



COASTAL ENGINEERING

Glossary and Conversion Factors

Coastal Engineering Group
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Work is of significant value
only after it is communicated.

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Introduction to glossary.

The following glossary of technical coastal engineering terms consist of four separate tables making it possible to translate the terms presented between the four languages of the tables: English, Dutch, French and German.

Each table is arranged in alphabetical order in the language of its first column. Additionally, definitions (in English only) of some of the more specific terms have been added to the English language table.

The assistance of Mr. W. Tilmans, student assistant and Miss J. Landman, secretary, both members of the Coastal Engineering Group has been invaluable in compiling the translations for Dutch, French and German.

It might be well to note additionally here, that a glossary is also included in volume III of the *Shore Protection Manual*. This latter listing includes more words and more complete English definitions than are included in this book; translations into Dutch, French and German are not included, however.

Extra Notes

Table I English words with Definitions and Translations

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|---------------------------|--|--|--|---|
| Abstract | 1. Short summary with reference listing 2. Difficult to visualize physically | 1. Uitreksel, voorlopig rapport 2. Abstract | 1. Auszug | 1. Extrait, abrégé, résumé 2. Abstrait |
| Access | | Toegang | Zutritt, Zugang | Accès |
| Accretion (= silting up) | Accumulation, build-up of material; opposite of erosion | Aanwas, aanslibbing | Anlandung, Anschwemmung, Anhäuerung, Verschlickung | Atterrissement, lais, dépôt, alluvion, envasement |
| Amplify (to) | | versterken | Verstärken | amplifier, survolter, répéter, élever, renforcer |
| Arc | | Deel v.e. kegelsnede i.h.b. cirkelboog | Bogen, Kreisbogen | Arc, courbe |
| Armor unit | An element of the primary (upper) cover layer of a rubble mound breakwater | | | |
| Articulated platform | Floating structure hinged to an anchor on the sea bottom | | | |
| Artificial island | | Kunstmatig eiland | Künstliche Insel | îlot artificiel |
| Bank (= flat) | Shoal area, often isolated at sea | Bank | Plat, bank | Banc |
| Bar | Long narrow shoal area | Bank (evenwijdig aan de kust), drempel | Barre, Sandbank | Barre |
| Barnacles (= fouling) | Marine shellfish which grow on fixed, hard objects | Eendemossel, aangroeing (schip) | Bodenanwuchs | Filandres |
| Barrier | A coastal formation resulting from the deposition of material on the edge of a shoal | | | |
| Bathymetry | Physical configuration of sea bed (see Hydrography) | Diepteligging | Tiefenmessung, Tiefseemessung, Tiefseelotung | Bathymétrie |
| Beach | | strand | Strand | Plage |
| Beach face (= Fore-shore) | That portion of a beach exposed to wave uprush | "nat" strand | "nass" Strand | Plage d'estran |
| Beach protection | | Strandverdediging | Strandschutz | Protection des plages |
| Beam | 1. Maximum width of ship 2. Direction perpendicular to longitudinal centerline of ship | | | |
| Bedload | Material moving along the bottom | | | |
| Bedload transport | The quantity of material moved along the bottom with at least intermediate contact Contrast: suspended load transport | Bodemtransport | Geschiebeführung | Charriage de fond |
| Bore | A travelling hydraulic jump, sometimes caused by tides in shallow estuaries | Vloedbranding | Flutbrandung | Marée deferlante, mascaret |
| Bottom protection | | Bodenbescherming | Bodenschutz | Protection du fond |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|-----------------------|--|--|--|----------------------------------|
| Boundary condition | | Randvoorwaarde | Randbedingung | Condition des limites |
| Boundary layer | | Grenslaag | Grenzschicht | Couche limite |
| Bow | Forward point of a ship | Boeg, voorsteven | Bug | Proue |
| Break (waves) | Loss of stability of wave form, resulting in transformation of energy to noise, turbulence, etc. | | | |
| Breaker zone | | Brandingszone | Brandungszone | Zône de brisants, zône de ressac |
| Breakwater | | Golfbreker | Wellenbrecher | Brise-lame |
| Bridge (ship) | | Brug | Brücke | Pont |
| Bulk carrier | | Bulk carrier | Massengutschiff | Cargo de transport en vrac |
| Buoy | | Boei | Boje, Barretonne | Bouée |
| Buoyancy | | Opdrijvend vermogen | Auftrieb, Hubkraft, Schwebefähigkeit | Flottabilité |
| Bypass | | Omloopleiding | Umgehungsleitung | Canal d'évacuation |
| Cape (= Headland) | A large scale outcropping of land in the sea | Punt, landhoofd, kop | Vorgebirge, Kap | Pointe, cap |
| Cavitation | Spontaneous boiling of water, caused by locally low pressures | Cavitatie | Kavitation, Hohlraumbildung | Cavitation |
| Celerity | Speed of propagation | Voortplantingssnelheid | Fortpflanzungsgeschwindigkeit | Vitesse de propagation |
| Channel | | Geul | Rinne | Chenal |
| Chute | A steeply sloping slide, gutter or trough | Steile afvoergoot | Abschüssige Rinne | Radier incliné |
| Clay | Soil particles having a grain size of less than 2 μm | Klei | Ton | Argile |
| Cliff | | Klif | Steilküste | Falaise |
| Coast | | Kust | Küste | Côte |
| Coastal protection | | Kustverdediging | Küstenschutz | Protection des côtes |
| Cofferdam | | Kofferdam | Kastenfangedamm | Bâtardeau |
| Container ship | | Container schip | Behälterschiff | Cargo porte-container |
| Continental shelf | That portion of the oceans less than 200 m deep | Continental plat | Festlandssockel, Schelf | Plateau continental |
| Cooling water | | Koelwater | Kühlwasser | Eau de refroidissement |
| Coriolis acceleration | | Coriolis versnelling | Coriolis Beschleunigung | Accélération de Coriolis |
| Current | 1. Present 2. Flow velocity | 1. Gangbaar 2. Stroming, stroomsnelheid | 1. Kurant, gangbar 2. Strömung, Strom | 1. Courant 2. Courant |
| Current meter | | Stroomsnelheidsmeter | Strommesser | Courantomètre |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|----------------------------|--|--|---|------------------------------|
| Dam | | Dalafsluiting | Talsperre | Barrage |
| Dead weight tonnage | The carrying capacity of a ship, including fuel and provisions (1 ton = 1016 kg) | Laadvermogen v.e. schip (netto lading incl. brandstofvoorraad en proviand) | Ladevermögen, Schergutladerähigkeit (effektive Ladung, einschliesslich Bunkervorräte, Ballast und Proviant) | Port et lourd |
| Delta | Sediment deposit at a river mouth | Delta | Delta | Delta |
| Density current | | Dichtheidsstroming | Dichtestrom | Courant de densité |
| Diffraction | | Diffractie | Diffraction | Diffraction |
| Diffusion | | Diffusie | Diffusion | Diffusion |
| Dike | | Dijk | Deiche | Digue |
| Dipper Dredge | | Lepelbaggerwerktuig (drijvend) | Löffelbagger | Drague à cuillère |
| Draft (= draught) | Depth of water, necessary to float a ship in still water | Diepgang | Tiefgang | Tirant d'eau |
| Drag (of submerged bodies) | | Weerstand (van overstromende lichamen) | Widerstand (von umströmte Körper) | Résistance à l'écoulement |
| Dredge | | Baggerwerktuig | Nassbagger | Drague, Dragueur, Excavateur |
| Drydock | | Urooqdok | Trockendock | Cale sèche |
| Ebb | Tidal current flowing toward the sea or the dropping phase of the tide level | Eb | Ebbe | Jusant |
| Eddy | Turbulence | Neer | Walze, Wirbel | Remole |
| Eddy viscosity | A fictitious viscosity from turbulent energy dissipation | Wervelviskositeit | Wirbelviskosität | Viscosité de foucault |
| Erosion | Removal of material contrast with accretion | Erosie, uitschuring | Erosion | Érosion |
| Fall velocity | The speed at which soil particles settle in still water | Valsnelheid | Fallgeschwindigkeit | Vitesse de chute |
| Fascine mattress | A bottom scour protection fabricated from willow saplings | Zinkstuk van rijs-hout | Faschinenpakwerk | Matelas de fascinages |
| Fender | A device to reduce impact forces between a ship and fixed structures | Fender, wrijfhout, schutplank | Fender, Prellpfahl | Pare-chocs |
| Fetch | The distance over which the wind blows when generating waves | Strijk lengte | Windweg | Fetch |
| Filter | | Filter | Filter | Filtre |
| Flood current | Current, directed up the river, caused by the tide | Vloedstroom | Flutstrom | Courant de flot |
| Flow pattern | | Stroombeeld | Strömungsbild | Champs de courants |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|--------------------------|---|--|--|------------------------------|
| Foreshore (= beach-face) | That portion of a beach, which is intermittently covered by water | "nat" strand | "nass" Strand | Plage d'estran |
| Fouling (= barnacles) | Covering of marine growth | Aangroeiing, aanzetting (op schepen) | Bodenanwuchs | Filandres |
| Fracture | | Breuk, breukvlak | Bruch | Cassure |
| Geostrophic | Caused by earth's rotation | | | |
| Grain size distribution | | Korrelgrootteverdeling | Korngrößenverteilung | Distribution granulométrique |
| Groin (= groyne) | A shore protection structure, usually built perpendicular to a coast to retard littoral transport | Strandhoofd (zee), krib (rivier) | Strandbühne | Épis |
| Gravel | Pebbles | | | |
| Gust | Short interval of higher than average wind speed | Windstoot | Windstoss | Coup de vent |
| haul (to) | to pull or tow | slepen, trekken, halen, hijsen | schleppen | traîner, remorquer |
| headland (= cape) | A major coastal outcropping in the ocean | Punt, landhoofd, kop | Vorgebirge, Kap | Pointe, Cap |
| Heave | Vertical motion of a floating body | dampen | Heben | Hisser |
| High water (H.W.) | The instant at which the tide level is highest | Hoogwater (H.W.) | Hoch Wasser (H.W.) | Haute Mer (H.M.) |
| Hydrography | Study of configuration of sea bed (see bathymetry) | | | |
| Impact | | Botsing, stoot, slag, schok | Stoss | Heurt, choc |
