Airborne Labs International

Carbon Dioxide (CO_2) Analysis
ISBT No-Haz Beverage-Grade Program

Customer Company
Street Address 1
City, State ZIP
Phone: nnn-nnn-nnnn, Cell: nnn-nnn-nnnn, (Fax: nnn-nnn-nnnn)
Attn.: Mr./Ms./Dr. John Smith and Mr./Ms./Dr. Derek Jeter
E-Mail:
Sample ID.: Vaporized Liquid CO_2 / Gaseous CO_2: "See Sample ID on Analysis Auth Form"
Sample ID.: Received in 2L True Blue MLB Polybag 1.2 + MiniCyl 1.0 + NVR 8.0 No-Haz Kits

ALI Track No.: nnnnn
Received On: mm/dd/yy
Report Date: mm/dd/yy
Payment Mode: PO/CC/Wire

Sample Date:
Process Stage: Final

Test Description/Units:	Result	LOQ	ISBT Limit
CO_2 Identification (Positive/ Negative by USP [DT]):	positive	5	positive
Comments: Positive ID = Positive Detector Tube Response.			
CO_2 Purity (% v/v, ISBT 2.0 [GC/DID]):	99.99+	5	99.9 min
Comments: Obtained by NCG + target list impurity subtraction method			
Water Vapor (H_2O, ppm v/v, ISBT 3.0 [FTIR]):	--	[illegible]	20 max
Oxygen (O_2, ppm v/v, ISBT 4.0 [GC/DID]):	nd	1	30 max
Comments: Result represents Total O_2 + Ar ppm v/v.			
Nitrogen (N_2, ppm v/v, ISBT 4.0 [GC/DID]):	nd	1	na
Carbon Monoxide (CO, ppm v/v, ISBT 5.0 [GC/DID]):	[illegible]	1	10 max
Ammonia (NH_3, ppm v/v, ISBT 6.0 [DT]):	nd	0.5	2.5 max
Oxides of Nitrogen (NO_x, ppm v/v, ISBT 7.0	nd	0.5	5 max*
Comments: *Speciation required if above 2.5 ppm v/v. M[illegible] 5 ppm of [illegible] O & [illegible]			
Nitric Oxide (NO, ppm v/[illegible]BT 7.1 [DT]):	nd	0.5	2.5 max
Nitrogen Dioxide (NO_2, [illegible] v/v, ISBT 7.2 [D	nd	0.5	2.5 max
Non-Volatile Residue (NVR, ppm w/w[illegible]BT [illegible] [Grav]):	nd	2	10 max
Comments: No visible matter observed.			
Non-Volatile Organic Residue ([illegible]OR, ppm w/w, ISBT 8.0 [Grav]):	nd	2	5 max
Comments: No NVOR film observed.			
Phosphine (PH_3, ppm v/v, ISBT SM 3.0 [DT]):	nd	0.25	0.3 max
Comments:			
Total Hydrocarbons (THC, ppm v/v as CH_4, ISBT 10.0):			
Flash Vaporized Liquid Phase:	nd	0.1	50 max
Total Non-Methane Hydrocarbons (TNMHC, ppm v/v as CH_4, ISBT 10.1):	nd	0.1	20 max
Methane (CH_4, ppm v/v, ISBT 10.1 [GC]):	nd	0.1	50 (see THC)
Methanol (MeOH, ppm v/v, ISBT 9.0 [GC]):	nd	0.1	10 (see THC)
Acetaldehyde (AA, ppm v/v, ISBT 11.0 [GC]):	nd	0.05	0.2 max
Total Other Volatile Oxygenates (TOVO, ppm v/v, ISBT 11.0 [GC]):	nd	0.1	na
Comments: Obtained by summation of all speciated VOX target impurities less AA, MeOH & EtOH			
Aromatic Hydrocarbon Content (ppb v/v as Benzene, ISBT 12.0 [GC]):	nd	2	20 max
Comments: No target BTEX impurities detected.			
Total Sulfur Content* (TSC* ppm v/v as S, ISBT 14.0):	nd	0.01	0.1 max
Comments: *Obtained by summation of all speciated VSC target impurities less SO_2			
Sulfur Dioxide (SO_2, ppm v/v, ISBT 14.0 [GC]):	nd	0.05	1 max
Sensory Tests			
Appearance in Water (Pass/Fail, ISBT 16.0):	pass	na	clear
Odor & Taste in Water (Pass/Fail, ISBT 16.0):	pass	na	none
Comments:			
Supplemental Tests			
Hydrogen Cyanide (HCN, ppm v/v by ISBT SM-1.0 [GC]):	nd	0.2	nd
Vinyl Chloride (VCl, ppm v/v by ISBT SM-2.0 [GC]):	nd	0.1	nd
Ethylene Oxide (ETO, ppm v/v by ISBT 11.0 [GC]):	nd	0.1	nd

