

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
3501	HD	BASECOL	hd_basecol.dat	He	Roueff, E. & Zeippen, C.J. 1999, A&A 343,1005	Crash RADEX
12001, 12501	C-atom	LAMDA	catom.dat	H	Launay, J.M. & Roueff, E. 1977, J.Phys.B, 10, 879	Only 2 lines in JPL, 3 in collision file
				e	Johnson, C.T., Burke, P.G., Kingston, A.E. 1987, J.Phys.B, 20, 2553	
				p	Roueff, E. & Le Bourlot, J. 1990, A&A, 236, 515	
				He	Staemmler, V. & Flower, D.R. 1991, J.Phys. B, 24, 2343	
				H2	Schröder, K. et al. 1991, J.Phys.B., 24, 2487	
12503	C+	LAMDA	c+.dat	H	Barinovs, G. et al 2005, ApJ 620, 537	Only 1 line in CDMS, 14 in collision file
				e	Wilson, N. J. & Bell, K. L. 2002, MNRAS, 337, 1027	
				H2	Flower, D.R. 1988, J.Phys.B 21, L451	

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
13503	CH+	BASECOL	ch+_basecol.dat	He	Hammami, K., Owono Owono, L.C. & Stäuber, P. 2009 A&A 507, 1083	None
14503	CD+	BASECOL	cd+_basecol.dat	He	Hammami, K., Owono Owono, L.C. & Stäuber, P. 2009 A&A 507, 1083	None
15001, 15501	NH	Private	nh-h2_cassis.dat	H2	Lique et al., to be published	
16001	O-atom	LAMDA	oatom_cassis.dat	H	Abrahamsson, Krems, & Dalgarno 2007, ApJ, 654, 1171	Only 2 lines in JPL, 3 in collision file
				e	Bell, K. L., Berrington, K. A., & Thomas, M. R. J. 1998, MNRAS, 293, L83	
				p	Chambaud, G. et al. 1980, JPhB, 13, 4205	
				H2	Jaquet, R. et al. 1992, J. Phys. B., 25, 285	
16502	ND	Private	nd-h2_cassis.dat	H2	Dumouchel et al. (2012), unpublished	
17001	OH	LAMDA	oh@hfs_cassis.dat	p-H2 & o-H2	Offer, A.R., van Hemert, M.C., van Dishoeck, E.F. 1994, J. Che. Phys. 100, 362	None

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17501	OH+	LAMDA	oh+.dat	e	Faure, A. & Lique, F. 2012, MNRAS 425,740	None
17002	NH3	LAMDA	o-nh3_cassis.dat, p-nh3_cassis.dat	p-H2	Danby et al. 1988, MNRAS 235,229	None
17082	p-NH3	LAMDA	p-nh3_cassis.dat	p-H2	Danby et al. 1988, MNRAS 235,229	None
17092	o-NH3	LAMDA	o-nh3_cassis.dat	p-H2	Danby et al. 1988, MNRAS 235,229	None
18003	H2O	LAMDA	p-h2o@daniel.dat, o-h2o@daniel.dat	p-H2 & o-H2	Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None
18083	p-H2O	LAMDA	p-h2o@daniel.dat	p-H2 & o-H2	Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None
18093	o-H2O	LAMDA	o-h2o@daniel.dat	p-H2 & o-H2	Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None
19002	HDO	LAMDA	hdo.dat	p-H2 & o-H2	Faure, A. et al. 2012, MNRAS 420, 69	None
19004	H3O+	LAMDA	o-H3O+_JPL.dat, p-H3O+_JPL.dat	H2	Offer, A.R. & van Hemert, M.C. 1992, Chem. Phys. 163, 83	Collisions from NH3, 100K only

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20002	HF	LAMDA	hf_cassis.dat	e	Thuemmel H.T. et al. 1991, JPhB 25, 4553	Only for frequencies ≤ 10 THz
				He	Reese, C. et al. 2005, A&A 430, 1139	
				p-H2 & o-H2	Guillon, G. & Stoecklin, T. 2012 MNRAS 420, 579	
25001, 25501	CCH	LAMDA	c2h_h2_e.dat	e	Faure, A. 2014	None
				H2	Spielfiedel, A. et al. 2012 MNRAS 421,1891	None
26001, 26504	CN, v=0,1	BASECOL	cn_cassis.dat	p-H2	Lique et al (2010, J. Chem. Phys., 132, 024303)	None
27501	HCN, v=0	LAMDA +CASSIS	hcn_cdms.dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	HFS not taken into account
27502	HNC	LAMDA +CASSIS	hnc_cdms.dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
28001, 28503	CO	LAMDA	co.dat	p-H2 & o-H2	Yang, B. et al. 2010, ApJ 718, 1062	None
28501	HC-13-N, v=0	LAMDA +CASSIS	h13cn_cdms.dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	HFS not taken into account