| Impeller (pump) | The rotation part of a centrifugal pump | Waaier, schoepenrad | Pumpenflügelrad | Aube, palette |
| Inertia | | Traagheid | Trägheit | Inertie |
| Interface | Surface of separation between two materials having different properties | Grensvlak | Grenzschicht, Übergangsfläche, Grenzfläche | Interface |
| Internal wave | A wave propagating along an interface between ocean layers | Interne golf | Interne Welle | Onde Interne |
| Island | | Eiland | Insel | Ile |
| Jet | | Straal | Strahl | Jet |
| Jetty | A breakwater, groin or crib | Aanlegsteiger | Hafendamm | Jetée |
| Ladder | That portion of a dredge structure which supports the soil cutting device | Ladder (waarlangs de zimmers worden gehaald) | Baggerleiter | Échelle de drague |
| Lagoon | A shallow area separated from the sea by a barrier | Lagune | Lagune | Lagune |
| Laminar flow | | Laminaire stroming | Laminarströmung | Écoulement laminaire |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|-----------------------|--|-------------------------------------|-----------------------------------|------------------------|
| Latitude | | Breedte (geografisch, astronomisch) | Breite (geografisch), Breitengrad | Latitude |
| Lethal | Deadly | Dodelijk | Tödlich, letal | Mortel |
| Littoral | Taking place primarily within the breaker zone | Langs de kust | Der Küste entlang | Côtier, littoral |
| Low Water (L.W.) | The instant at which the tide level is lowest | Laagwater (L.W.) | Niederigwasser (N.W.) | Basse Mer (B.M.) |
| Mariner | | Zeeman, matroos | Matrose | Marin, matelot |
| Meandering | | Meanderen | Mäandern | Méandrer |
| Megaripple | Large ripple on sea bottom, caused by ocean current sediment transport | Megaribbel | Megarippel | Ride géante |
| Mole | Breakwater | Havenhoofd | Mole | Môle |
| Momentum | | Impuls | Impuls, Antrieb | Impulsion |
| Monolith | A single massive unit | Monoliet | Monolith | Monolithe |
| Mud | Loosely packed saturated clay or silt | Modder | Schlamm | Boue |
| Navigation | | Navigatie, route-bepaling | Navigation, Schiff-fahrtkunde | Navigation |
| Neap tide | Lowest amplitude tides occurring near the times of 1/4 or 3/4 moon | Doodtij | Nipptide | Morte eau |
| Nutrient | | Voedingsstof | Nährflüssigkeit, Nährstoff | Nutritif |
| Oblique | Approaching at an angle | schuin, scheef, hellend | Überhangend, geneigt | oblique, incliné |
| Oceanography | Study of the oceans | Oceanografie | Ozeanografie | Océanographie |
| Oil tanker | | Olietanker | Ol Tanker | Pétrolier |
| Peat | | Veen, turf | Torf | Tourbe |
| Pebbles | Gravel; grains larger than 2 mm. | Kiezel | Kiesel | Galets |
| Peninsula | A spit or pointed headland or cape | Schiereiland, Landtong | Halbinsel | Presqu'île |
| Physical Oceanography | Study of oceanographic physics | | | |
| pitch (to) | Rotational motion of a ship about a beam axis | stampen | stampfen | tanguer (tangage) |
| Pollution | | Verontreiniging | Verunreinigung | Pollution |
| Polynomial | | Veelterm | Polynom, vielgliedrige Grösse | Polynôme |
| Port | 1. (Left) 2. Harbor | 1. Bakboord 2. Haven | 1. Backbord 2. Hafen | 1. Bâbord 2. Port |
| Potential flow | Flow of an ideal fluid described by specific mathematical equations | Potentiaalstroming | Potentialströmung | Écoulement à potentiel |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|---------------------------|--|---|--|---------------------------------|
| propel (to) | | Voortstuwen, voortdrijven, voortbewegen | Antreiben | Propulser |
| Random | Unpredictable | willekeurig, onvoorspelbaar | beliebig | quelconque |
| Reflection | | Terugkaatsing | Reflektion | Réflexion |
| Refraction | | Refractie | Refraktion | Réfraction |
| retain (to) | | keren, behouden | stauen (von wasser), behalten | retenir |
| Retention time | The period during which given water remains in a harbor basin | Verblijftijd | Retentionszeit, Verweilzeit, Rückhaltezeit | Periode de Séjour, de rétention |
| Rigging | | Takelage, tuig, vleet | Takelage, Takelung, Betakelung | Grément |
| Rip current | A local current returning littoral current flow to the sea | Muistroom | Rückstrom | "Rip courant" |
| Ripple | A wave-like irregularity on the sea bottom | Ribbel | Rippel | Ride |
| River bend | | Riverbocht | Flusskurve | Courbe d'un fleuve |
| River mouth | | Riviermonding | Flussmündung | Embouchure d'un fleuve |
| Rock | | Rots | Felsen | Rocher |
| roll (to) | The rotation motion of a floating about its longitudinal axis | rollen, slingeren | rollen, schlingern | rouler (roulis) |
| Roughness | | Ruwheid | Rauhigkeit | Rugosité |
| Rubble mound break-water | | Stortstenen golfbreker | | Brise-lame et enrochements |
| Rule of thumb | | Vuistregel | Faustregel | Règle |
| Salinity | Salt content, usually expressed in grams of salt per kilogram of water (parts per thousand) | Zoutgehalte | Salzgehalt | Salinité |
| Salt intrusion | | Binnendringen van zout | Eindringen von Salz | Pénétration d'eau salée |
| Salt water wedge (tongue) | | Zouttong | Salzwasserzunge | Coin salé |
| Sand | Soil particles having a grain size ranging between about 2000 μm and 50 μm | Zand | Sand | Sable |
| Sand transport | | Zandtransport | Förderung von Sand | Transport de sable |
| Scour | Local erosion near some fixed object | Ontgronding | Ausspülung, Auswaschung | Affouillement |
| Seawall | | Strandmuur | Deckwerk | Brise-mer |
| Sedimentation | | Sedimentatie, afzetting | Ablagerung | Sédimentation |
| Sediment transport | | Sediment transport | Geschiebeführung | Débit solide |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|------------------|---|---------------------------------|--------------------------------------|-------------------------------|
| Seiche | A standing wave within a confined basin | Seiche | Seiche | Seiche |
| Semi-diurnal | Occurring twice per lunar day | Dubbeldaags | | |
| Semi-submersible | Capable of being partially submerged in order to increase stability and decrease response to waves | | | |
| settle (to) | | bezinken, zich afzetten | sich (ab)setzen, sich niederschlagen | se déposer, se précipiter |
| Set-up | Increase of average water level caused by a. wave action b. wind shear stresses c. barometric pressure changes | Opwaaiing | Aufwehung | "set-up" |
| Sewage | | Rioolwater | Abwasser | Eaux vannes |
| Sheet piling | | Damwand | Spundwand | Rideau de palplanches |
| Shelf | Area of the sea adjacent to the coast less than 200 m deep | | | |
| Shoal | An area of relatively shallower water | Verondieping, ondiepte | Veruntiefung, Untiefe | Déprofondissement |
| Sidereal day | The time required for the earth to turn 360° on its axis | | | |
| Silt | Soil having a grain size ranging between about 50 µm and 2 µm | Slib | Schlick | Vase, silt |
| Slack water | The instant at which the (tidal) current is zero | Dood (stil) water, kentering | Stauwasser, Totwasser, Stillwasser | Étale |
| Slug | 1. A mass of material 2. The unit of mass in the English System of units | | | |
| Sluice | | Sluis, Uitwaterings-sluis | Schleuse | Écluse |
| Spit | A point of land formed from deposited material transported by a littoral current | Spit, Strandhaak | Spitze | Flèche |
| Spring tide | Highest amplitude tides, usually occurring near the times of full and new moon | Springtij | Springflut | Vive eau |
| Spud | A vertical, retractible pile, used to moor certain types of dredges | Ankerpaal, Stapper | | Pieu d'ancrage |
| Squat | Increase in ship draft caused by its forward motion | Squat, Vertrimming | Fahrtrimm | Dejaugeage |
| Standing wave | | Staaude golf, Stationnaire golf | Stehende Welle, Stationäre Welle | Clapotis, Onde Stationnaire |
| Starboard | Right hand side | Stuurboord | Steuerbord | Tribord |
| Stern | The after (back) end of a ship | Achtersteven | Heck | Poupe |
| Storm surge | | Stormvloed | Sturmflut | Onde de tempête, Coupe de mer |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|-------------------|--|---|------------------------------------|-------------------------|
| Submergence | | Onderdompeling | Eintauchung | Immersion |
| Surf | | Branding (van een golf) | Brandung | Déferlement |
| Surge | 1. Longitudinal oscillatory motion of a ship 2. Increase in water level caused, for example, by a storm | 1. Schrikken 2. Opstuwing | 2. Wanderwelle (mit steiler Front) | 2. Infumexence |
| Suspended load | Material in suspension | Zwevend materiaal | Schwebestoff | Sédiments en suspension |
| Sway | Beamwise movement of a ship | Verzetten (dwars-verplaatsing v.e. schip) | Schwingen | |
| Swell | | Deining | Dünnung | Houle |
| Tanker | | Tanker | Tanker | Pétrolier |
| Tidal current | | Getijstroom | Gezeitenstrom | Courant de marée |
| Tidal prism | The volume of an estuary between the high and low tide levels | Getijvolume, vloed-volume | Tidewassermenge | Volume de flot |
| Tidal wave | 1. Long wave of tide 2. (incorrect) name for Tsunami | 1. Getijgolf | 1. Gezeitwelle | 1. Onde de marée |
| Tide | | Getij | Tide, Gezeit | Marée |
| Tide(tidal) range | Elevation difference between high and low water | Getijverschil | Tidehub | Marnage |
| Tide table | | Getijtafel | Gezeitentafel | Annuaire des marées |
| Trade winds | | Passaat (wind) | Passatwinden | Vents alizes |
| Trench | | Geul, sleuf (van kabels) | Kabelgraben | Tranchée |
| Tsunami | A long ocean wave caused (for example) by an earthquake | Tsunami | Tsunami | Tsunami |
| Tugboat | | Sleepboot | Schleppschiff | Remorqueur |
| Turbidity | | Troebeling | Trübung | Turbidité |
| Turbulence | | Turbulentie | Turbulenz | Turbulence |
| Viscosity | | Viscositeit | Viskosität | Viscosité |
| Vortex | | Wervel | Wirbel | Vortex, Tourbillon |
| Warping | Moving of boat by towing from fixed object using a line on a winch | | | |
| Water line | | Waterlijn | Wasserlinie | Laisse d'eau |
| Wave attack | | Golfaanval | Wellenangriff | Attaque de la houle |
| Wave climate | | Golfklimaat | Wellenklima | Climat d'ondes |
| Wave crest | | Golfkam | Wellenkamm | Crête d'une lame |