Sample ID: Customer Company **ALI Track No.:** nnnnn

Speciated Volatile Hydrocarbons (VHC, ppm v/v by ISBT 10.1)	Result	LOQ	ISBT Limit

Ethane:	nd	0.1	see THC
Ethylene:	nd	0.1	see THC
Propane:	nd	0.1	see THC
Propylene:	nd	0.1	see THC
Isobutane:	nd	0.1	see THC
n-Butane:	nd	0.1	see THC
Butene:	nd	0.1	see THC
Isopentane:	nd	0.1	see THC
n-Pentane:	nd	0.1	see THC
Hexanes+:	nd	0.1	see THC

Comments: Pk ID based upon tr match vs target analyte std. CH_4 result on pg 1.

Speciated Volatile Sulfur Compounds (VSC, ppm v/v by ISBT 14.0)

Hydrogen Sulfide (H_2S):	nd	0.01	see TSC
Carbonyl Sulfide (COS):	nd	0.01	see TSC
Methyl Mercaptan:	nd	0.01	see TSC
Ethyl Mercaptan:	nd	0.01	see TSC
Dimethyl Sulfide:	nd	0.01	see TSC
Carbon Disulfide:	nd	0.01	see TSC
t-Butyl Mercaptan:	nd	0.01	see TSC
Isopropyl Mercaptan:	nd	0.01	see TSC
n-Propyl Mercaptan:	nd	0.01	see TSC
Methyl Ethyl Sulfide:	nd	0.01	see TSC
2-Butyl Mercaptan:	nd	0.01	see TSC
i-Butyl Mercaptan:	nd	0.01	see TSC
Diethyl Sulfide:	nd	0.01	see TSC
n-Butyl Mercaptan:	nd	0.01	see TSC
Dimethyl Disulfide:		0.01	see TSC
Unknown VSC:	nd	0.01	see TSC

Comments: Peak ID based upon t_r match against target analyte standa[illegible] SO[illegible]TS results reported on pg. 1.

Speciated Volatile Oxyge[illegible]VOX, pp[illegible]v/v[illegible]ISBT [illegible])

Dimethyl Ether:	nd	0.1	see THC
Diethyl Ether:	nd	0.1	see THC
Propionaldehyde:	nd	0.1	see THC
Acetone:	nd	0.1	see THC
t-Butanol:	nd	0.1	see THC
Ethanol:	nd	0.1	see THC
Isopropanol:	nd	0.1	see THC
Ethyl Acetate:	nd	0.1	see THC
Methyl Ethyl Ketone:	nd	0.1	see THC
2-Butanol:	nd	0.1	see THC
n-Propanol:	nd	0.1	see THC
Isobutanol:	nd	0.1	see THC
n-Butanol:	nd	0.1	see THC
Isoamyl Acetate:	nd	0.1	see THC
Isoamyl Alcohol:	nd	0.1	see THC
Unknown VOX:	nd	0.1	see THC

Comments: Peak ID based upon t_r match against target analyte standards. AA and ETO results reported on pg. 1.

LOQ = Limit of Quantitation (lowest amount of analyte quantitatively determined with suitable precision and accuracy) **MDL** = method detection limit (lowest amount of analyte detected). **trace =** unquantified amount observed between MDL and LOQ. **nd =** indicates the impurity was not detected (below MDL). **--** = test not performed. **na** = not available. **LT** = less than the amount specified. **GT** = greater than the amount specified. **%** = percent. **ppm** = parts per million. **ppb** = parts per billion. **v/v** = volume analyte/volume sample. **w/w** = weight analyte/weight sample. **[result]** indicates the result was obtained by the method listed within brackets. **TSC*** = ISBT Total Sulfur Content exluding SO_2. **Unit Conversions:** 1ppm v/v = 1µL/L = 1000 ppb = 0.0001% v/v. **Date format:** MM/DD/YY.

Report Summary:

Customer request for a std ISBT No-Haz LCO_2 test pgm.

This sample meets all ISBT purity criteria for bev-grade LCO_2.

Reviewed by / Date:

Laboratory Manager

Laboratory Manager

Attachments: none
Addendum: Signatures, Instrument & Notebook data on-file

Measurement Uncertainty available upon request.

F-21.7v4 (04/14)

ilac-MRA PJLA Testing
Accreditation # 68099