



RAYONG LABORATORY ADDRESS :

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**CERTIFICATION OF ANALYSIS**  
**( PEPSI-COLA CO2 BEVERAGE 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 :						
TEST PARAMETER	UNIT	TEST METHOD	ISBT Reference no.	TEST RESULT	DL	SPECIFICATION
CO2 Purity (Assay)*	% v/v	Zahm & Nagel	ISBT 2.0		99.00	Min. 99.90
Moisture Content / Water (H2O)*	ppm v/v	Moisture Analyzer	ISBT 3.0		0.25	Max. 20.0
Oxygen (O2)	ppm v/v	Inhouse method <sup>2</sup>	ISBT 4.0		0.7	Max. 30.0
Nitrogen (N2)	ppm v/v	Inhouse method <sup>2</sup>	-		1.0	na
Ammonia (NH3)*	ppm v/v	Detector Tube	ISBT 6.0		0.2	Max. 2.5
Nitrogen Dioxide (NO2)*	ppm v/v	Detector Tube	ISBT 7.1		0.1	Max. 2.5
Nitric Oxide (NO)*	ppm v/v	Detector Tube	ISBT 7.2		0.1	Max. 2.5
Non-Volatile Organic Residue (NVOR)*	ppm w/w	Gravimetry	ISBT 8.0		1.5	Max. 5.0
Non-Volatile Residue (NVR)*	ppm w/w	Gravimetry	ISBT 8.0		1.5	Max. 10.0
Phosphine (PH3)*	ppm v/v	Detector Tube	ISBT 19.0		0.02	Max. 0.3
Total volatile Hydrocarbon (THC) (as CH4)*	ppm v/v	Gas chromatography	ISBT 10.0		0.15	Max. 50.0
Methane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Ethane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Ethylene	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Propane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Propylene	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Isobutane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
n-butane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Isopentane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
n-pentane	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Hexane plus	ppm v/v	Inhouse method <sup>1</sup>	-		0.15	-
Acetaldehyde (C2H4O, or AA)	ppm v/v	Inhouse method <sup>5</sup>	ISBT 11.0		0.1	Max. 0.2
Aromatic Hydrocarbon (Benzene)	ppb v/v	Inhouse method <sup>3</sup>	ISBT 12.0		5.0	Max. 20.0
Carbon Monoxide (CO)	ppm v/v	Inhouse method <sup>2</sup>	ISBT 5.0		0.5	Max. 10.0
Total Sulfur (as S) (Excluding Sulfur Dioxide)*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	Max. 0.1
Sulfur Dioxide (SO2)*	ppm v/v	Gas chromatography	ISBT 14.0		0.05	Max. 1.0
Hydrogen Sulfide	ppm v/v	Inhouse method <sup>4</sup>	ISBT 13.0		0.05	-
Carbonyl Sulfide	ppm v/v	Inhouse method <sup>4</sup>	ISBT 13.0		0.05	-
Dimethyl Disulfide	ppm v/v	Inhouse method <sup>4</sup>	ISBT 13.0		0.05	-
Methyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Ethyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Dimethyl Sulfide*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Carbon Disulfide*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Isopropyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
n-propyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Isobutyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
n-butyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
t-butyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Sec-Butyl Mercaptan*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Methyl Ethyl Sulfide*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Diethyl Sulfide*	ppm v/v	Gas chromatography	ISBT 13.0		0.05	-
Ethylene Oxide (EO)*	ppm v/v	Gas chromatography	ISBT 20.0		0.1	Not Detectable
Hydrogen Cyanide (HCN)*	ppm v/v	Detector Tube	ISBT 17.0		0.1	Not Detectable
Vinyl Chloride*	ppm v/v	Gas chromatography	ISBT 18.0		0.1	Not Detectable
Odor of Solid CO2 (Snow)*	-	Organoleptic	ISBT 15.0		na	Odorless
Appearance of Solid CO2 (Snow)*	-	Organoleptic	ISBT 15.0		na	Normal appearance , Colorless snow

TEST PARAMETER	UNIT	TEST METHOD	ISBT Reference no.	TEST RESULT	DL	SPECIFICATION
Appearance in Water *	-	Organoleptic	ISBT 16.0		na	Colorless
Odor in Water*	-	Organoleptic	ISBT 16.0		na	No characteristic Odor
Taste in Water*	-	Organoleptic	ISBT 16.0		na	Tasteless

**Note :**

- (1) Inhouse method WI-LAB08 based on International Society of Beverage Technologists (ISBT)- 4<sup>th</sup> Revision, 01 Oct 2021, Procedure 10.0
- (2) Inhouse method WI-LAB06 based on ASTM D8098-17.
- (3) Inhouse method WI-LAB03 & WI-LAB07 based on International Society of Beverage Technologists (ISBT)- 4<sup>th</sup> Revision, 01 Oct 2021, Procedure 12.0
- (4) Inhouse method WI-LAB04 based on International Society of Beverage Technologists (ISBT)- 4<sup>th</sup> Revision, 01 Oct 2021, Procedure 13.0
- (5) Inhouse method WI-LAB05 based on International Society of Beverage Technologists (ISBT)- 4<sup>th</sup> Revision, 01 Oct 2021, Procedure 11.0
- (\*) Test marked "Not TISI Accredited" in this certificate are not included in the TISI Accreditation Schedule for our laboratory.

- The reported uncertainty is an expanded uncertainty calculated using a coverage factor of k=2 which gives a level of confidence of approximately 95%  
DL = Detection Limit. nd = less than the detection Limit. ppm = parts per million. ppb = parts per billion. na = not available.

**Review by :**

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(Thatchayaphan Thongmuengluang)

**Approved by :**

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(Tippawan Pichetjumruscheep)

**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.