| <u>English</u> | <u>Definition</u> | <u>Dutch</u> | <u>German</u> | <u>French</u> |
|------------------|--|----------------------|---------------------|---|
| Wave damping | | Golfdenping | Wellendämpfung | Amortissement de la houle, Amortissement des vagues |
| Wave field | | Golfveld | Wellenfeld | Champs d'ondes |
| Wave force | | Golfkracht | Wellenkraft | Force de la houle, Force des vagues |
| Wave overtopping | | Golfoverslag | Wellenüberschlag | Franchissement de la houle, Franchissement des vagues |
| Wave penetration | | Golfdoordringing | Wellendurchdringung | Pénétration de la houle |
| Wave prediction | | Golfvoorspelling | Wellenvoraussage | Prédiction de la houle |
| Wave theory | | Golftheorie | Wellentheorie | Théorie des ondes |
| Wedge | | Wig | Keil | Coin |
| Winch | | Windas, haspel, lier | Winde | Treuil |
| Wave run-up | | Golfoploop | Wellenauflauf | Montée de la houle, Cote d'affleurement des vagues |
| Wave uprush | See wave run-up | | | |
| Yaw | Rotation of a ship about its vertical axis | Gieren | Gieren | Embarder |

Extra Notes

Table 2 Dutch words with Translations

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|--|--------------------------|--|---|
| Aangroeing, aanzetting. (op schepen) | Fouling (= barnacles) | Bodenanwuchs | Filandres |
| Aanlegsteiger | Jetty | Hafendamm | Jetée |
| Aanwas, aanslibbing | Accretion (= silting up) | Anlandung, Anschwemmung, Anhagerung, Verschlickung | Atterrissement, lais, depot, alluvion, envasement |
| Abstract | Abstract | | Abstrait |
| Achtersteven | Stern | Heck | Poupe |
| Ankerpaal, stapper | Spud | | Pieu d'ancrage |
| Baggerwerktuig | Dredge | Massbagger | Drague, dragueur, excavateur |
| Bakboord | Port | Backbord | Babord |
| Bank | Bank (= flat) | Plat, Bank | Banc |
| Bank (evenwijdig aan de kust), drempel | Bar | Barre, Sandbank | Barre |
| bezinken, zich afzetten | settle (to) | sich (ab)setzen, sich niederschlagen | se deposer, se precipiter |
| binnendringen van zout | Salt intrusion | Eindringen von Salz | Penetration d'eau salee |
| Bodembescherming | Bottom protection | Bodenschutz | Protection du fond |
| Bodemtransport | Bedload transport | Geschiebefuhrung | Charriage de fond |
| Boeg, voorsteven | Bow | Bug | Proue |
| Boei | Buoy | Boje, Barretonne | Bouee |
| Botsing, stoot, slag, schok | Impact | Stoss | Heurt, choc |
| Branding (van een golf) | Surf | Brandung | Deferlement |
| Brandingszone | Breaker zone | Brandungszone | Zone de brisants, zone de ressac |
| Breedte (geografisch, astronomisch) | Latitude | Breite (geografisch), Breitengrad | Latitude |
| Breuk, breukvlak | Fracture | Bruch | Cassure |
| Brug | Bridge (ship) | Brucke | Pont |
| Bulk carrier | Bulk carrier | Massengutschiff | Cargo de transport en vrac |
| Cavitatie | Cavitation | Kavitation, Hohlraumbildung | Cavitation |
| Container schip | Container ship | Behalterschiff | Cargo porte-container |
| Continental plat | Continental shelf | Festlandsockel, Schelf | Plateau continental |
| Coriolis versnelling | Coriolis acceleration | Coriolis Beschleunigung | Acceleration de coriolis |
| Dalafsluiting | Dam | Talsperre | Barrage |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|--|-----------------------|--|-----------------------|
| Damwand | Sheet piling | Spundwand | Rideau de palplanches |
| Deel van een kegelsnede i.h.b. cirkelboog | Arc | Bogen, Kreisbogen | Arc, courbe |
| Deining | Swell | Dünung | Houle |
| Delta | Delta | Delta | Delta |
| Dichtheidsstroming | Density current | Dichtestrom | Courant de densité |
| Diepgang | Draft (= draught) | Tiefgang | Tirant d'eau |
| Diepteligging | Bathymetry | Tiefenmessung, Tiefseemessung, Tiefseelotung | Bathymétrie |
| DiffRACTIE | Diffraction | Diffraktion | Diffraction |
| Diffusie | Diffusion | Diffusion | Diffusion |
| Dijk | Dike | Deiche | Digue |
| Dodelijk | Lethal | Tödllich, letal | Mortel |
| Dampen | Heave | Heben | Hisser |
| Doodtij | Neap tide | Nipptide | Morte eau |
| Dood (stil) water | Slack water | Stauwasser, Totwasser, Stillwasser | Étale |
| Droogdok | Drydock | Trockendock | Cale sèche |
| Dubbeldaags | Semi-diurnal | | |
| Eb | Ebb | Ebbe | Jusant |
| Eendenossel, aangroeiing (schip) | Barnacles (= fouling) | Bodenanwuchs | Filandres |
| Eiland | Island | Insel | Ile |
| Erosie, uitschuring | Erosion | Erosion | Érosion |
| Fender, wrijfhout, schutplank | Fender | Fender, Prellpfahl | Pare-chocs |
| Filter | Filter | Filter | Filtre |
| Gangbaar | Current | Kurant, Gangbar | Courant |
| Getij | Tide | Tide, Gezeit | Marée |
| Getijgolf | Tidal wave | Gezeitwelle | Onde de marée |
| Getijstroom | Tidal current | Gezeitenstrom | Courant de marée |
| Getijtafel | Tide table | Gezeitentafel | Annuaire des marées |
| Getijverschil | Tide (tidal) range | Tidehub | Marnage |
| Getijvolume, vloedvolume | Tidal prism | Tidewassermenge | Volume de flot |
| Geul | Channel | Rinne | Chenal |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|--|---|--|--|
| Geul, sleuf (van kabels) | Trench | Kabelgraben | Tranchée |
| Gieren | Yaw | Gieren | Embarder |
| Golfaanval | Wave attack | Wellenangriff | Attaque de la houle |
| Golfbreker | Breakwater | Wellenbrecher | Brise-lame |
| Golfdemping | Wave damping | Wellendämpfung | Amortissement de la houle, Amortissement des vagues |
| Golfdoordringing | Wave penetration | Wellendurchdringung | Pénétration de la houle |
| Golfkam | Wave crest | Wellenkamm | Crête d'une lame |
| Golfklimaat | Wave climate | Wellenklima | Climat d'ondes |
| Golfkracht | Wave force | Wellenkraft | Force de la houle, Force des vagues |
| Golfploop | Wave run-up | Wellenauflauf | Montée de la houle, cote d'affleurement des vagues |
| Golfoverslag | Wave overtopping | Wellenüberschlag | Franchissement de la houle, Franchissement des vagues |
| Golftheorie | Wave theory | Wellentheorie | Théorie des ondes |
| Golfveld | Wave field | Wellenfeld | Champs d'ondes |
| Golfvoorspelling | Wave prediction | Wellenvoraussage | Prédiction de la houle |
| Grenslaag | Boundary layer | Grenzschicht | Couche limite |
| Grensvlak | Interface | Grenzschicht, Übergangs- fläche, Grenzfläche | Interface |
| Haven | Port | Hafen | Port |
| Havenhoofd | Mole | Mole | Môle |
| Hoogwater (H.W.) | High Water (H.W.) | Hoch Wasser (H.W.) | Haute Mer (H.M.) |
| Impuls | Momentum | Impuls, Antrieb | Impulsion |
| Interne Golf Kentering Keren, behouden | Internal wave Slack water Retain (to) | Interne Welle Stillwasser Stauen (von Wasser), behalten | Onde Interne Étalge retenir |
| Kiezel | Pebbles | Kiesel | Galets |
| Klei | Clay | Ton | Argile |
| Klif | Cliff | Steilküste | Falaise |
| Koelwater | Cooling water | Kühlwasser | Eau de refroidissement |
| Kofferdam | Cofferdam | Kastenfangedamm | Bâtardeau |
| Korrelgrootteverdeling | Grain size distribution | Korngrößenverteilung | Distribution granulométrique |
| Kunstmatig eiland | Artificial island | Künstliche Insel | Îlot artificiel |
| Kust | Coast | Küste | Côte |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|---|---------------------------|--|------------------------|
| Kustverdediging | Coastal protection | Küstenschutz | Protection des côtes |