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
28506	HCN-15	LAMDA +CASSIS	hc15n_cdms .dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
28509	DCN	LAMDA +CASSIS	dcn_cdms.d at	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
28515	HNC-13	LAMDA +CASSIS	hn13c_cdms .dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
29001, 29501	C-13-O	LAMDA	13co.dat	p-H2 & o-H2	Yang, B. et al. 2010, ApJ 718, 1062	None
29006	CO-17	LAMDA	c17o.dat	p-H2 & o-H2	Yang, B. et al. 2010, ApJ 718, 1062	None
29504	HOC+, v2=1	BASECOL	hoc +_basecol.d at	p-H2	Flower, D.R. 1999 MNRAS 305, 651	None
29506	N2H+, v=0	LAMDA	n2h +@xpol_cas sis.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	HFS not taken into account, Collisions from HCO+
		BASECOL	n2h +_basecol.d at	He	Green, S. 1975 ApJ 201, 366	only up to N2H+(6-5)
29507	HCO+, v=0	LAMDA	hco +_cassis.dat , hco +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/ Lamda for hco +@xpol.dat
		BASECOL	hco +_basecol.d at	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
29510	DC-13-N	LAMDA +CASSIS	d13cn_cdms .dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
29511	DCN-15	LAMDA +CASSIS	dc15n_cdms .dat	H2	Dumouchel, F., Faure, A., Lique, F. 2010, MNRAS 406, 2488	None
29606	N2H+_HFS	LAMDA	n2h +_hfs.dat	H2	Daniel et al. 2005, MNRAS 363, 1083 + extrapolation , scaled to H2, http:// home.strw.le idenuniv.nl/	None
30001, 30502	CO-18	LAMDA	c18o.dat	p-H2 & o-H2	Yang, B. et al. 2010, ApJ 718, 1062	None
30004, 30501	H2CO	LAMDA	o-h2co.dat or p- h2co.dat	p-H2 & o-H2	Wiesenfeld, L. & Faure, A. 2013 MNRAS 432, 2573	None
30581	p-H2CO	LAMDA	p-h2co.dat	p-H2 & o-H2	Wiesenfeld, L. & Faure, A. 2013 MNRAS 432, 2573	None
30591	o-H2CO	LAMDA	o-h2co.dat	p-H2 & o-H2	Wiesenfeld, L. & Faure, A. 2013 MNRAS 432, 2573	None
30008	NO	LAMDA	no_cassis.d at	H2	Lique, F. et al., 2009, A&A, 493, 557	None

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
30504	HC-13-O+	LAMDA	hc13o +_cassis.dat , h13co +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/Lamda for hc13o +@xpol
		BASECOL	h13co +_basecol.dat	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None
30505	HCO-17+	LAMDA	hc17o +_cassis.dat , hc17o +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/Lamda for hc17o +@xpol
		BASECOL	hc17o +_basecol.dat	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None
30506	DOC+	BASECOL	doc +_basecol.dat	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None
30510	DCO+	LAMDA	dco +_cassis.dat , dco +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/Lamda for dco +@xpol.d
		BASECOL	dco +_basecol.dat	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None
31506	HCO-18+	LAMDA	hc18o +_cassis.dat , hc18o +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/Lamda for hc18o +@xpol
			hc18o +_basecol.dat	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
30510	DC-13-O+	LAMDA	dc13o +_cassis.dat , d13co +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	High frequencies differ CDMS/ Lamda for d13co +@xpol
			d13co +_basecol.d at	p-H2	Flower, D.R. 1999, MNRAS, 305, 651	None
32001, 32508	O2	LAMDA	o2.dat	H2	Lique 2010, J. Chem. Phys., 132, 044311	None
32003	CH3OH	LAMDA	a- ch3oh_cassi s.dat, e- ch3oh_cassi s.dat	H2	Rabli, D., Flower, D.R. 2010, MNRAS 406, 95	Not a lot of transitions are present
32083	A-CH3OH	LAMDA	a- ch3oh_cassi s.dat	H2	Rabli, D., Flower, D.R. 2010, MNRAS 406, 95	Not a lot of transitions are present
32093	E-CH3OH	LAMDA	e- ch3oh_cassi s.dat	H2	Rabli, D., Flower, D.R. 2010, MNRAS 406, 95	Not a lot of transitions are present
34002, 34502	H2S	LAMDA	o-h2s.dat or p-h2s.dat	p-H2 & o-H2	Dubernet, M.-L. et al. 2009, A&A 497, 911 & Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
34082, 34502	p-H ₂ S	LAMDA	p-h2s.dat	p-H ₂ & o-H ₂	Dubernet, M.-L. et al. 2009, A&A 497, 911 & Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None
34092, 34592	o-H ₂ S	LAMDA	o-h2s.dat	p-H ₂ & o-H ₂	Dubernet, M.-L. et al. 2009, A&A 497, 911 & Daniel, F., Dubernet, M., & Grosjean, A. 2011, A&A, 536, A76	None
36001	HCl	LAMDA	hcl@hfs_cassis.dat	H ₂	Neufeld, D.A., Green, S. 1994, ApJ, 432, 158	None
			hcl@hfs_h2_Lique.dat	H ₂	Lanza, M. et al. 2014, submitted to MNRAS	None
38002, 38508	c-C ₃ H ₂	LAMDA	o-c-c3h2_cassis.dat, p-c-c3h2_cassis.dat	H ₂	Chandra, S., Kegel, W.H. 2000, A&AS, 142, 113	Only for Eup ≤ 120 K
38082	o-c-C ₃ H ₂	LAMDA	o-c-c3h2_cassis.dat	H ₂	Chandra, S., Kegel, W.H. 2000, A&AS, 142, 113	Only for Eup ≤ 120 K
38092	p-c-C ₃ H ₂	LAMDA	p-c-c3h2_cassis.dat	H ₂	Chandra, S., Kegel, W.H. 2000, A&AS, 142, 113	Only for Eup ≤ 120 K
41001, 41505	CH ₃ CN	LAMDA	ch3cn.dat	H ₂	Green, S. 1986, ApJ 309, 331	None

