bureauveritas.com

Certificate of Analysis

Our ref	**BEANT-25-11573-XXV1999883**	Asset	**Submitted Sample**
Location	**Not specified**	Seals	**None**
Product	**VLSFO 380**	Packed	**Plastic**
Reference id	**XBEE**	Submitted by	**Ourselves**
Sample received	**13-02-2026**	End of analysis	**06-03-2026**
Subject	**Submitted samples**		
Sample from	**Sample as received**		

AUTHORIZATION

Bresseleers

Cynthia Bresseleers (Submitted Analysis Coordinator)

Certified to ISO 9001
Trade Register Antwerp 333.309
VAT nr. BE 0465.326.123

All tests marked by (a)
are accredited by
BELAC ref. 486-TEST
ISO/IEC 17025

Bureau Veritas Commodities Antwerp NV
Romeynsweel 14
2030 Antwerp
Belgium

T: +32 (0)3 546 08 88
E: labco@bureauveritas.com
commodities.bureauveritas.com

Certificate of Analysis

Our ref	**BEANT-25-11573-XXV1999885**	Asset	**Submitted Sample**
Location	**Not specified**	Seals	**None**
Product	**VLSFO 380 with XBEE additive**	Packed	**Plastic**
Reference id	**XBEE**	Submitted by	**Ourselves**
Sample received	**13-02-2026**	End of analysis	**13-03-2026**
Subject	**Submitted samples**		
Sample from	**Sample as received**		

Test	Method	Unit	Result
Density at 15 °C (a)	ASTM D4052	kg/m^3	961.0
Micro Carbon Residue	ASTM D4530	% m/m	9.0
Viscosity at 50 °C (a)	ASTM D445	mm^2/s	140.5
Flash Point PM - Proc. B (a)	ASTM D93	Deg C	97.5
Sulphur (EDF) (a)	EN ISO 8754	% m/m	0.49
Ash Content	ASTM D482	% m/m	0.033
Water by Distillation	ASTM D95	% v/v	0.15
Pour Point	ASTM D97	Deg C	-3
Acid number	ASTM D664	mg KOH/g	0.15
Hydrogen Sulphide	IP 570 - Proc. A	mg/kg	<0.60
CCAI	ref Annex F		833
Total Sediments - Potential	ISO 10307-2	% m/m	<0.01
Metals	IP 501	-	-
Vanadium (V) - ICP	-	mg/kg	10
Sodium (Na) - ICP	-	mg/kg	19
Aluminium (Al) - ICP	-	mg/kg	21
Silicon (Si) - ICP	-	mg/kg	18
Aluminium + Silicon (Al+Si)	-	mg/kg	39
ULO metals content (a)	-	-	free of
_Zinc (Zn) - ICP	-	mg/kg	5
_Phosphorus (P) - ICP	-	mg/kg	6
_Calcium (Ca) - ICP	-	mg/kg	13

Unless specified, the latest version at our disposal of the test methods has been used.
The results relate only to the items tested.

AUTHORIZATION

Jonathan Van Hecke (Lab Shiftleader)

Certified to ISO 9001
Trade Register Antwerp 333.309
VAT nr. BE 0465.326.123

All tests marked by (a) are accredited by BELAC ref. 486-TEST ISO/IEC 17025

Bureau Veritas Commodities Antwerp NV
Romeynsweel 14
2030 Antwerp
Belgium

T: +32 (0)3 546 08 88
E: labco@bureauveritas.com
commodities.bureauveritas.com

Certificate of Analysis

Our ref	**BEANT-25-11573-XXV1999885**	Asset	**Submitted Sample**
Location	**Not specified**	Seals	**None**
Product	**VLSFO 380 with XBEE additive**	Packed	**Plastic**
Reference id	**XBEE**	Submitted by	**Ourselves**
Sample received	**13-02-2026**	End of analysis	**13-03-2026**
Subject	**Submitted samples**		
Sample from	**Sample as received**		

AUTHORIZATION

Jonathan Van Hecke (Lab Shiftleader)

Certified to ISO 9001
Trade Register Antwerp 333.309
VAT nr. BE 0465.326.123

All tests marked by (a) are accredited by BELAC ref. 486-TEST ISO/IEC 17025