

## Linde (Thailand) Public Company Limited

RAYONG LABORATORY ADDRESS : 269 SUKHUMVIT ROAD, MAPTAPHUT, AMPHUR MUANG, RAYONG 21150 THAILAND TEL : (66) 2 3386100 ext. 5109



269 SUKHUMVII KUAD, MAPTAPHUT, AMPH			,			NSC-11SI-11S 17026 TESTING 0659
		CERTIFI	CATION C	F ANALYSIS		
	( Coca	-Cola CO2 B	everage	Grade Specifications)		
REPORT DESCRIPTION :						
REPORT No.				REPORT DATE	:	
ANALYSIS No.				ANALYSIS DATE	:	
SERVICE ORDER AGREEMENT No.				SAMPLE RECEIVED DATE	:	
EXPORT INVOICE No. or PO No. / DATE:				ANALYSIS BY		
CUSTOMER DESCRIPTION :						
CUSTOMER NAME :						
CUSTOMER ADDRESS						
TEL. No. / FAX. No.						
Attn. to						
SAMPLE DESCRIPTION (By Customer) :						
SAMPLE TYPE				SAMPLING RECEIVED IN		
SAMPLE POINT / LOCATION				- Cylinder No. :		
SAMPLING DATE				- Sampling Kit : Small Cylinder no. :		
SAMPLING TIME				Beaker no.		
SAMPLING BY				Sampling Bags no.		
ANALYSIS DESCRIPTION :				L Sumpling Bugs no.		
TEST PARAMETER	UNIT	TEST METHOD	ISBT Reference	TEST RESULT	DL	SPECIFICATION
CO2 Purity (Assay)*	% v/v	Zahm & Nagel	ISBT 2.0	99.99	99.90	Min. 99.90
Moisture Content / Water (H2O)*	ppm v/v	Moisture Analyzer	ISBT 3.0	4.0	0.25	Max. 20.0
Oxygen (O2)*	ppm v/v	Inhouse method ?	ISBT 4.0	7.3	0.7	Max. 30.0
Ammonia (NH3)*	ppm v/v	Detector Tube	ISBT 6.0	nd	0.1	Max. 2.5
Nitrogen Dioxide (NO2)*	ppm v/v	Detector Tube	ISBT 7.1	nd	0.1	Max. 2.5
Nitric Oxide (NO)*	ppm v/v	Detector Tube	ISBT 7.2	nd	0.25	Max. 2.5
Non-Volatile Organic Residue (NVOR)*	ppm v/v	Gravimatry	ISBT 8.0	nd	1.5	Max. 5.0
Non-Volatile Residue (NVR)*	ppm v/v	Gravimatry	ISBT 8.0	nd	1.5	Max. 10.0
Methanol (CH3OH)*	ppm v/v	GC - FID	ISBT 9.0	nd	0.1	Max. 10.0
Phosphine (PH3)*	ppm v/v	Detector Tube	ISBT 19.0	nd	0.1	Max. 0.3
Total volatile Hydrocarbon (THC) (as CH4)*	ppm v/v	GC - FID	ISBT 10.0		0.4	Max. 50.0
Methane	ppm v/v	Inhouse method 1	101		0.4	-
Ethane	ppm v/v	Inhouse method 1			0.4	-
Ethylene	ppm v/v	Inhouse method 1	÷ 1	nd	0.4	-
Propane	ppm v/v	Inhouse method 1		nd	0.4	-
Propylene	ppm v/v	Inhouse met		nd	0.4	-
Isobutane	ppm v/v	Inhonethe		nd	0.4	-
n-butane	r v/v	In ouse hoo		nd	0.4	-
Isopentane	A	Tinhe ent od 3		nd	0.4	-
n-pentane	ppm v/v	hos method 1	101	nd	0.4	-
Hexane plus	ppm v/v	.nhouse method 1	100	nd	0.4	-
Acetaldehyde (C2H4O, or AA)	ppm v/v	Inhouse method 5	ISBT 11.0	nd	0.1	Max. 0.2
Aromatic Hydrocarbon (Benzene)	ppb v/v	Inhouse method <sup>3</sup>	ISBT 12.0	nd	5.0	Max. 20.0
Carbon Monoxide (CO)	ppm v/v	Inhouse method <sup>2</sup>	ISBT 5.0	nd	0.5	Max. 10.0
Total Sulfur (as S) (Excluding Sulfur Dioxide)*	ppm v/v	GC - SCD	ISBT 13.0	nd	0.05	Max. 0.1
Sulfur Dioxide (SO2)*	ppm v/v	GC - SCD	ISBT 14.0	nd	0.05	Max. 1.0
Hydrogen Sulfide	ppm v/v	Inhouse method 4	ISBT 13.0	nd	0.1	
Carbonyl Sulfide	ppm v/v	Inhouse method 4	ISBT 13.0	nd	0.05	
Dimethyl Sulfide*	ppm v/v	GC - SCD	ISBT 13.0	nd	0.05	
Odor of Solid CO2 (Snow)*		Organoleptic	ISBT 15.0	No off odor	na	No off odor
Appearance of Solid CO2 (Snow)*	-	Organoleptic	ISBT 15.0	No Foreign Appearance	na	No Foreign Appearance
Appearance in Water *		Organoleptic	ISBT 16.0	No Color or Turbidity	na	No Color or Turbidity
Odor in Water*		Organoleptic	ISBT 16.0	No off odor	na	No off odor
Taste in Water*	-	Organoleptic	ISBT 16.0	No off taste	na	No off taste

Note :

(1) Inhouse method WI-LAB08 based on International Society of Beverage Technologists (ISBT)- 3<sup>rd</sup> Revision, 09 Mar 2019, Procedure 10.0 (2) Inhouse method WI-LAB06 based on ASTM D8098-17.

(3) Inhouse method WI-LAB03 based on International Society of Beverage Technologists (ISBT)- 3<sup>rd</sup> Revision, 09 Mar 2019, Procedure 12.0

(4) Inhouse method WI-LABO5 based on International Society of Beverage Technologists (ISBT) - 3<sup>rd</sup> Revision, 09 Mar 2019, Procedure 12.0 (5) Inhouse method WI-LABO5 based on International Society of Beverage Technologists (ISBT) - 3<sup>rd</sup> Revision, 09 Mar 2019, Procedure 13.0 (5) Inhouse method WI-LABO5 based on International Society of Beverage Technologists (ISBT) - 3<sup>rd</sup> Revision, 09 Mar 2019, Procedure 11.0 (\*) Test marked "Not TISI Accredited" in this certificate are not included in the TISI Accreditation Schedule for our laboratory.

C) - Communication of the comm

Approved by :

Remark :

- Partial duplication of this certificate without documentary permission from Laboratory is prohibited. - This certificate is valid only for the test and mentioned sample(s).

The laboratory disclaims responsibility for The information is supplied by the customer and can affect the validity of results.
The certificate that the results apply to the sample as received.

The laboratory does not have a policy to reporting opinions, interpretations and statements of conformity.
The laboratory disclaims in the report indicating which results may be affected by the deviation.

Review by :