

Größenordnung (Volumen)

Dies ist eine Zusammenstellung von Volumina verschiedener Größenordnungen zu Vergleichszwecken. Die Angaben sind oft als „typische Werte“ zu verstehen; die umgerechneten Werte sind gerundet.

Die von der Grundeinheit Meter abgeleitete Einheit des Volumens im internationalen Einheitensystem ist 1 Kubikmeter (Einheitenzeichen m^3), das Formelzeichen V .

Siehe auch: Vorsätze für Maßeinheiten und Wissenschaftliche Notation

kleinere Volumina als 1 mm³

- 0,00419 nm³ - Volumen eines Kohlenstoffatoms
- 1 nm³ - Sichtbarkeitsgrenze Elektronenmikroskop

1 μm³ (Kubikmikrometer) entspricht $1 \cdot 10^9 = 1.000.000.000 = 1$ Milliarde Kubiknanometer

- 0,0005 μm³ - Volumen eines Grippevirus
- 0,002 μm³ - mittlere Korngröße von Feinton
- 0,01 μm³ - Sichtbarkeitsgrenze Lichtmikroskop
- 0,06 μm³ - mittlere Korngröße von Ton
- 1 μm³ - Volumen eines Bakteriums
- 2 μm³ - mittlere Korngröße von Grobton
- 60 μm³ - mittlere Korngröße von Feinschluff
- 2000 μm³ - mittlere Korngröße von Schluff
- 60000 μm³ = 0,00006 mm³ - mittlere Korngröße von Grobschluff
- 0,0001 mm³ - kleinstes mit bloßem Auge sichtbares Teilchen
- 0,002 mm³ - mittlere Korngröße von Feinsand
- 0,003 mm³ - menschliche Eizelle
- 0,06 mm³ - mittlere Korngröße von Sand
- 0,4 mm³ - Senfkorn

1 mm³ bis 1 cm³ (1 ml)

1 mm³ entspricht $1 \cdot 10^9 = 1.000.000.000 = 1$ Milliarde Kubikmikrometer

- 1 mm³ entspricht 1 μl = 1 Mikroliter - geläufige Maßeinheit für Durchsatz einer Auto-Einspritzpumpe
 - 2 mm³ - mittlere Korngröße von Grobsand
 - 30 mm³ - Pfefferkorn
 - 60 mm³ - mittlere Korngröße von Feinkies
 - 100 mm³ - Erbse
 - 150 mm³ - Stubenfliege
-

1 cm³ bis 10 cm³ (1 cl)

- 2 cm³ - mittlere Korngröße von Kies
- 2,56 cm³ - Zuckerwürfel
- 4 cm³ - Kirsche

10 cm³ bis 100 cm³ (1 dl)

- 16,387064 cm³ = Kubikzoll
- 20,0 cm³ - Portion Schnaps (2 cl)
- 33,5 cm³ - Tischtennisball
- 40,7 cm³ - Golfball
- 60 cm³ - mittlere Korngröße von Grobkies

100 cm³ bis 1000 cm³ (1 Liter)

- 116 cm³ - Eishockey puck
- 125 cm³ - Espressotasse
- 134 cm³ - Tennisball
- 166 cm³ - Zauberwürfel (3er Normalgröße)
- 250 cm³ - Suppenteller
- 500 cm³ - Inhalt einer Bierdose
- 700 cm³ - Inhalt einer Mineralwasserflasche

1 bis 10 Liter

- 1,435 Liter - Klinkerstein NF
- 1,960 Liter - Kalksandstein NF
- 3,119 Liter - Kalksandstein 2DF
- 3,450 Liter - Handball
- 3,785411784 Liter = 1 US gallon
- 4 Liter - durchschnittliches Lungenvolumen eines erwachsenen Menschen
- 4,5460902819948 Liter = 1 Imp.gallon
- 5,780 Liter - Fußball
- 8,568 Liter - Kalksandstein R5DF
- 10 Liter - typischer Eimer



Espressotasse

100 bis 1000 Liter (1 m³)

- 159 Liter - Standard Erdölfass (1 Barrel)
- 220 Liter - typischer Badewanneninhalt
- 764,554857984 Liter = 1 Cubic yard

