

# Gas Composition and Properties

Anadarko, Kerr McGee Gath, Western Gas  
Partners

Effective May 16, 2017 11:24 - May 8, 2018 00:00

Source #: 100203432  
Name: COLORADO STATE C-5

Component	Mole %	Liquid Content	Mass %
Carbon Dioxide, CO2	3.0351		3.8126
Nitrogen, N2	0.5857		0.4683
Methane, C1	36.0463		16.5059
Ethane, C2	18.3825	4.9682	15.7772
Propane, C3	23.7264	6.6057	29.8630
iso-Butane, iC4	2.8123	0.9300	4.6656
n-Butane, nC4	9.9816	3.1801	16.5596
iso-Pentane, iC5	1.6515	0.6104	3.4011
n-Pentane, nC5	1.8386	0.6735	3.7864
Neo-Pentane, NeoC5			
Hexanes Plus, C6+	1.9400	0.8555	5.1603
Water, H2O			
Hydrogen Sulfide, H2S			
Oxygen, O2			
Carbon Monoxide, CO			
Hydrogen, H2			
Helium, He			
Argon, Ar			

Property	Total Sample	C6 Plus Fraction
Pressure Base	14.730	
Temperature Base	60.00	
HCDP @ Sample Pressure	67.373	
Cricondentherm	203.979	
HV, Dry @ Base P, T	1968.32	
HV, Sat @ Base P, T	1934.06	
HV, Sat @ Sample P, T	1834.54	
Relative Density	1.2222	

C6+: 60 - 30 - 10

Totals	100.0000	17.8240	100.0000
--------	----------	---------	----------

## Sample

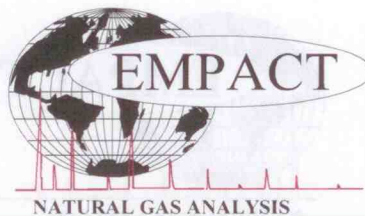
Date: 05/16/2017      Pressure: 20.5  
Type: Spot      Temperature 130.0  
Tech: M. COTNER      H2O: lbs/mm  
H2S: 2 ppm

Remarks:

## Analysis

Date: 05/31/2017      Instrument: 103  
Cylinder:  
Tech: B. GEHRMAN

Remarks:



PRIMARY DB KEY: NAME/DESCRIP : STATE OF COLORADO C 5  
 LEASE #: 05-001-09194  
 FIELD/ AREA:  
 PROJECT NO. : 201907047 ANALYSIS NO. : 06  
 COMPANY NAME : RENEGADE OIL & GAS COMPANY ANALYSIS DATE: JULY 15, 2019 15:21  
 OFFICE / BRANCH: AURORA, CO SAMPLE DATE : JULY 9, 2019  
 CUSTOMER REF: TO:  
 PRODUCER : EFFECTIVE DATE:

\*\*\*FIELD DATA\*\*\*

SAMPLE CYCLE: SAMPLE TYPE:  
 SAMPLE PRES. : 12 psig PROBE :  
 FLOW PRES. : psig CYLINDER NO. : 1082  
 LAB PRES: psig SAMPLED BY : CODY BAYLIS  
 SAMPLE TEMP. : 80 °f SAMPLING COMPANY: RENEGADE  
 AMBIENT TEMP.: °f H2S BY STAIN TUBE: 1 ppm  
 H2O BY STAIN TUBE: #/mmcf CO2 BY STAIN TUBE: Mol %  
 FIELD COMMENTS:  
 LAB COMMENTS:

COMPONENTS	NORM. MOLE%	GPM @ 14.65	GPM @ 14.73
HELIUM	0.00	-	-
HYDROGEN	0.01	-	-
OXYGEN/ARGON	0.00	-	-
NITROGEN	0.37	-	-
CO2	3.04	-	-
METHANE	36.39	-	-
ETHANE	17.99	4.8317	4.8581
PROPANE	22.67	6.2725	6.3067
ISOBUTANE	2.46	0.8085	0.8129
N-BUTANE	9.37	2.9661	2.9823
ISOPENTANE	2.07	0.7601	0.7643
N-PENTANE	2.56	0.9323	0.9374
HEXANES+	3.07	1.3381	1.3454
TOTAL	100.00	17.9093	18.0071

BTU @ 60 DEG F

	14.65	14.73
GROSS DRY REAL =	1998.4 /scf	2009.3 /scf
GROSS SATURATED REAL =	1963.5 /scf	1974.4 /scf

RELATIVE DENSITY (AIR=1 @14.696 PSIA 60F) 1.235  
 GRAVITY (LB/SCF) 0.09424  
 COMPRESSIBILITY FACTOR : 0.99012

NOTE: REFERENCE GPA 2261(ASTM D1945 & ASME-PTC), 2145, & 2172 CURRENT PUBLICATIONS

Reference: Per GPA 2172-14 sec 9

The C6+ is derived from the following ratios of C6, C7 & C8+ respectively: 60% 30% 10%

The data presented herein has been acquired by means of current analytical techniques and represents the judicious conclusion EMPACT Analytical Systems, Inc.  
 Results of the analysis can be affected by the sampling conditions, therefore, are only warranted through proper lab protocol. EMPACT assumes no responsibility  
 for interpretation or any consequences from application of the reported information and is the sole liability of the user. The reproduction in any media of this  
 reported information may not be made, in portion or as a whole, without the written permission of EMPACT Analytical Systems, Inc.