32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Principal cross sections

![Graph showing cross sections vs. Energy (MeV)]

- Cross section (barns)
- Energy (MeV)

Lines represent:
- total
- absorption
- elastic
- gamma production
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance total cross section

![Graph](image-url)

- **Energy (MeV)**
- **Cross section (barns)**
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance total cross section

Energy (MeV)

Cross section (barns)

---
total

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32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance total cross section

![Graph showing total cross section as a function of energy (MeV).]
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance total cross section

![Graph showing total cross section vs. energy in MeV]
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance total cross section

Energy (MeV)

Cross section (barns)

$10^0$  $10^1$
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance absorption cross sections

capture
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance absorption cross sections

![Graph showing energy (MeV) vs. cross section (barns)](#)

- **Cross section (barns)**
  - $10^{-3}$
  - $10^{-2}$
  - $10^{-1}$
  - $10^{0}$
  - $10^{1}$
  - $10^{2}$

- **Energy (MeV)**
  - $10^{-3}$
  - $10^{-2}$

The graph indicates peaks at various energies, corresponding to resonance absorption cross sections.
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance absorption cross sections
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance absorption cross sections

![Graph showing the capture cross section as a function of energy (MeV). The x-axis represents energy in MeV, ranging from $10^{-1}$ to $10^{0}$, and the y-axis represents the cross section in barns, ranging from $10^{-2}$ to $10^{-1}$. The graph shows a decreasing trend in cross section with increasing energy.](image-url)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
resonance absorption cross sections

capture

Energy (MeV)

Cross section (barns)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+

Heating

Heating (MeV/reaction) vs. Energy (MeV)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Non-threshold reactions

- Energy (MeV) vs. Cross section (barns)
- (n,gma)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Heating

![Graph showing the relationship between energy (MeV) and heating (MeV/reaction). The graph shows an increasing trend as energy increases.]
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Damage

![Graph showing damage as a function of energy. The graph has a y-axis labeled 'Damage (MeV-barns)' and an x-axis labeled 'Energy (MeV).']
Non-threshold reactions

Cross section (barns)

Energy (MeV)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Inelastic levels

Energy (MeV)

Cross section (barns)

(\text{n,n}^6)
(\text{n,n}^7)
(\text{n,n}^8)
(\text{n,n}^9)
(\text{n,n}^{10})

Energy (MeV)
Threshold reactions

Energy (MeV)

Cross section (barns)

- (n,x)
- (n,2n)
- (n,3n)
- (n,n*)
- (n,2n)

32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Threshold reactions

Energy (MeV) vs Cross section (barns)

(n,pa)
Threshold reactions

Cross section (barns) vs. Energy (MeV)

- \((n,\text{xp})\)
- \((n,\text{xd})\)
- \((n,\text{xt})\)
- \((n,\text{xhe3})\)
- \((n,\text{xa})\)
Threshold reactions

Energy (MeV)

Cross section (barns)

(n,p*0)
(n,p*1)
(n,p*2)
(n,p*3)
(n,p*4)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Threshold reactions

Cross section (barns)

Energy (MeV)

*n10^3

- (n, p*10)
- (n, p*c)
- (n, d*0)
- (n, d*1)
- (n, d*2)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+

Threshold reactions

Cross section (barns)

Energy (MeV)

(n,t^1) (n,t^2) (n,t^3) (n,t^4) (n,t^5)
Threshold reactions

32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+

Cross section (barns)

Energy (MeV)

- (n,t^c)
- (n,he3*0)
- (n,he3*1)
- (n,he3*2)
- (n,he3*3)
Threshold reactions

- $(n, \text{he}^3*4)$
- $(n, \text{he}^3*5)$
- $(n, \text{he}^3*c)$
- $(n, a^0)$
- $(n, a^1)$

Cross section (barns) vs. Energy (MeV)
Threshold reactions

Cross section (barns)

