



RAYONG LABORATORY ADDRESS :
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CERTIFICATION OF ANALYSIS
(Pepsi-Cola CO2 Beverage Grade Specifications)

REPORT DESCRIPTION :						
REPORT No. :		REPORT DATE :		ANALYSIS DATE :		
ANALYSIS No. :		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	Zahn & Nagel	ISBT 2.0	99.99	99.90	Min. 99.90
Moisture Content / Water (H2O)*	ppm v/v	Moisture Analyzer	ISBT 3.0	3.0	0.25	Max. 20.0
Oxygen (O2)*	ppm v/v	Inhouse method ²	ISBT 4.0	19.3	0.7	Max. 30.0
Nitrogen (N2)*	ppm v/v	Inhouse method ²	-	27.1	1.0	Max. 120.0
Ammonia (NH3)*	ppm v/v	Detector Tube	ISBT 6.0	< 0.1	0.1	Max. 2.5
Nitrogen Dioxide (NO2)*	ppm v/v	Detector Tube	ISBT 7.1	< 0.1	0.1	Max. 2.5
Nitric Oxide (NO)*	ppm v/v	Detector Tube	ISBT 7.2	< 0.25	0.25	Max. 2.5
Non-Volatile Organic Residue (NVOR)*	ppm v/v	Gravimetry	ISBT 8.0	< 1.5	1.5	Max. 5.0
Non-Volatile Residue (NVR)*	ppm v/v	Gravimetry	ISBT 8.0	< 1.5	1.5	Max. 10.0
Phosphine (PH3)*	ppm v/v	Detector Tube	ISBT 19.0	< 0.1	0.1	Max. 0.3
Total volatile Hydrocarbon (THC) (as CH4)*	ppm v/v	GC - FID	ISBT 10.0	13.7	0.4	Max. 50.0
Methane	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Ethane	ppm v/v	Inhouse method ¹	-	3.3	0.4	-
Ethylene	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Propane	ppm v/v	Inhouse method ¹	-	2.0	0.4	-
Propylene	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Isobutane	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
n-butane	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Isopentane	ppm v/v	Inhouse method ¹	-	1.4	0.4	-
n-pentane	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Hexane plus	ppm v/v	Inhouse method ¹	-	< 0.4	0.4	-
Total Other Volatile Oxygenates*	ppm v/v	GC - FID	ISBT 11.0	< 0.1	0.1	Max.1.0
Acetaldehyde (C2H4O, or AA)	ppm v/v	Inhouse method ⁵	ISBT 11.0	< 0.1	0.1	Max. 0.2
Aromatic Hydrocarbon (Benzene)	ppb v/v	Inhouse method ³	ISBT 12.0	< 5.0	5.0	Max. 20.0
Carbon Monoxide (CO)	ppm v/v	Inhouse method ²	ISBT 5.0	< 1.0	0.5	Max. 10.0
Total Sulfur (as S) (Excluding Sulfur Dioxide)*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	Max. 0.1
Sulfur Dioxide (SO2)*	ppm v/v	GC - SCD	ISBT 14.0	< 0.05	0.05	Max. 1.0
Hydrogen Sulfide	ppm v/v	Inhouse method ⁴	ISBT 13.0	< 0.05	0.1	-
Carbonyl Sulfide	ppm v/v	Inhouse method ⁴	ISBT 13.0	< 0.05	0.05	-
Methyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Ethyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Dimethyl Sulfide*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Carbon Disulfide*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Isopropyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Methyl Ethyl Sulfide*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
n-propyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
t-butyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Dimethyl Disulfide	ppm v/v	Inhouse method ⁴	ISBT 13.0	< 0.05	0.05	-
Sec-Butyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Isobutyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Diethyl Sulfide*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
n-butyl Mercaptan*	ppm v/v	GC - SCD	ISBT 13.0	< 0.05	0.05	-
Ethylene Oxide (EO)*	ppm v/v	GC - FID	ISBT 20.0	< 0.1	0.1	Not Detectable
Hydrogen Cyanide (HCN)*	ppm v/v	Detector Tube	ISBT 17.0	< 0.2	0.2	Not Detectable
Vinyl Chloride*	ppm v/v	GC - FID	ISBT 18.0	< 0.1	0.1	Not Detectable
Odor of Solid CO2 (Snow)*	-	Organoleptic	ISBT 15.0	Odorless	na	Odorless
Appearance of Solid CO2 (Snow)*	-	Organoleptic	ISBT 15.0	Normal appearance, Colorless snow	na	Normal appearance, Colorless snow
Appearance in Water *	-	Organoleptic	ISBT 16.0	Colorless	na	Colorless

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

Note :

(1) Inhouse method WI-LAB08 based on International Society of Beverage Technologists (ISBT)- 3rd 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)- 3rd Revision, 09 Mar 2019, Procedure 12.0

(4) Inhouse method WI-LAB04 based on International Society of Beverage Technologists (ISBT)- 3rd Revision, 09 Mar 2019, Procedure 13.0

(5) Inhouse method WI-LAB05 based on International Society of Beverage Technologists (ISBT)- 3rd Revision, 09 Mar 2019, Procedure 11.0

(*) Test marked "Not TISI Accredited" in this certificate are not included in the TISI Accreditation Scheme of 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. n/a = not available.

Review by :

Approved by :

Remark :

- Partial duplication of this certificate without documentary permission from our 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.