



# ESDU Conversion Factors

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## Conversion Factors



**ROYAL  
AERONAUTICAL  
SOCIETY**

Endorsed by  
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## 1. CONVERSION TABLE

The following table gives factors for conversion into and from SI Units. The symbols used here are largely those recommended in Derivation 3. The definitions of the base units used in SI will also be found in Derivation 3 and the definitions of the other units will be found in Derivations 1, 4 and 5. The conversion factors given in bold type are exact. Where an exact value does not exist the factors are given to six significant figures.

To convert into SI multiply by the factor given in the third column. To convert from SI to the other systems of units multiply by the factor given in the fourth column.

| TO CONVERT              |                        | INTO (SI)                               | MULTIPLY BY                            |                              |
|-------------------------|------------------------|-----------------------------------------|----------------------------------------|------------------------------|
| TO OBTAIN               |                        | FROM (SI)                               |                                        | MULTIPLY (SI) BY             |
| Length                  | in (inch)              | mm ( <b>millimetre</b> )                | <b>25.4</b>                            | 0.039 370 1                  |
|                         | in                     | m ( <b>metre</b> )                      | <b>0.025 4</b>                         | 39.370 1                     |
|                         | ft (foot)              | m                                       | <b>0.304 8</b>                         | 3.280 84                     |
|                         | yd (yard)              | m                                       | <b>0.914 4</b>                         | 1.093 61                     |
| Area                    | in <sup>2</sup>        | mm <sup>2</sup>                         | <b>645.16</b>                          | 1.550 00 × 10 <sup>-3</sup>  |
|                         | in <sup>2</sup>        | m <sup>2</sup>                          | <b>0.645 16 × 10<sup>-3</sup></b>      | 1.550 00 × 10 <sup>3</sup>   |
|                         | in <sup>2</sup>        | cm <sup>2</sup>                         | <b>6.451 6</b>                         | 0.155 000                    |
|                         | ft <sup>2</sup>        | m <sup>2</sup>                          | <b>0.092 903 04</b>                    | 10.763 9                     |
| Volume                  | in <sup>3</sup>        | mm <sup>3</sup>                         | <b>16 387.064</b>                      | 61.023 7 × 10 <sup>-6</sup>  |
|                         | in <sup>3</sup>        | m <sup>3</sup>                          | <b>0.016 387 064 × 10<sup>-3</sup></b> | 61 023.7                     |
|                         | in <sup>3</sup>        | cm <sup>3</sup>                         | <b>16.387 064</b>                      | 0.061 023 7                  |
|                         | ft <sup>3</sup>        | m <sup>3</sup>                          | 0.028 316 8                            | 35.314 7                     |
|                         | gal (UK) (gallon)      | 1 (1 <b>litre</b> = 1 dm <sup>3</sup> ) | 4.546 09                               | 0.219 969                    |
|                         | gal (UK)               | mm <sup>3</sup>                         | 4.546 09 × 10 <sup>6</sup>             | 0.219 969 × 10 <sup>-6</sup> |
|                         | gal (UK)               | m <sup>3</sup>                          | 4.546 09 × 10 <sup>-3</sup>            | 219.969                      |
|                         | gal (US)               | 1                                       | 3.785 41                               | 0.264 172                    |
| Higher powers of length |                        |                                         |                                        |                              |
|                         | in <sup>4</sup>        | mm <sup>4</sup>                         | 416 231                                | 2.402 51 × 10 <sup>-6</sup>  |
|                         | in <sup>4</sup>        | m <sup>4</sup>                          | 0.416 231 × 10 <sup>-6</sup>           | 2.402 51 × 10 <sup>6</sup>   |
|                         | in <sup>4</sup>        | cm <sup>4</sup>                         | 41.623 1                               | 0.024 025 1                  |
|                         | in <sup>6</sup>        | mm <sup>6</sup>                         | 268.536 × 10 <sup>6</sup>              | 3.723 90 × 10 <sup>-9</sup>  |
|                         | in <sup>6</sup>        | m <sup>6</sup>                          | 0.268 536 × 10 <sup>-9</sup>           | 3.723 90 × 10 <sup>9</sup>   |
| Force                   | lbf (pound force)      | N ( <b>Newton</b> )                     | 4.448 22                               | 0.224 809                    |
|                         | pdl (poundal)          | N                                       | 0.138 255                              | 7.233 01                     |
|                         | dyn (dyne)             | N                                       | <b>10 × 10<sup>-6</sup></b>            | <b>100 × 10<sup>3</sup></b>  |
|                         | tonf (UK ton-force)    | N                                       | 9 964.02                               | 0.100 361 × 10 <sup>-3</sup> |
| *                       | kgf (kilogramme-force) | N                                       | <b>9.806 65</b>                        | 0.101 972                    |
|                         | kp (kilopond)          | N                                       | <b>9.806 65</b>                        | 0.101 972                    |

For footnotes see end of conversion table

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