Energy (MeV)
angular distribution for elastic
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for elastic
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*1)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*2)
angular distribution for (n,n*3)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*4)
angular distribution for (n,n*5)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*6)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for \((n,n^*7)\)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*8)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*9)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*10)
angular distribution for (n,n*11)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*12)
angular distribution for (n,n*13)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*14)
angular distribution for (n,n*15)
angular distribution for (n,n*16)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*17)
angular distribution for (n,n*18)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*19)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,n*20)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Neutron emission for (n,x)
Neutron emission for \((n,2n)\)
Neutron emission for \((n,n^*)a\)
Neutron emission for (n,2n)a
Neutron emission for \((n,n^*)p\)
Neutron emission for \((n,n^*)d\)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Neutron emission for (n,n*c)
Photon emission for (n,x)
Photon emission for (n,2n)
Photon emission for (n,3n)
Photon emission for (n,n*)a
Photon emission for \((n,2n)\)a
Photon emission for \((n,n^*)p\)
Photon emission for (n,n*1)
Photon emission for \((n,n^*2)\)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,n*3)
Photon emission for (n,n'4)
Photon emission for \((n,n^*5)\)
Photon emission for (n,n\*6)
Photon emission for (n,n*7)
Photon emission for (n, n*8)
Photon emission for (n,n*9)
Photon emission for (n,n*10)
Photon emission for (n,n*11)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,n*12)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,n*13)
Photon emission for (n,n*14)
Photon emission for (n,n*15)
Photon emission for (n,n*16)
Photon emission for \((n,n^*17)\)
Photon emission for \((n, n*18)\)
Photon emission for (n,n\*19)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,n*c)
Photon emission for (n,gma)
Photon emission for (n,2a)
Photon emission for (n,2p)
Photon emission for \((n,pa)\)
Photon emission for (n,p*1)
Photon emission for (n,p*2)
Photon emission for (n,p*3)
Photon emission for \( (n,p^*4) \)
Photon emission for \((n, p^{*5})\)
Photon emission for \((n,p^*6)\)
Photons emission for (n,p*7)
Photon emission for (n,p*8)
Photon emission for (n, p*)9
Phonon emission for (n,p*10)
Photon emission for (n,p*c)
Photon emission for (n,d*1)
Photon emission for (n,d^2)
Photon emission for (n,d*3)
Photon emission for (n,d*4)
Photon emission for \((n,d^*5)\)
Photon emission for (n,d*c)
Photon emission for \((n,t*1)\)
Photon emission for $(n,t^*2)$

![Graph showing photon emission probabilities. The x-axis represents $E_n$ (MeV), the y-axis represents $E_y$ (MeV), and the z-axis represents probability per MeV. Peaks are observed at specific energy values.](image-url)
Photon emission for (n,t*3)
Photon emission for (n,t*4)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for \((n,t^*5)\)
Photon emission for (n,t*c)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,he3*1)
Photon emission for (n,he3*2)
Photon emission for (n,he3*3)
Photon emission for \((n, \text{he}3^*4)\)
Photon emission for (n,he3*5)
Photon emission for (n,he3*c)
Photon emission for (n,a*2)
Photon emission for (n,a*)

Eγ (MeV)

E_n (MeV)

Prob/MeV

0.7

0.8

0.9

1.0

50

100

150

200

10^0

10^1

10^2
Photon emission for (n,a*4)
Photon emission for (n,a*5)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Photon emission for (n,a*6)
Photon emission for (n,a*7)
Photon emission for (n,a*8)
Photon emission for (n,a*9)
Photon emission for (n,a*10)
Photon emission for $(n,a^*c)$
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
thermal capture photon spectrum
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
14 MeV photon spectrum

Gamma Prod (barns/MeV)

Gamma Energy (MeV)
Particle heating contributions

32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+

- protons
- deuterons
- tritons
- he-3
- alphas
Recoil Heating

Energy (MeV)

Heating (MeV/reaction)

32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
Particle production cross sections

- Protons
- Deuterons
- Tritons
- He-3
- Alphas

Energy (MeV)

Cross section (barns)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
protons from (n,x)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
protons from (n,n*)p
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+ protons from (n,2p)
angular distribution for (n,p*0) proton
angular distribution for (n,p*1) proton
angular distribution for (n,p*2) proton
angular distribution for (n,p*3) proton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,p*4) proton
angular distribution for (n,p*5) proton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for \((n,p^6)\) proton
angular distribution for (n,p^7) proton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,p*8) proton
angular distribution for (n,p*9) proton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,p*10) proton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
protons from (n,p*c)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
deuterons from (n,x)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
deuterons from (n,n*)d
angular distribution for (n,d*0) deuteron
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,d*1) deuteron
angular distribution for (n,d^2) deuteron
angular distribution for (n,d*3) deuteron
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,d*4) deuteron
angular distribution for (n,d*5) deuteron
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
deuterons from (n,d*c)

![Graph showing probability vs. energy](image)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
tritons from \((n,x)\)
angular distribution for (n,t*0) triton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,t*1) triton
angular distribution for (n,t\*2) triton
angular distribution for (n,t*3) triton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,t*4) triton
angular distribution for (n,t*5) triton
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
tritons from (n,t*c)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
he3s from (n,x)
angular distribution for \((n,he3^*0)\) 3he
angular distribution for \((n, \text{he}^3*1)\) \(3\text{he}\)
angular distribution for (n,he3*) 3he

Energy (MeV)
angular distribution for (n,he3*3) 3he
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,he3*4) 3he
angular distribution for (n,he3*5) 3he
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
he3s from (n,he3*c)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from (n,x)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from (n,n*)a
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from \((n,2n)a\)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from (n,2a)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from (n,pa)
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*0) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*1) alpha
angular distribution for (n,a*2) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*3) alpha
angular distribution for (n,a*4) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*5) alpha
angular distribution for \((n,a^*6)\) alpha
angular distribution for (n,a*7) alpha
angular distribution for (n,α\times 8) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*9) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
angular distribution for (n,a*10) alpha
32-GE-72 FOR FENDL-3.2 FROM JEFF-3.1.1 BY NJOY2016.60+
alphas from (n,a^c)