1 m³ bis 1000 m³

- 1 m³ - 1,1 m³ großer Müllcontainer (Vierrädriger Müllgroßbehälter)
- 4,3 m³ - Rauminhalt einer Standard-Litfaßsäule (Durchmesser ca. 1,2 m, Höhe ca. 3,80 m)
- 12 m³ - Kerosinverbrauch eines Jumbo-Jet (Boeing 747-400) pro Stunde in Reiseflughöhe^[1]
- 20 m³ - typischer Gartenpavillon (3x3 m)
- 33 m³ - Laderaum eines 20-Fuß-ISO-Container
- 67,6 m³ - Laderaum eines 40-Fuß-ISO-Container
- 80 m³ - üblicher Omnibus
- 120 m³ - Gelenkbus
- 216,8 m³ - Tankinhalt eines Jumbo-Jet (Boeing 747-400)
- 237,31 m³ - Goldeinlagerung in Fort Knox, das entspricht 147,3 Millionen Feinunzen oder etwa 4.580 Tonnen (Stand: 2. März 2011^[2]).
- 240 m³ - 100 m² Wohnung mit 2,4 m Höhe

1000 m³ bis 1.000.000 m³

- 1233,48183754752 m³ = 1 acre-foot
- 2000 bis 3000 m³ - Rauminhalt eines olympischen Schwimmbeckens
- 5800 m³ - Jahresproduktion der schottischen Whiskybrennerei Glen Grant (2003)
- 8000 m³ - geschätzte Gesamtmenge des bisher von Menschen geschürften Goldes, ein Würfel von ca. 20 m Kantenlänge
- 8225 m³ - Traggasvolumen eines Luftschiffs vom Typ Zeppelin NT
- 11.300 m³ - Traggasvolumen des ersten Zeppelins *LZ1*
- 15.600 m³ - Ahornsirup-Produktion der kanadischen Provinz Québec im Jahr 2001
- 55.000 m³ - Volumen des Kugelgasbehälters in Wuppertal
- 125.000 bis 147.000 m³ - Ladevolumen von LNG-Tankern
- 211.890 m³ - Traggasvolumen der Zeppelin-Luftschiffe *LZ129 „Hindenburg“* und *LZ130 „Graf Zeppelin II“*, der größten Luftschiffe aller Zeiten
- 347.000 m³ - Volumen des Gasometer Oberhausen

1.000.000 m³ bis 1.000.000.000 m³ (1 km³)

- 2,6 Millionen m³ - Volumen der Cheops-Pyramide
- 5,5 Millionen m³ - Innenraum des Freizeitparks Tropical Islands
- 12,6 Millionen m³ - Stauinhalt der Ennepetalsperre
- 38,4 Millionen m³ - Stauinhalt der Hennetalsperre
- 70 Millionen m³ - Stauinhalt der Sorpetalsperre
- 125 bis 130 Millionen m³ - jährliche (Trink-)Wasserentnahme des Bodensees durch die Bodensee-Wasserversorgung
- 134,5 Millionen m³ - Stauinhalt der Möhnetalsperre
- 173 Millionen m³ - Rauminhalt des Baldeggersees (Schweiz)
- 285 Millionen m³ - Rauminhalt des Hallwilersees (Schweiz)

1 km³ bis 1000 km³

1 km³ (Kubikkilometer) entspricht $1 \cdot 10^9 = 1.000.000.000 = 1$ Milliarde Kubikmeter

- 1,3 km³ - Rauminhalt des Bielersees (Schweiz)
- 3,0 km³ - Rauminhalt des Starnberger Sees (Deutschland)
- 3,9 km³ - Rauminhalt des Zürichsees (Schweiz)
- 4 km³ - Rauminhalt des Attersees (Österreich)
- 4,168182 km³ \approx 1 Kubikmeile
- 5,2 km³ - Rauminhalt des Brienersees (Schweiz)
- 6,5 km³ - Rauminhalt des Luganersees und des Thunersees (Schweiz)
- 11,5 km³ - jährlicher Zufluss des Bodensees (Deutschland/Schweiz/Österreich)
- 14 km³ - Rauminhalt des Lac de Neuchâtel (Schweiz)
- 14 km³ - Rauminhalt des Vierwaldstättersees (Schweiz)
- 37 km³ - Rauminhalt des Lago Maggiore (Italien/Schweiz)
- 48 km³ - Rauminhalt des Bodensees (Deutschland/Schweiz/Österreich)
- 89 km³ - Rauminhalt des Genfersees (Schweiz)
- 153 km³ - Stauinhalt des Volta-Stausees (Ghana)
- 165 km³ - Stauinhalt des Nassersees (Ägypten)
- 180 km³ - Stauinhalt der Kariba-Talsperre (Simbabwe)
- 484 km³ - Rauminhalt des Eriesees (USA/Kanada)