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
41585	e-CH3CN	LAMDA +CASSIS	e- ch3cn_cassi s.dat	H2	S. Green 1986, ApJ 309, 331 + extrapolation (http:// home.strw.le idenuniv.nl/) + A-E separation (CASSIS)	None
41595	a-CH3CN	LAMDA +CASSIS	a- ch3cn_cassi s.dat	H2	S. Green 1986, ApJ 309, 331 + extrapolation (http:// home.strw.le idenuniv.nl/) + A-E separation (CASSIS)	None
43511	HNCO	LAMDA	hnco_cassis. dat	He	Green, S. 1986, NASA Technical Memorandu m 87791	Only for Aij > 1e-8
44501	CS, v=0	LAMDA	cs@xlique_ assis.dat	H2	Lique, F. et al., 2006, A&A, 451, 1125	Only up to CS(40-39)
44505	SiO, v=0-6	LAMDA	sio.dat	H2	Dayou, F. & Balanca, C. 2006, A&A 459, 297	Only up to SiO(40-39)
45501	C-13-S, v=0,1	LAMDA	13cs@lique_ cassis.dat	H2	Lique, F. et al., 2006, A&A, 451, 1125	Only up to 13CS(40-39)
45504	Si-29-O, v=0-3	LAMDA	29sio.dat	H2	Dayou F., Balanca C. 2006, A&A 459, 297	Only up to Si-29- O(40-39)
45506	HCS+	LAMDA	hcs +@xpol.dat	H2	Flower, D.R. 1999, MNRAS, 305, 651	Only up to HCS +(30-29), collisions from HCO+

CASSIS Tags	Species	Database	Collision File	Collisioners	Reference	Caveats
46501	CS-34, v=0,1	LAMDA	c34s@lique_cassis.dat	H2	Lique, F. et al., 2006, A&A, 451, 1125	Only up to CS-34(40-39)
46509	H2CS	LAMDA	o-h2cs.dat, p-h2cs.dat	p-H2 & o-H2	Wiesenfeld, L. & Faure, A. 2013 MNRAS 432, 2573	None
48501	SO, v=0	LAMDA	so@lique.dat	H2	Lique, F. et al., 2006, A&A, 450, 399	For temperatures from 60 to 300 K only
		BASECOL	so@lique2007.dat	p-H2	Lique, F., Senent, M.-L., Spielfiedel, A., Feautrier, N., 2007, Journal of Chemical Physics, Volume 126, Issue 16	For temperatures from 10 to 50 K only
51001, 51501	HCCCN	LAMDA	hc3n.dat	H2	Green, S. & Chapman, S. 1978, ApJSS, 37, 169	Only up to HC3N(20-19)
60503	OCS, v=0	LAMDA	ocs@xpol.dat	H2	Green, S. & Chapman, S. 1978, ApJSS, 37, 169	Frequencies, Eup and Aij slightly wrong
64002, 64502	SO2	LAMDA	so2@xpol.dat	H2	Green, S. 1995, ApJS, 100, 213	Aij ~ 10% wrong for all frequencies