| Laadvermogen v.e. schip (netto lading, incl. brand- stofvoorraad en proviand) | Dead weight tonnage | Ladevermögen, Schwergut- laderähigkeit (effektive Ladung, einschliesslich Bunkervorräte, Ballast und Proviant) | Port et lourd |
| Laag water (L.W.) | Low water (L.W.) | Niederigwasser (N.W.) | Basse mer (B.M.) |
| Ladder (waarlangs de emmers worden gehaald) | Ladder | Baggerleiter | Échelle de drague |
| Lagune | Lagoon | Lagune | Lagune |
| Laminaire stroming | Laminar flow | Laminarströmung | Écoulement laminaire |
| Langs de kust | Littoral | Der Küste entlang | Côtier, littoral |
| Lepelbaggerwerktuig (drij- vend) | Dipper Dredge | Löffelbagger | Draque à cuillère |
| Meanderen | Meandering | Mäandern | Méandrer |
| Megaribbel | Megaripple | Megarippel | Ride géante |
| Modder | Mud | Schlamm | Boue |
| Monoliet | Monolith | Monolith | Monolithe |
| Muistroom | Rip current | Rückstrom | "Rip courant" |
| "Nat" strand | Beach face (= fore shore) | "Nass" Strand | Plage d'estran |
| Navigatie, routebepaling | Navigation | Navigation, Schifffahrts- kunde | Navigation |
| Neer | Eddy | Walze, Wirbel | Remole |
| Oceanografie | Oceanography | Ozeanografie | Océanographie |
| Olietanker | Oil tanker | Ol Tanker | Pétrolier |
| Omloopleiding | Bypass | Umgehungsleitung | Canal d'évacuation |
| Onderdempeling | Submergence | Eintauchung | Immersion |
| Ontgronding | Scour | Ausspülung, Auswaschung | Affouillement |
| Opdrijvend vermogen | Buoyancy | Auftrieb, Hubkraft, Schwe- befähigkeit | Flottabilité |
| Opstuwing (van water) | Surge | Wanderwelle | Infumexence |
| Opwaaiing | Set-up | Aufwehung | "Set-up" |
| Passaat (wind) | Trade winds | Passatwinden | Vents alizes |
| Potentiaalstroming | Potential flow | Potentialströmung | Écoulement à potentiel |
| Punt, landhoofd, kop | Cape (= headland) | Vorgebirge, Kap | Pointe, Cap |
| Randvoorwaarde | Boundary condition | Randbedingung | Condition des limites |
| Refractie | Refraction | Refraktion | Réfraction |
| Ribbel | Ripple | Rippel | Ride |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|----------------------------------|-------------------------|----------------------------------|-------------------------------|
| Rioolwater | Sewage | Abwasser | Eaux vannes |
| Rivierbocht | River bend | Flusskurve | Courbe d'un fleuve |
| Riviermonding | River mouth | Flussmündung | Embouchure d'un fleuve |
| Rollen, slingeren | Roll (to) | Rollen, Schlingern | Rouler (roulis) |
| Rots | Rock | Felsen | Rocher |
| Ruwheid | Roughness | Rauhigkeit | Rugosité |
| Schiereiland, landtong | Peninsula | Halbinsel | Presqu'île |
| Schrikken | Surge | | |
| Schuin, scheef, hellend | Oblique | Überhangend, geneigt | Oblique, incliné |
| Sediment transport | Sediment transport | Geschiebeführung | Débit solide |
| Sedimentatie, afzetting | Sedimentation | Ablagerung | Sédimentation |
| Seiche | Seiche | Seiche | Seiche |
| Sleepboot | Tugboat | Schleppschiff | Remorqueur |
| Slepen, trekken, halen, hijsen | Haul (to) | Schleppen | Trainer, remorquer |
| Slib | Silt | Schlick | Vase, silt |
| Sluis, uitwateringssluis | Sluice | Schleuse | Écluse |
| Spit, strandhaak | Spit | Spitze | Flèche |
| Springtij | Spring tide | Springflut | Vive eau |
| Squat, vertrimming | Squat | Fahrtrimm | Dejaugeage |
| Staaude golf, stationaire golf | Standing wave | Stehende Welle, stationäre Welle | Clapotis, onde stationnaire |
| Stampen | Pitch (to) | Stampfen | Tanguer (tangage) |
| Steile afvoergoot | Chute | Abschüssige Rinne | Radier incliné |
| Stormvloed | Storm surge | Sturmflut | Onde de tempête, Coupe de mer |
| Stortstenen golfbreker | Rubble mound breakwater | | Brise-lame et enrochements |
| Straal | Jet | Strahl | Jet |
| Strand | Beach | Strand | Plage |
| Strandhoofd (zee), krib (rivier) | Groin (= groyne) | Strandbühne | Epis |
| Strandmuur | Seawall | Deckwerk | Brise-mer |
| Strandverdediging | Beach protection | Strandschutz | Protection des plages |
| Strijk lengte | Fetch | Windweg | Fetch |
| Stroming, stroomsnelheid | Current | Strömung, Strom | Courant |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|---|-----------------|---|---|
| Stroombeeld | Flow pattern | Strömungsbild | Champs de courants |
| Stroomsnelheidsmeter | Current meter | Strommesser | Courantomètre |
| Stuurboord | Starboard | Steuerbord | Tribord |
| Takelage, tuig, vleet | Rigging | Takelage, Takelung, Betakelung | Gréement |
| Tanker | Tanker | Tanker | Pétrolier |
| Terugkaatsing | Reflection | Reflektion | Réflexion |
| Toegang | Access | Zutritt, Zugang | Accès |
| Traagheid | Inertia | Trägheit | Inertie |
| Troebling | Turbidity | Trübung | Turbidité |
| Tsunami | Tsunami | Tsunami | Tsunami |
| Turbulentie | Turbulence | Turbulenz | Turbulence |
| Uitrekse! , voorlopig rapport | Abstract | Auszug | Extrait, abrégé, résumé |
| Valsnelheid | Fall velocity | Fallgeschwindigkeit | Vitesse de chute |
| Veeltem | Polynomial | Polynom, vielgliedrige Grösse | Polynôme |
| Veen, turf | Peat | Torf | Tourbe |
| Verblijftijd | Retention time | Retentionszeit, Verweilzeit, Rückhaltezeit | Periode de Séjour de rétention |
| Verondieping, ondiepte | Shoal | Veruntiefung, Untiefe | Déprofondissement |
| Verontreiniging | Pollution | Verunreinigung | Pollution |
| Versterken | Amplify (to) | Verstärken | Amplifier, survolter, répéter, élever, renforcer |
| Verzetten (dwarsverplaat- sing v.e. schip) | Sway | Schwingen | |
| Viscositeit | Viscosity | Viskosität | Viscosité |
| Vloedbranding | Bore | Flutbrandung | Marée deferlante, mascaret |
| Vloedstroom | Flood current | Flutstrom | Courant de flot |
| Voedingsstof | Nutrient | Nährflüssigkeit, Nährstoff | Nutritif |
| Voortplantingssnelheid | Celerity | Fortpflanzungsgeschwindig- keit | Vitesse de propagation |
| Voortstuwcn, voortdrijven, voortbewegen | Propel (to) | Antreiben | Propulser |
| Vuistregel | Rule of thumb | Faustregel | Règle |
| Waaier, schoepenrad | Impeller (pump) | Pumpenflügelrad | Aube, palette |
| Waterlijn | Water line | Wasserlinie | Laisse d'eau |

| <u>Dutch</u> | <u>English</u> | <u>German</u> | <u>French</u> |
|-------------------------------------|----------------------------|-----------------------------------|---------------------------|
| Weerstand (van omstroomde lichamen) | Drag (of submerged bodies) | Widerstand (von umströmte Körper) | Résistance à l'écoulement |
| Wervel | Vortex | Wirbel | Vortex, tourbillon |
| Wervelviscositeit | Eddy viscosity | Wirbelviscosität | Viscosité du Foucault |
| Wig | Wedge | Keil | Coin |
| Willekeurig, onvoorspelbaar | Random | Beliebig | Quelconque |
| Windas, haspel, lier | Winch | Winde | Treuil |
| Windstoot | Gust | Windstoss | Coup de vent |
| Zand | Sand | Sand | Sable |
| Zandtransport | Sand Transport | Förderung von Sand | Transport de sable |
| Zeeman, matroos | Mariner | Matrose | Marin, Matelot |
| Zinkstuk van rijshout | Fascine mattress | Faschinenpakwerk | Matelas de fascinages |
| Zoutgehalte | Salinity | Salzgehalt | Salinité |
| Zouttong | Salt water wedge (tongue) | Salzwasser-zunge | Coin salé |
| Zwevend materiaal | Suspended load | Schwebestoff | Sédiments en suspension |

