

LENR Excess Heat Measurements per 4He Atom Production

Cold fusion proponents erroneously assume $D+D \rightarrow 4He$ (~24 MeV) Heat and
no other reaction products in system

	Measured Rate of 4He $\times 10^{11}/\text{sec/W}$	Theoretical Rate of 4He from $D+D>4He$ [A]	Percentage of Theoretical from $D+D>4He$	Theoretical MeV/4He Atom	Measured MeV/4He Atom	
Miles (1994) Source: [1, pg. 6]	1.6	2.6	0.615384615	23.8	39	
	2.5	2.6	0.961538462	23.8	25	
	1.4	2.6	0.538461538	23.8	44	
	0.7	2.6	0.269230769	23.8	88	
	0.75	2.6	0.288461538	23.8	83	
	1.2	2.6	0.461538462	23.8	52	
	1	2.6	0.384615385	23.8	62	
De Ninno (2002) Source: [2, pg. 16] [B]	0.6	2.6	0.230769231	23.8	103	
	0.7	2.6	0.269230769	23.8	88	
	0.5	2.6	0.192307692	23.8	124	
	0.6	2.6	0.230769231	23.8	103	
	0.6	2.6	0.230769231	23.8	103	
McKubre (1998, 1995)	SRI-Case	SRI-M4-1	SRI-M4-2	SRI-M4-3	SRI-M4-4	
	Amount of helium measured		1.556	1.66	0.34	2.077
	Stated percentage of expected		0.62	0.69		1.04
	Expected amount of helium		2.509677419	2.405797101		1.997115385
	Heat if 23.77 MeV reaction	31	38.33870968	34.44927536	n/a	22.85576923
Source [3, pgs 9-10]	SRI-Case					31
	SRI-M4-1					38
	SRI-M4-2					34
	SRI-M4-3				N/A	
	SRI-M4-4					23

NOTES

A. Theoretical rate of $2.6 \times 10^{11} \text{ } ^4\text{He s}^{-1}\text{W}^{-1}$ for the D-D fusion reaction.

B. The number of He atoms evaluated from the measured heat is substantially lower than the number of He atoms measured (counted by means the mass spectroscopy) because, as we underlined at page 17 (case 1) of the paper, we missed most of the heat produced due to a mismatch in the calorimetry.

C. In 2008, McKubre and Miles confirmed their data as shown here. De Ninno did not confirm her data.

REFERENCES

1. Miles, M., "Correlation of Excess Enthalpy and Helium-4 Production: A Review," Proceedings of the Tenth International Conference on Cold Fusion, Cambridge, Mass., (2003)
2. De Ninno, A.; Frattolillo, A.; Rizzo, A.; Del Gindice, E.; Preparata, G., "Experimental Evidence of 4He Production in a Cold Fusion Experiment (Report 41)," ENEA - Unita Tecnico Scientifica Fusione Centro Ricerche Frascati: Rome, 2002
3. Peter Hagelstein, Michael McKubre, David Nagel, Talbot Chubb, Randy Hekman, "New Physical Effects In Metal Deuterides," Submitted to the 2004 U.S. Department of Energy LENR Review, (2004)

REVISION HISTORY

No changes in any values or sources. Changes are:

- 1) Explicitly identify source references by paper bibliography rather than by url.
- 2) Add sub-head to explain assumption
- 3) Organize Notes and Sources more clearly.
- 4) Relabel SRI-X to SRI-Case
- 5) Add year 1998 to McKubre reference

This spreadsheet is **preliminary**. McKubre and Miles have confirmed their data as shown here. I have been in communication with De Ninno up until press time. I will update this spreadsheet prior to our Sept. 10 issue.

Energy Measurements per 4He Atom Production

S.B.Krivit, 2008

Miles (1994)

Source

[Correlation of...](#)

Measured Rate of 4He x 10 ¹¹ /sec/W	Theoretical Rate of 4He from D+D>4He [1]	Percentage of Theoretical from D+D>4He	Theoretical MeV/4He Atom	Measured MeV/4He Atom
1.6	2.6	0.615384615	23.8	39
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De Ninno (2002)

Source [2]

[Experimental Evidence...](#)

page 16

McKubre (1995)

Amount of helium measured
Stated percentage of expected
Expected amount of helium
Heat if 23.77 MeV reaction

SRI-X	SRI-M4-1	SRI-M4-2	SRI-M4-3	SRI-M4-4
	1.556	1.66	0.34	2.077
	0.62	0.69		1.04
	2.509677419	2.405797101		1.997115385
31	38.33870968	34.44927536	n/a	22.85576923

Source

[New Physical Effects...](#)

pg. 9, 10

SRI-X	31
SRI-M4-1	38
SRI-M4-2	34
SRI-M4-3	N/A
SRI-M4-4	23

1. Theoretical rate of $2.6 \times 10^{11} \text{ } ^4\text{He s}^{-1}\text{W}^{-1}$ for the D-D fusion reaction. [Correlation of...](#) (page 6)

2. The number of He atoms evaluated from the measured heat is substantially lower than the number of He atoms measured (counted by means the mass spectroscopy) because, as we underlined at page 17 (case 1) of the paper, we missed most of the heat produced due to a mismatch in the calorimetry.