

Lab #: 747707 Job #: 43808 IS-94649 Co. Job#:   
 Sample Name: Brown 5-3 / Production Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location: C762503   
 Formation:   
 Sampling Point: 251267   
 Date Sampled: 12/13/2019 Date Received: 12/23/2019 Date Reported: 1/24/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0155			
Hydrogen -----	nd			
Argon -----	0.0129			
Oxygen -----	0.26			
Nitrogen -----	1.32			
Carbon Dioxide -----	0.13	-0.5		
Methane -----	85.45	-48.1	-247	
Ethane -----	10.84	-32.6		
Ethylene -----	0.0002			
Propane -----	1.40	-29.2		
Propylene -----	nd			
Iso-butane -----	0.0852	-32.9		
N-butane -----	0.252	-31.0		
Iso-pentane -----	0.0971	-28.6		
N-pentane -----	0.0831	-30.0		
Hexanes + -----	0.0585			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 1116

Specific gravity, calculated: 0.638

Remarks: Isotopes obtained online via GC-C-IRMS/GC-P-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 747708 Job #: 43808 IS-94649 Co. Job#:   
 Sample Name: Brown 5-3 / Surface Casing Co. Lab#:   
 Company: Crestone Peak Resources   
 API/Well:   
 Container: IsoTube®   
 Field/Site Name: Bradenhead Testing   
 Location: C762503   
 Formation:   
 Sampling Point: 251267   
 Date Sampled: 12/13/2019 Date Received: 12/23/2019 Date Reported: 1/24/2020

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	0.0152			
Hydrogen -----	nd			
Argon -----	0.555			
Oxygen -----	12.83			
Nitrogen -----	47.58			
Carbon Dioxide -----	0.055	-11.1		
Methane -----	32.32	-51.6	-246	
Ethane -----	3.90	-33.3		
Ethylene -----	nd			
Propane -----	1.92	-29.8		
Propylene -----	nd			
Iso-butane -----	0.207	-31.8		
N-butane -----	0.448	-28.7		
Iso-pentane -----	0.0768	-28.4		
N-pentane -----	0.0673	-27.9		
Hexanes + -----	0.0224			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 473   
 Specific gravity, calculated: 0.877

Remarks: Isotopes obtained online via GC-C-IRMS/GC-P-IRMS.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.