Extra Notes

Table 3 French words with Translations

| <u>French</u> | <u>English</u> | <u>Dutch</u> | <u>German</u> |
|---|--------------------------|---|---|
| Accélération de coriolis | Coriolis Acceleration | Coriolis versnelling | Coriolis-Beschleunigung |
| Accès | Access | Toegang | Zutritt, Zugang |
| Affouillement | Scour | Ontgronding | Ausspülung, Auswaschung |
| Amortissement de la houle Amortissement des vagues | Wave damping | Golfdemping | Wellendämpfung |
| Amplifier, survolter, répéter, élever, renforcer | Amplify (to) | Versterken | Verstärken |
| Annuaire des marées | Tide table | Getijtafel | Gezeitentafel |
| Arc, courbe | Arc | Deel v.e. kegelsnede i.h.b. cirkelboog | Bogen, Kreisbogen |
| Argile | Clay | Klei | Ton |
| Attaque de la houle | Wave attack | Golfaanval | Wellenangriff |
| Atterrissement, lais, dépôt, alluvion, envasement | Accretion (= silting up) | Aanwas, aanslibbing | Anländung, Anschwemmung, Anhägerung, Verschlickung |
| Aube, palette | Impeller (pump) | Waaier, Schoepenrad | Pumpenflügelrad |
| Bâbord | Port | Bakbord | Backbord |
| Banc | Bank (= flat) | Bank | Plat, Bank |
| Barrage | Dam | Dalafsluiting | Talsperre |
| Barre | Bar | Bank (evenwijdig aan de kust), drempel | Barre, Sandbank |
| Basse Mer (B.M.) | Low Water (L.W.) | Laag water (L.W.) | Niederigwasser (N.W.) |
| Bâtardeau | Cofferdam | Kofferdam | Kastenfangedamm |
| Bathymétrie | Bathymetry | Diepteligging | Tiefenmessung, Tiefseemessung, Tiefseelotung |
| Boue | Mud | Modder | Schlamm |
| Bouée | Buoy | Boei | Boje, Barretonne |
| Brise-lame | Breakwater | Golfbreker | Wellenbrecher |
| Brise-lame et enrochements | Rubble mound Breakwater | Stortsteen Golfbreker | |
| Brise-mer | Seawall | Strandmuur | Deckwerk |
| Cale sèche | Drydock | Droogdok | Trockendock |
| Canal d'évacuation | Bypass | Omloopleiding | Umgehungsleitung |
| Cargo de transport en vrac | Bulk carrier | Bulk carrier | Massengutschiff |
| Cargo porte-container | Container ship | Container schip | Behälterschiff |
| Cassure | Fracture | Breuk, Breukvlak | Bruch |
| Cavitation | Cavitation | Cavitatie | Kavitation, Hohlraumbildung |

| <u>French</u> | <u>English</u> | <u>Dutch</u> | <u>German</u> |
|---------------------------------|---------------------------------------|----------------------------------|--|
| Champs de courants | Flow pattern | Stroombeeld | Strömungsbild |
| Champs d'ondes | Wave field | Golfveld | Wellenfeld |
| Chenal | Channel | Geul | Rinne |
| Clapotis, Onde stationnaire | Standing wave | Staannde golf, stationnaire golf | Stehende Welle, Stationäre Welle |
| Climat d'ondes | Wave climate | Golfklimaat | Wellenklima |
| Coin | Wedge | Wig | Keil |
| Coin salé | Salt water wedge (tongue) | Zouttong | Salzwasser-zunge |
| Condition des limites | Boundary condition | Randvoorwaarde | Randbedingung |
| Côte | Coast | Kust | Küste |
| Côtier, littoral | Littoral | Langs de kust | Der Küste entlang |
| Couche limite | Boundary layer, interface | Grens laag, Grensvlak | Grenzschicht, Übergangsfläche, Grenzfläche |
| Coup de vent | Gust | Windstoot | Windschlag |
| Courant | Current | Gangbaar | Kurant, Gangbar |
| Courant | Current | Stroming, Stromsnelheid | Strömung, Strom |
| Courant de densité | Density current | Dichtheidsstroming | Dichtestrom |
| Courant de flot | Flood current | Vloedstroom | Flutstrom |
| Courant de marée | Tidal current | Getijstroom | Gezeitenstrom |
| Courantomètre | Current meter | Stromsnelheidsmeter | Strommesser |
| Courbe d'un fleuve | River bend | Rivierbocht | Flussskurve |
| Crête d'une lame | Wave crest | Golfkam | Wellenkamm |
| Débit solide, charriage de fond | Sediment transport, Bedload transport | Sediment-, Bodemtransport | Geschiebeführung |
| Déferlement | Surf | Branding (v.e. golf) | Brandung |
| Dejaugeage | Squat | Squat, Vertrimming | Fahrtrimm |
| Delta | Delta | Delta | Delta |
| Déposer (se), Précipiter (se) | Settle (to) | Bezinken, zich afzetten | (Ab)setzen (sich), Niederschlagen (sich) |
| Déprofondissement | Shoal | Verondieping, Ondiepte | Veruntiefung, Untiefe |
| Diffraction | Diffraction | DiffRACTIE | DiffRAKTION |
| Diffusion | Diffusion | Diffusie | Diffusion |
| Digue | Dike | Dijk | Deiche |
| Distribution granulométrique | Grain size distribution | Korrelgrootteverdeling | Korngrößenverteilung |
| Drague, Dragueur, Excavateur | Dredge | Baggerwerktuig | Nassbagger |

| <u>French</u> | <u>English</u> | <u>Dutch</u> | <u>German</u> |
|--|------------------------------------|--|---|
| Draque à cuillère Eau de refroidissement | Dipper Dredge Cooling water | Lepelbaggerwerktuig Koelwater | Löffelbagger Kühlwasser |
| Eaux vannes | Sewage | Rioolwater | Abwasser |
| Echelle de drague | Ladder | Ladder (waarlangs de emmers worden gehaald) | Baggerleiter |
| Ecluse | Sluice | Sluis, uitwateringssluis | Schleuse |
| Ecoulement à potentiel | Potential Flow | Potentiaalstroming | Potentialströmung |
| Ecoulement laminaire Embarder Embouchure d'un fleuve | Laminar flow Yaw River mouth | Laminaire stroming Gieren Riviermonding | Laminarströmung Gieren Flussmündung |
| Entrée | Access | Toegang | Zutritt, Zugang |
| Epis | Groin (= groyne) | Strandhoofd (zee), krib (rivier) | Strandbühne |
| Erosion Étale Extrait, abrégé, résumé | Erosion Slackwater Abstract | Erosie, uitschuring Dood (stil) water, Kentering Uittreksel, voorlopig rapport | Erosion Stauwasser, Totwasser, Stillwasser Auszug |
| Falaise | Cliff | Klif | Steilküste |
| Fetch | Fetch | Strijklengte | Windweg |
| Filandres | Fouling (= Barnacles) | Aangroeiing, aanzetting (op schepen) | Bodenanwuchs |
| Filtre | Filter | Filter | Filter |
| Flèche | Spit | Spit, Strandhaak | Spitze |
| Flottabilité | Buoyancy | Opdrijvend vermogen | Auftrieb, Hubkraft, Schwebefähigkeit |
| Force de la Houle, Force des Vagues | Wave Force | Golfkracht | Wellenkraft |
| Franchissement de la Houle, Franchissement des Vagues | Wave overtopping | Golfoverslag | Wellenüberschlag |
| Galets | Pebbles | Kiezel | Kiesel |
| Gréement | Rigging | Tagelage, Tuig, Vleet | Takeelage, Takelung, Betakelung |
| Haute Mer (H.M.) | High Water (H.W.) | Hoogwater (H.W.) | Hoch Wasser (H.W.) |
| Heurt, Choc | Impact | Botsing, Stoot, Slag, Schok | Stoss |
| Hisser Houle | Heave Swell | Dampen Deining | Heben Dünung |
| Ile | Island | Eiland | Insel |
| Ilot Artificiel | Artificial Island | Kunstmatig Eiland | Künstliche Insel |
| Immersion | Submergence | Onderdompeling | Eintauchung |
| Impulsion | Momentum | Impuls | Impuls, Antrieb |
| Inertie | Inertia | Traagheid | Trägheit |
| Infumexence | Surge | Opstuwing | Wanderweile |

| <u>French</u> | <u>English</u> | <u>Dutch</u> | <u>German</u> |
|--|------------------------|-------------------------------------|-----------------------------------|
| Interface | Interface | Grensvlak | Grenzschrift |
| Jet | Jet | Straal | Strahl |
| Jetée | Jetty | Aanlegsteiger | Hafendamm |
| Jusant | Ebb | Eb | Ebbe |
| Lagune | Lagoon | Lagune | Lagune |
| Laisse d'eau | Water line | Waterlijn | Wasserlinie |
| Latitude | Latitude | Breedte (Geografisch, astronomisch) | Breite (Geografisch), Breitengrad |
| Marée | Tide | Getij | Tide, Gezeit |
| Marée deferlante, Mascaret | Bore | Vloedbranding | Flutbrandung |
| Marin, Matelot | Mariner | Zeeman, Matroos | Matrose |
| Marnage | Tide (tidal) range | Getijverschil | Tidehub |
| Matelas de fascines | Fascine Mattress | Zinkstuk van rijshout | Faschinenpakwerk |
| Méandrer | Meandering | Meanderen | Mäandern |
| Môle | Mole | Havenhoofd | Mole |
| Monolithe | Monolith | Monoliet | Monolith |
| Montée de la houle, Cote d'affleurement des vagues | Wave run-up | Golfoploop | Wellenauflauf |
| Morte eau | Neap tide | Doodtij | Nipptide |
| Mortel | Deadly | Dodelijk | Tödlich, letal |
| Navigation | Navigation | Navigatie, Routebepaling | Navigation, Schiffahrtskunde |
| Oblique, Incliné | Oblique | Schuin, scheef, hellend | Überhangend, Geneigt |
| Océanographie | Oceanography | Oceanografie | Ozeanografie |
| Onde de marée | Tidal Wave | Getijgolf | Gezeitwelle |
| Onde de tempête, Coupe de mer | Storm surge | Stormvloed | Sturmflut |
| Onde interne | Internal wave | Interne golf | Interne Welle |
| Pare-chocs | Fender | Fender, Wrijf hout, Schutzplank | Fender, Prellpfahl |
| Oblique, Incliné | Oblique | Schuin, scheef, hellend | Überhangend, Geneigt |
| Pénétration d'eau salée | Salt intrusion | Binnendringen van zout | Eindringen von Salz |
| Période de Séjour de retention | Retention Time | Verblijftijd | Retentionzeit |
| Pénétration de la houle | Wave penetration | Golfdoordringing | Wellendurchdringung |
| Pétrolier | Oil tanker | Olietanker | Ol Tanker |
| Pétrolier | Tanker | Tanker | Tanker |
| Pieu d'ancrage | Spud | Ankerpaal | |
| Plage | Beach | Strand | Strand |
| Plage d'estran | Beach face, Fore-shore | "Nat" strand | "Nass" Strand |
| Plateau continental | Continental shelf | Continental plat | Festlandssockel, Schelf |
| Pointe, Cap | Cape, Headland | Punt, Landhoofd, Kop | Vorgebirge, Kap |
| Pollution | Pollution | Verontreiniging | Verunreinigung |