1000 km³ bis 1.000.000 km³

- 1.639 km³ - Rauminhalt des Ontariosees (USA/Kanada)
- 2.689 km³ - weltweite Erdgasförderung im Jahr 2004
- 2.760 km³ - Rauminhalt des Viktoriasees (Tansania/Uganda/Kenia)
- 3.538 km³ - Rauminhalt des Huronsees (USA/Kanada)
- 4.918 km³ - Rauminhalt des Michigansees (USA)
- 12.232 km³ - Rauminhalt des Lake Superior (USA/Kanada)
- 20.000 km³ - Rauminhalt der Ostsee
- 23.000 km³ - Rauminhalt des Baikalsees, weltweit größter Süßwassersee (nach Rauminhalt)
- 50.000 km³ - Rauminhalt der Nordsee
- 200.000 km³ - Rauminhalt des Roten Meeres
- 550.000 km³ - Rauminhalt des Schwarzen Meeres

1.000.000 km³ bis 1.000.000.000 km³

- 2,85 Millionen km³ - Rauminhalt des Grönländischen Eisschildes
 - 4,2 Millionen km³ - Rauminhalt des europäischen Mittelmeeres
 - 26 Millionen km³ - Rauminhalt des Antarktischen Eisschildes
 - 292 Millionen km³ - Rauminhalt des Indischen Ozean
 - 355 Millionen km³ - Rauminhalt des Atlantik
 - 724 Millionen km³ - Rauminhalt des Pazifik
-

1.000.000.000 km³ bis 1.000.000.000.000 km³

- 1,38 Milliarden km³ ($1,38 \cdot 10^{18}$ m³) - Rauminhalt aller Meere der Erde
- 22,0 Milliarden km³ ($2,2 \cdot 10^{19}$ m³) - Rauminhalt des Mondes
- 164 Milliarden km³ ($1,64 \cdot 10^{20}$ m³) - Rauminhalt des Mars
- 928 Milliarden km³ ($9,28 \cdot 10^{20}$ m³) - Rauminhalt der Venus

größere Volumina als 1.000.000.000.000 km³ ($1 \cdot 10^{21}$ m³) **$1 \cdot 10^{21}$ m³ bis $1 \cdot 10^{24}$ m³**

- 1,09 Billionen km³ ($1,09 \cdot 10^{21}$ m³) - Rauminhalt der Erde
- 1,432 Billionen km³ ($1,432 \cdot 10^{24}$ m³) - Rauminhalt des Jupiters

 $1 \cdot 10^{24}$ m³ bis $1 \cdot 10^{27}$ m³

- 1,412 Trillionen km³ ($1,412 \cdot 10^{27}$ m³) - Rauminhalt der Sonne

über $1 \cdot 10^{27}$ m³

- 846,73 Septilliarden km³ ($8,4673 \cdot 10^{47}$ m³) - Rauminhalt eines Kubiklichtjahres
- 29,38 Oktillionen km³ ($2,938 \cdot 10^{49}$ m³) - Rauminhalt eines Kubikparsecs
- 100 Dezillionen km³ ($1 \cdot 10^{62}$ m³) - Rauminhalt der Milchstraße
- 4 Tredezillionen km³ ($4 \cdot 10^{78}$ m³) - Rauminhalt des beobachtbaren Universums, nach aktuellen Schätzungen

Weblinks

- Interaktive Veranschaulichung von Ansichten der Welt in verschiedenen Distanzen ^[3] (englisch)

Quellen

[1] Science Centre Singapore:

[2] OANDA Currency Converter (<http://www.oanda.com/currency/converter/>) – Aktuelle Rohstoff- und Währungskurse. Zuletzt abgerufen am 2. März 2011

[3] <http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10/>

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