Species Tag:	28010	Name:	$^{12}C_2D_2$
Version:	1		Deuterated Acetylene,
Date:	Apr. 2009		GS, ν_4, $2\nu_4$, ν_5, $2\nu_5$, $3\nu_5$, $\nu_4+\nu_5$,
Contributor:	S. Yu		$2\nu_4+\nu_5$
	B. J. Drouin		
Lines Listed:	6940	Q(300.0)=	514.5253
Freq. (GHz) <	19900	Q(225.0)=	319.4031
Max. J:	60	Q(150.0)=	189.8997
LOGSTR0=	-12.0	Q(75.00)=	92.7489
LOGSTR1=	-12.0	Q(37.50)=	46.6162
Isotope Corr.:	0.0	Q(18.75)=	23.5624
Egy. (cm^{-1}) >	0.0	Q(9.375)=	12.0411
μ_a =	0.0358	A=	
μ_b =		B=	25418.60758
μ_c =	0.0358	C=	

The following states are included in this calculation: the ground state, ν_4, $2\nu_4$, ν_5, $2\nu_5$, $3\nu_5$, $\nu_4+\nu_5$, $2\nu_4+\nu_5$. The vibrational levels are labeled as $V_4^{l_4}V_5^{l_5}$. The vibrational designations are as the following: 00 for 0^00^0 ($^1\Sigma_g{}^+$); 01 for 1^10^0 ($^1\Pi_g$); 02 for 0^01^1 ($^1\Pi_u$), 03 for 2^20^0 ($^1\Delta_g$), 04 for 2^00^0 ($^1\Sigma_g{}^+$), 05 for 1^11^1 ($^1\Sigma_u{}^+$), 06 for 1^11^1 ($^1\Delta_u$); 07 for 1^11^1 ($^1\Sigma_u{}^-$); 08 for 0^02^0 ($^1\Sigma_g{}^+$); 09 for 0^02^2 ($^1\Delta_g$); 10 for 0^03^1 ($^1\Pi_u$); 11 for 0^03^3 ($^1\Phi_u$); 12 for 2^21^1 ($^1\Pi_u$(II)); 13 for 2^21^1 ($^1\Pi_u$(I)); 14 for 2^21^1 ($^1\Phi_u$). The experimental measurements were reported by Lafferty et al. 1977, J. Mol. Spectrosc. **64**, 147; Deleon and Muenter 1987, J. Mol. Spectrosc. **126**, 13; Huet et al. 1991, J. Chem. Phys. **94**, 3407; Yu et al., 2009, Astrophys. 698(2) 2114-2120, 2009.

A vibrational transition dipole moment of 0.0358 D, which was determined for the ν_5-ν_4 difference band by Lafferty et al. (J. Mol. Spectrosc. **64**, 147), was used for all the transitions because dipole moments for other bands are not available.