| <u>French</u> | <u>English</u> | <u>Dutch</u> | <u>German</u> |
|---------------------------|----------------------------|---|-----------------------------------|
| Polynôme | Polynomial | Veelterm | Polynom, vielgliedrige Grösse |
| Pont | Bridge(ship) | Brug | Brücke |
| Port | Port | Haven | Hafen |
| Port et lourd | Dead Weight Tonnage | Laadvermogen | Laadvermögen |
| Poupe | Stern | Achtersteven | Heck |
| Prédiction de la houle | Wave prediction | Golfvoorspelling | Wellenvoraussage |
| Presqu'île | Peninsula | Schiereiland, Landtong | Halbinsel |
| Propulser | Propel (to) | Voortstuwen, Voortdrijven Voortbewegen | Antreiben |
| Protection des côtes | Coastal Protection | Kustverdediging | Küstenschutz |
| Protection des plages | Beach Protection | Strandverdediging | Strandschutz |
| Protection du fond | Bottom Protection | Bodembescherming | Bodenschutz |
| Proue | Bow | Boeg, Voorsteven | Bug |
| Quelconque | Random | Willekeurig, Onvoorspelbaar | Beliebig |
| Radier incliné | Chute | Steile afvoergoot | Abschüssige Rinne |
| Réflexion | Reflection | Terugkaatsing | Reflektion |
| Réfraction | Refraction | Refractie | Refraktion |
| Règle | Rule of thumb | Vuistregel | Faustregel |
| Remole | Eddy | Heer | Walze, Wirbel |
| Remorqueur | Tugboat | Sleepboot | Schleppschiff |
| Résistance à l'écoulement | Drag (of submerged bodies) | Weerstand (van omstroomde lichamen) | Widerstand (von umströmte Körper) |
| retenir | Retain (to) | Keren, behouden | Stauen (von Wasser), behalten |
| Ride | Ripple | Ribbel | Rippel |
| Rideau de palplanches | Sheet Piling | Damwand | Spundwand |
| Ride géante | Megaripple | Megaribbel | Megarippe |
| "Rip Courant" | Rip Current | Muistroom | Rückstrom |
| Rocher | Rock | Rots | Felsen |
| Rouler(Roulis) | Roll (to) | Rollen, Slingeren | Rollen, Schlingern |
| Rugosité | Roughness | Ruwheid | Rauhigkeit |
| Tanguer (Tangage) | Pitch (to) | Stampen | Stampfen |
| Théorie des ondes | Wave theory | Golftheorie | Wellentheorie |
| Sable | Sand | Zand | Sand |
| Salinité | Salinity | Zoutgehalte | Salzgehalt |
| Sédimentation | Sedimentation | Sedimentatie, afzetting | Ablagerung |

| <u>German</u> | <u>English</u> | <u>Dutch</u> | <u>French</u> |
|--|--|-------------------------------|---------------------------------|
| Deckwerk | Seawall | Strandmuur | Brise-mer |
| Deiche | Dike | Dijk | Digue |
| Delta | Delta | Delta | Delta |
| Dichtestrom | Density current | Dichtheidsstroming | Courant de densité |
| Diffraktion | Diffraction | Diffractie | Diffraction |
| Diffusion | Diffusion | Diffusie | Diffusion |
| Dünnung | Swell | Deining | Houle |
| Ebbe | Ebb | Eb | Jusant |
| Eindringen von Salz | Salt intrusion | Binnendringen van zout | Pénétration d'eau salée |
| Eintauchung | Submergence | Onderdompeling | Immersion |
| Erosion | Erosion | Erosie, uitschuring | Erosion |
| Fahrtrimm | Squat | Squat, vertrimming | Dejaugeage |
| Fallgeschwindigkeit | Fall velocity | Valsnelheid | Vitesse de chute |
| Faschinenpakwerk | Fascine mattress | Zinkstuk van rijshout | Matelas de fascinages |
| Faustregel | Rule of thumb | Vuistregel | Règle |
| Felsen | Rock | Rots | Rocher |
| Fender, Prellpfahl | Fender | Fender, wrijfhout, schutplank | Pare-chocs |
| Festlandssockel, Schelf | Continental shelf | Continentale plat | Plateau continental |
| Filter | Filter | Filter | Filtre |
| Flusskurve | River bend | Rivierbocht | Courbe d'un fleuve |
| Flussmündung | River mouth | Riviermonding | Embouchure d'un fleuve |
| Flutbrandung | Bore | Vloedbranding | Marée de ferlante, mascaret |
| Flutstrom | Flood current | Vloedstroom | Courant de flot |
| Förderung von Sand | Sand transport | Zandtransport | Transport de sable |
| Fortpflanzungsgeschwindigkeit | Celerity | Voortplantingsnelheid | Vitesse de propagation |
| Geschiebeführung | Sediment transport, bed-load transport | Sediment-, bodentransport | Débit solide, charriage de fond |
| Gezeitenstrom | Tidal current | Getijstroom | Courant de marée |
| Gezeitentafel | Tide table | Getijtafel | Annuaire des marées |
| Gezeitwelle | Tidal wave | Getijgolf | Onde de marée |
| Gieren | Yaw | Gieren | Embardeur |
| Grenzschrift, Übergangsfläche, Grenzfläche | Boundary layer, interface | Grenslaag, grensvlak | Couche limite Interface |

| <u>German</u> | <u>English</u> | <u>Dutch</u> | <u>French</u> |
|---|-------------------------|--|------------------------------|
| Hafen | Port | Haven | Port |
| Hafendamm | Jetty | Aanlegsteiger | Jetée |
| Halbinsel | Peninsula | Schiereiland, landtong | Presqu'île |
| Heben | Heave | Dampen | Hisser |
| Heck | Stern | Achtersteven | Poupe |
| Hoch Wasser (H.W.) | High Water (H.W.) | Hoogwater (H.W.) | Haute Mer (H.M.) |
| Impuls, Antrieb | Momentum | Impuls | Impulsion |
| Insel | Island | Eiland | Ile |
| Interne Welle | Internal Wave | Interne Golf | Onde interne |
| Kabelgraben | Trench | Geul, sleuf (van kabels) | Tranchée |
| Kastenfangedamm | Cofferdam | Kofferdam | Bâtardeau |
| Kavitation, Hohlraumbildung | Cavitation | Cavitation | Cavitation |
| Keil | Wedge | Wig | Coin |
| Kiesel | Pebbles | Kiezel | Galets |
| Korngrößenverteilung | Grain size distribution | Korrelgrootteverdeling | Distribution Granulométrique |
| Kühlwasser | Cooling water | Koelwater | Eau de refroidissement |
| Künstliche Insel | Artificial Island | Kunstmatig eiland | Ilot artificiel |
| Küste | Coast | Kust | Côte |
| Der Küste entlang | Littoral | Langs de kust | Côtier, littoral |
| Küstenschutz | Coastal protection | Kustverdediging | Protection des côtes |
| Kurant, gangbar | Current | Gangbaar | Courant |
| Ladevermögen, Schwergut-laderähigkeit (effektive Ladung, einschliesslich Bunkervorräte, Ballast und Proviant) | Dead weight tonnage | Laadvermogen v.e. schip (netto lading incl. brandstofvoorraad en proviand) | Port et lourd |
| Lagune | Lagoon | Lagune | Lagune |
| Laminarströmung | Laminar flow | Laminaire stroming | Écoulement laminaire |
| Löffelbagger | Dredge | Lepelbaggerwerktuig | Draque à cuillère |
| Mäandern | Meandering | Meanderen | Méandrer |
| Massengutschiff | Bulk carrier | Bulk carrier | Cargo de transport en vrac |
| Matrose | Mariner | Zeeman, matroos | Marin, matelot |
| Megarippel | Megaripple | Megaribbel | Ride géante |
| Mole | Mole | Havenhoofd | Môle |
| Monolith | Monolith | Monoliet | Monolithe |
| Nährflüssigkeit, Nährstoff | Nutrients | Voedingsstoffen | |

