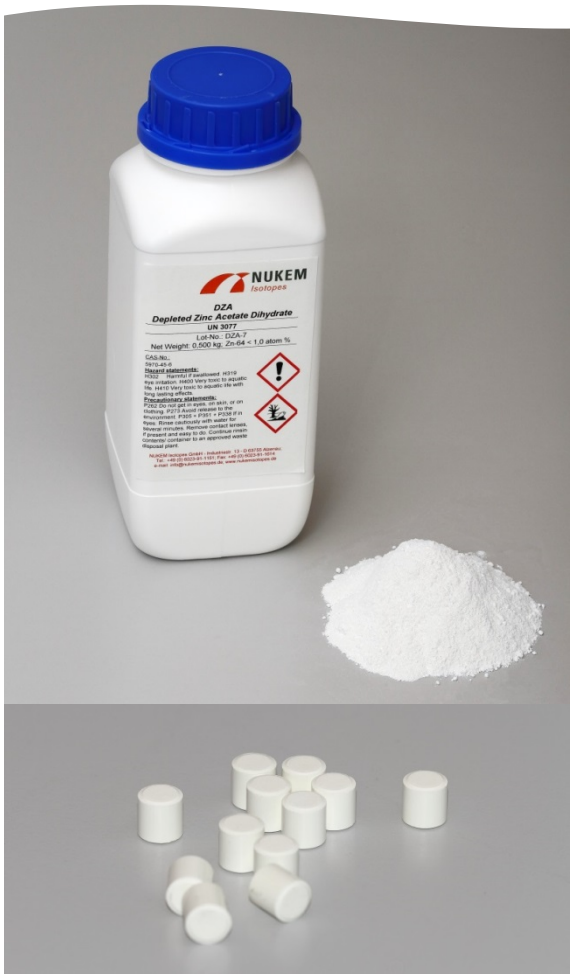
Depleted Zinc-64 in the form of Zinc Oxide and Zinc Acetate Dihydrate



- Zinc, depleted in the isotope ^{64}Zn, is a product for the water chemistry of nuclear power plants (NPPs).
- Depleted Zinc in the form of sintered Zinc Oxide Pellets is used in boiling water reactors (BWR).
- Depleted Zinc in the form of Zinc Oxide Powder or Zinc Acetate is used in pressurized water reactors (PWR).
- The aim of using Depleted Zinc is to reduce corrosion in the primary water circuit in order to reduce occupational radiation exposure for NPP personnel (possible reduction of collective dose rate is approx. 50 %).
- Another goal is the reduction of the potential for stress corrosion cracking in PWRs.
- American BWRs (mainly GE types) started with the use of Zinc Oxide in the form of natural zinc. The residual dose uptake problem from the activation of ^{64}Zn to ^{65}Zn has been successfully avoided in the United States, Mexico and some European countries by using Depleted Zinc.

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Zinc Oxide Pellets

Specification

Physical Properties:

- Material ^{64}Zn Depleted Zinc Oxide in form of sintered pellets
- Depletion $^{64}Zn \leq 1$ at%
- Density ≥ 4,77 g/cm³
- Diameter 10 mm ± 1 mm
- Length 10 mm ± 1 mm

Chemical Properties:

- Form ZnO
- Purity ≥ 99,8 wt%

Impurities in µg/g

Ag	≤ 10
Al	≤ 50
As, Au	≤ 10
B, Ba, Be, Bi, Br	≤ 10
C	≤ 500
Ca, Cd, Ce, Cl, Co, Cr, Cs, Cu	≤ 10
Dy	≤ 10
Er, Eu	≤ 10
F, Fe	≤ 10
Ga, Gd, Ge	≤ 10
Hf	≤ 10
Hg	≤ 2
Ho	≤ 10
I, In, lr	≤ 10
K	≤ 10
La, Li, Lu	≤ 10
Mg, Mn, Mo	≤ 10
N, Na, Nb, Nd, Ni	≤ 10
Os	≤ 10
P, Pb, Pd, PO_4, Pr, Pt	≤ 10
Rb, Re, Rh, Ru	≤ 10
S, Sb, Sc, Se	≤ 10
Si	≤ 50
Sn	≤ 50
Sm, SO_4, Sr	≤ 10
Ta, Tb, Te, Th, Ti, Tl, Tm	≤ 10
U	≤ 10
V	≤ 10
W	≤ 10
Y, Yb	≤ 10
Zr	≤ 10
Rare Earth	≤ 20
Insoluble	≤ 100
Remaining Inpurities	≤ 20

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Zinc Acetate Dihydrate Powder

Specification

Physical Properties:

- Material ^{64}Zn Depleted Zinc in form of Zinc Acetate Dihydrate
- Zn-64 $^{64}Zn \leq 1$ at%
- Particle Size ≤ 1 mm

Chemical Properties:

- Form $Zn(CH_3CO_2)_2(H_2O)_2$
- Purity ≥ 99,8 wt%

Impurities in µg/g

Ag	≤ 10
Al	≤ 50
As	≤ 10
Au	≤ 20
B, Ba	≤ 10
Be	≤ 20
Bi, Br	≤ 10
C	n.s.
Ca, Cd	≤ 10
Ce, Cl	≤ 20
Co, Cr	≤ 10
Cs	≤ 20
Cu	≤ 10
Dy	≤ 20
Er, Eu	≤ 20
F	≤ 20
Fe	≤ 10
Ga, Gd, Ge	≤ 20
Hf	≤ 10
Hg, Ho	≤ 20
I, In	≤ 10
Ir	≤ 20
K	≤ 10
La	≤ 20
Li	≤ 10
Lu	≤ 20
Mg, Mn, Mo	≤ 10
N	≤ 20
Na	≤ 10
Nb, Nd	≤ 20
Ni	≤ 10
Os	≤ 20
P, Pb	≤ 10

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Zinc Acetate Dihydrate Powder

Pd	≤ 20
PO_4, Pr, Pt	≤ 20
Rb, Re, Rh, Ru	≤ 20
S, Sb	≤ 10
Sc	≤ 20
Se	≤ 10
Si	≤ 50
Sm	≤ 20
Sn	≤ 10
SO_4	≤ 50
Sr	≤ 10
Ta, Tb, Te, Th	≤ 20
Ti	≤ 10
Tl, Tm	≤ 20
U	≤ 20
V	≤ 10
W	≤ 20
Y, Yb	≤ 20
Zr	≤ 20
Rare Earth	≤ 20
Insoluble	≤ 100
Remaining Inpurities	≤ 10

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