| <u>German</u> | <u>English</u> | <u>Dutch</u> | <u>French</u> |
|-----------------------------------|----------------------------|-------------------------------------|---|
| Torf | Peat | Veen, turf | Tourbe |
| Trägheit | Inertia | Traagheid | Inertie |
| Trockendock | Drydock | Droogdok | Cale sèche |
| Trübung | Turbidity | Troebling | Turbidité |
| Tsunami | Tsunami | Tsunami | Tsunami |
| Turbulentz | Turbulence | Turbulentie | Turbulence |
| Überhangend, geneigt | Oblique | Schuin, scheef, hellend | Oblique, incliné |
| Umgehungsleitung | Bypass | Omloopleiding | Canal d'évacuation |
| Verstärken | Amplify (to) | Versterken | Amplifier, survolter, répéter, élever, renforcer |
| Verunreinigung | Pollution | Verontreiniging | Pollution |
| Veruntiefung, Untiefe | Shoal | Verondieping, ondiepte | Déprofondissement |
| Viskosität | Viscosity | Viscositeit | Viscosité |
| Vorgebirge, Kap | Cape, headland | Punt, landhoofd, kop | Pointe, cap |
| Walze, Wirbel | Eddy | Neer | Remole |
| Wanderwelle (mit steiler Front) | Surge | Opstuwing | Infumexence |
| Wasserlinie | Water line | Waterlijn | Laisse d'eau |
| Wellenangriff | Wave attack | Golfaanval | Attaque de la houle |
| Wellenauflauf | Wave run-up | Golfoploop | Montée de la houle, cote d'affleurement des vagues |
| Wellenbrecher | Breakwater | Golfbreker | Brise-lame |
| Wellendämpfung | Wave damping | Golfdemping | Amortissement de la houle Amortissement des vagues |
| Wellendurchdringung | Wave penetration | Golfdoordringing | Pénétration de la houle |
| Wellenfeld | Wave field | Golfveld | Champs d'ondes |
| Wellenkamm | Wave crest | Golfkam | Crête d'une lame |
| Wellenklima | Wave climate | Golfklimaat | Climat d'ondes |
| Wellenkraft | Wave force | Golfkracht | Force de la houle, force des vagues |
| Wellentheorie | Wave theory | Golftheorie | Théorie des ondes |
| Wellenüberschlag | Wave overtopping | Golfoverslag | Franchissement de la houle, franchissement des vagues |
| Wellenvoraussage | Wave prediction | Golfvoorspelling | Prédiction de la houle |
| Widerstand (von umströmte Körper) | Drag (of submerged bodies) | Weerstand (van omstroomde lichamen) | Résistance à l'écoulement |
| Winde | Winch | Windas, haspel, tier | Treuil |

| <u>German</u> | <u>English</u> | <u>Dutch</u> | <u>French</u> |
|------------------|----------------|------------------------|-----------------------|
| Windstoss | Gust | Windstoot | Coup de vent |
| Windweg | Fetch | Strijklengte | Fetch |
| Wirbel | Vortex | Wervel | Vortex, tourbillon |
| Wirbelviskosität | Eddy viscosity | Turbulentieviskositeit | Viscosité de foucault |
| Zutritt, Zugang | Access | Toegang | Accès |

Extra Notes

Introduction to conversion factor tables.

Each of the following tables provides conversion factors for units of the quantity listed in the table heading. (A short table of important coastal engineering constants precedes the main body of tables).

To express a quantity in desired units listed across the top of each table, multiply the units listed down the left hand side of the table by the factor found at the intersection of the column and row of the two sets of units. For example, to obtain feet in the length table, multiply meters by 3.2808. Usually, the conversion factors are expressed as a decimal. Integer values - without decimal point - or ratios of integer values are used when an exact definition is involved. For example, feet can be obtained from inches by multiplying by 1/12.

Both standard and non-standard metric as well as English and United States units are included in these tables. Hopefully, the conversion factors involving non-standard units will be used primarily to convert from the less acceptable to standard units. Occasionally, less common conversion factors are not given; the space in the tables is then blank.

A primary source of data for the compilation of these tables was *Handbook of Chemistry and Physics*: 43rd edition: Chemical Rubber Publishing Company, Cleveland, Ohio, U.S.A.: 1961: pp. 3204-3227.

Table 5 Miscellaneous Constants.

| | | |
|------|------------------------------|---|
| e | 2.71828183 | |
| g | 9.81288 m/sec ² | * |
| | 32.19449 ft/sec ² | * |
| π | 3.1415926536 | |
| 2π | 6.28319 | |
| g/2π | 1.5618 m/sec ² | * |
| | 5.1239 ft/sec ² | * |

* Computed based upon a value of g for Amsterdam (42⁰N, mean sea level).

Table 6 Mass Units

| to obtain → multiply ↓ by → | kilogram | pound mass | ton (long) | ton (metric) | ton (short) | slug |
|-----------------------------------|----------|---------------|------------------------|------------------------|-------------------------|---------|
| kilogram | 1 | 2.2046 | 9.842×10^{-4} | 1/1000 | 1.1023×10^{-3} | 0.06848 |
| pound mass | 0.4536 | 1 | 1/2240 | 4.536×10^{-4} | 1/2000 | 0.03106 |
| ton (long) | 1016.1 | 2240 | 1 | 1.0161 | $\frac{28}{25}$ | 69.577 |
| ton (metric) | 1000 | 2204.6 | 0.9842 | 1 | 1.1023 | 68.478 |
| ton (short) | 907.2 | 2000 | $\frac{25}{28}$ | 0.90719 | 1 | 62.122 |
| slug | 14.603 | 32.194 | 0.01437 | 0.01460 | 0.01610 | 1 |

Table 7 Length Units

| to obtain → multiply ↓ by ↘ | fathom | foot | inch | kilometer | meter | milimeter | nautical mile | Statute mile (U.S.) | yard |
|--------------------------------------|-------------------------|-------------------------|---------|-------------------------|-------------------------|----------------------|-------------------------|---------------------------|----------------------|
| fathom | 1 | 6 | 72 | 1.8288×10^{-3} | 1.82880 | 1.8288×10^3 | 9.8748×10^{-4} | 1/880 | 2 |
| foot | 1/6 | 1 | 12 | 3.0480×10^{-4} | 0.30480 | 304.8 | 1.6458×10^{-4} | 1/5280 | 1/3 |
| inch | 1/72 | 1/12 | 1 | | 2.5400×10^{-2} | 25.400 | | 1/63360 | 1/36 |
| kilometer | 546.80 | 3280.8 | | 1 | 10^3 | 10^6 | 0.5340 | 0.62137 | 1093.6 |
| meter | 0.54680 | 3.2808 | 39.37 | 10^{-3} | 1 | 10^3 | 5.3996×10^{-4} | 6.2137×10^{-4} | $\frac{3937}{3600}$ |
| milimeter | 5.4680×10^{-4} | 3.2808×10^{-3} | 0.03937 | 10^{-6} | 10^{-3} | 1 | | | |
| nautical mile | 1012.7 | 6076.103 | | 1.852 | 1852 | | 1 | 1.1516 | 2.0254×10^3 |
| Statute mile (U.S.) | 880 | 5280 | 63360 | 1.60935 | 1609.35 | | 0.86836 | 1 | 1760 |
| yard | 1/2 | 3 | 36 | 9.1440×10^{-4} | $\frac{3600}{3937}$ | | 4.9374×10^{-4} | 1/1760 | 1 |

Table 8 Time Units

| to obtain → multiply ↓ by ↘ | day | hour | minute | second | sidereal day | year |
|-----------------------------------|---------|--------|----------------------|----------------------|-------------------------|-------------------------|
| day | 1 | 24 | 1440 | 86400 | 1.00274 | 2.738×10^{-3} |
| hour | 1/24 | 1 | 60 | 3600 | 0.04178 | 1/8766 |
| minute | 1/1440 | 1/60 | 1 | 60 | 6.9634×10^{-4} | 1.9013×10^{-6} |
| second | 1/86400 | 1/3600 | 1/60 | 1 | | 3.1688×10^{-8} |
| sidereal day | 0.99727 | 23.934 | 1436.07 | | 1 | 2.730×10^{-3} |
| year | 365.25 | 8766 | 5.2596×10^5 | 3.1558×10^7 | 366.25 | 1 |

Table 9 Area Units

| | acre | are | centimeter ² | foot ² | hectare | inch ² | kilometer ² | meter ² | mile ² | milimeter ² |
|-----------------------------------|--------------------------|-------------------------|-------------------------|--------------------------|-------------------------|------------------------|-------------------------|-------------------------|--------------------------|------------------------|
| to obtain → multiply ↓ by ↙ | acre | are | centimeter ² | foot ² | hectare | inch ² | kilometer ² | meter ² | mile ² | milimeter ² |
| acre | 1 | 40.469 | | 43600 | 0.40469 | | 4.0469x10 ⁻³ | 4046.9 | 1/640 | |
| are | 0.02471 | 1 | 10 ⁶ | 1076.4 | 10 ⁻² | | 10 ⁻⁴ | 100 | 3.8610x10 ⁻⁵ | |
| centimeter ² | | 10 ⁻⁶ | 1 | 1.0764x10 ⁻³ | | 0.15500 | 10 ⁻¹⁰ | 10 ⁻⁴ | | 100 |
| foot ² | 1/43600 | 9.2903x10 ⁻⁴ | 929.03 | 1 | 9.2903x10 ⁻⁶ | 144 | | 9.2903x10 ⁻² | | 9.2903x10 ⁴ |
| hectare | 2.47104 | 100 | | 1.0764x10 ⁵ | 1 | | 100 | 10 ⁴ | 3.8610x10 ⁻³ | |
| inch ² | | | 6.4516 | 1/144 | | 1 | | 6.4516x10 ⁻⁴ | | 645.16 |
| kilometer ² | 247.104 | 10 ⁴ | 10 ¹⁰ | | 10 ⁻² | | 1 | 10 ⁶ | 0.38610 | |
| meter ² | 2.47104x10 ⁻⁴ | 10 ⁻² | 10 ⁴ | 10.7639 | 10 ⁻⁴ | 1550.0 | 10 ⁻⁶ | 1 | 0.38610x10 ⁻⁶ | 10 ⁶ |
| mile ² | 640 | 25900 | | | 259.00 | | 2.5900 | 2.5900x10 ⁶ | 1 | |
| milimeter ² | | | 10 ⁻² | 1.07639x10 ⁻⁵ | | 1.550x10 ⁻³ | | 10 ⁻⁶ | | 1 |

Table 10 Volume Units

| to obtain → multiply ↓ by ↘ | barrel | centimeter ³ | foot ³ | gallon (imp) | gallon (U.S.) | inch ³ | liter | meter ³ | ton* |
|-----------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------------------|-----------|-------------------------|-------------------------|
| barrel (oil) | 1 | | 5.6146 | 34.97 | 42 | | 158.99 | 0.15899 | 0.05615 |
| centimeter ³ | | 1 | 3.5314×10^{-5} | 2.1997×10^{-4} | 2.6417×10^{-4} | 0.06102 | 10^{-3} | 10^{-6} | |
| foot ³ | 0.1781 | 2.8317×10^4 | 1 | 6.229 | 7.481 | 1728 | 28.317 | 0.0283 | 1/100 |
| gallon (imp) | 0.02859 | 4546.1 | 0.1605 | 1 | 1.2009 | 277.3 | 4.5460 | 4.546×10^{-3} | 1.6054×10^{-3} |
| gallon (U.S.) | 1/42 | 3785.4 | 0.13368 | 0.83268 | 1 | 231.00 | 3.785 | 3.785×10^{-3} | 1.3368×10^{-3} |
| inch ³ | | 16.387 | 1/1728 | 3.606×10^{-3} | 4.329×10^{-3} | 1 | 0.01639 | 1.6387×10^{-5} | |
| liter | 6.2898×10^{-3} | 10^3 | 0.03531 | 0.21997 | 0.2642 | 61.024 | 1 | 10^{-3} | 3.5315×10^{-4} |
| meter ³ | 6.2898 | 10^6 | 35.314 | 219.97 | 264.2 | 6.1023×10^4 | 1000 | 1 | 0.35315 |
| ton* | 17.811 | | 100 | 622.9 | 748.06 | | 2831.7 | 2.8317 | 1 |

* Used, here, to measure ship cargo volume.

Table 11 Velocity Units

| to obtain → multiply ↓ by ↘ | centimeters per second | feet per minute | feet per second | kilometers per hour | knots (Nautical miles per hour) | meters per minute | meters per second | statute (U.S.) miles per hour |
|-------------------------------------|------------------------------|-----------------------|-----------------------|---------------------------|--|-------------------------|-------------------------|--|
| centimeters per second | 1 | 1.9685 | 0.032808 | 3.60×10^{-4} | 1.499×10^{-3} | 0.6000 | 1/100 | 1.726×10^{-3} |
| feet per minute | 0.5080 | 1 | 1/60 | 1.8288×10^{-2} | 9.868×10^{-3} | 0.03048 | 5.080×10^{-3} | 8.569×10^{-3} |
| feet per second | 30.480 | 60 | 1 | 1.0973 | 0.59210 | 18.288 | 0.3048 | 0.68187 |
| kilometers per hour | 2777.78 | 54.68 | 0.91134 | 1 | 0.53961 | 16.6667 | 0.27778 | 0.62137 |
| knots* | 667.2 | 101.33 | 1.6889 | 1.85319 | 1 | 30.8667 | 0.5144 | 1.1516 |
| meters per minute | 1.6667 | 3.2808 | 0.05468 | 0.06000 | 0.03240 | 1 | 60 | 0.03728 |
| meters per second | 100 | 196.85 | 3.2808 | 3.6000 | 1.9438 | 1/60 | 1 | 2.2369 |
| statute (U.S.) miles per hour | 579.4 | 116.70 | 1.46656 | 1.60935 | 0.86836 | 26.822 | 0.44704 | 1 |

* Nautical miles per hour.

Table 12 Volume Flow Rate Units

| to obtain → multiply ↓ by ↘ | feet ³ per second | liters per second | meters ³ per day | meters ³ per tide * | meters ³ per second | meters ³ per year | yards ³ per year |
|-----------------------------------|------------------------------------|-------------------------|-----------------------------------|--------------------------------------|--------------------------------------|------------------------------------|-----------------------------------|
| feet ³ per second | 1 | 28,318 | 2447 | 1266 | 0.02832 | 8.936x10 ⁵ | 1.169x10 ⁶ |
| liters per second | 0.03531 | 1 | 86.40 | 44.70 | 1/1000 | 3.156x10 ⁴ | 4.128x10 ⁴ |
| meters ³ per day | 4.087x10 ⁻⁴ | 0.01157 | 1 | 0.5174 | 1/86400 | 365.26 | 477.7 |
| meters ³ per tide * | 7.900x10 ⁻⁴ | 0.02237 | 1.933 | 1 | 1/44700 | 706.0 | 923.4 |
| meters ³ per second | 35.31 | 1000 | 86400 | 44700 | 1 | 3.156x10 ⁷ | 4.128x10 ⁷ |
| meters ³ per year | 1.119x10 ⁻⁶ | 3.169x10 ⁻⁵ | 2.738x10 ⁻³ | 1.416x10 ⁻³ | 3.169x10 ⁻⁸ | 1 | 1.308 |
| yd ³ per year | 8.556x10 ⁻⁷ | 2.423x10 ⁻⁵ | 2.093x10 ⁻³ | 1.083x10 ⁻³ | 2.423x10 ⁻⁸ | 0.7646 | 1 |

*Based upon a semidiurnal tide period of 12h 25 m.

Table 13 Force or Weight Units

| to obtain → multiply ↓ by ↘ | dyne | kilogram force | newton | pound force | ton force (long) | ton force (metric) | ton force (short) |
|-----------------------------------|----------------------|-------------------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|
| dyne | 1 | 1.0191×10^{-5} | 10^{-5} | 2.2466×10^{-6} | | | |
| kilogram force | 9.8129×10^5 | 1 | 9.81288 | 2.2046 | 9.8420×10^{-4} | 1/1000 | 1.1023×10^{-3} |
| newton | 10^5 | 0.10191 | 1 | 0.22466 | 1.0029×10^{-4} | 1.0191×10^{-4} | 1.1233×10^{-4} |
| pound force | 4.4511×10^5 | 0.4536 | 4.4511 | 1 | 1/2240 | 0.4536×10^{-3} | 1/2000 |
| ton force (long) | | 1016.1 | 9970.5 | 2240 | 1 | 1.0161 | $\frac{2240}{2000}$ |
| ton force (metric) | | 1000 | 9812.88 | 2.2046×10^3 | 0.98419 | 1 | 1.1023 |
| ton force (short) | | 907.2 | 8902.2 | 2000 | $\frac{2000}{2240}$ | 0.90719 | 1 |

Table 14 Pressure Units

| to obtain multiply by | atmosphere | bar | dyne per centimeter ² | feet of water* | kilogram force per cm ² | meters of water* | millimeters of mercury* | newton per meter ² (Pascal) | pounds force per inch ² |
|--|-------------------------|-------------------------|-------------------------------------|-------------------------|--|-------------------------|-------------------------------|--|--|
| atmosphere | 1 | 1.0133 | 1.01325x10 ⁶ | 33.877 | 1.0332 | 10.326 | 759.52 | 1.0133x10 ⁵ | 14.696 |
| bar | 0.9869 | 1 | 10 ⁶ | 33.434 | 1.01971 | 10.191 | 749.55 | 10 ⁵ | 14.504 |
| dyne per cm ² | 9.8692x10 ⁻⁷ | 10 ⁻⁶ | 1 | | | | 7.4955x10 ⁻⁴ | 1/10 | 1.4504x10 ⁻⁵ |
| feet of* water | 0.0295 | 0.0299 | | 1 | 0.0305 | 0.3048 | 22.419 | 2991.0 | 0.43381 |
| kilogram force per cm ² | 0.96787 | 0.98067 | | 32.788 | 1 | 9.9936 | 735.06 | 98067 | 14.223 |
| meters of* water | 0.0968 | 0.09812 | | 3.2808 | 0.1006 | 1 | 73.55 | 9812.6 | 1.4233 |
| millimeters* of mercury | 1.3166x10 ⁻³ | 1.3340x10 ⁻³ | 1334.0 | 0.04460 | 1.3604x10 ⁻³ | 0.01360 | 1 | 133.41 | 0.01935 |
| newton per meter ² (pascal) | 9.8692x10 ⁻⁶ | 10 ⁻⁵ | 10 | 3.3434x10 ⁻⁴ | 1.0197x10 ⁻⁵ | 1.0191x10 ⁻⁴ | 7.496x10 ⁻³ | 1 | 1.4503x10 ⁻⁴ |
| pounds force per inch ² | 0.06805 | 0.06895 | 68946 | 2.3051 | 0.070307 | 0.70261 | 51.682 | 6895.1 | 1 |

* Based upon $g = 9.81288 \text{ m/s}^2$.

Table 15 Density or Concentration Units

| to obtain → multiply ↓ by ↘ | grams cm ³ | per kilograms m ³ | per miligrams liter | per pound mass foot ³ | per slugs foot ³ |
|--------------------------------------|--------------------------|------------------------------------|---------------------------|--|-----------------------------------|
| grams per cm ³ | 1 | 10 ³ | 10 ⁶ | 62.43 | 1.939 |
| kilograms per m ³ | 10 ⁻³ | 1 | 10 ³ | 0.06243 | 1.939x10 ⁻³ |
| miligrams per liter | 10 ⁻⁶ | 10 ⁻³ | 1 | 6.243x10 ⁻⁵ | 1.939x10 ⁻⁶ |
| pounds mass per foot ³ | 0.016018 | 16.018 | 16018 | 1 | 0.03106 |
| slugs per foot ³ | 0.5157 | 515.7 | 5.157x10 ⁵ | 32.194 | 1 |