

# Tolerances

| Nominal Diameter |                | Tolerances of mean diameter     |                                                                                                             |
|------------------|----------------|---------------------------------|-------------------------------------------------------------------------------------------------------------|
| Above            | Up to and inc. | Applicable to the mean diameter | Applicable to any diameter including deviations from the circular shape for straight lengths <sup>a,b</sup> |
| 3 <sup>c</sup>   | 10             | ± 0,06                          | ± 0,12                                                                                                      |
| 10               | 20             | ± 0,08                          | ± 0,16                                                                                                      |
| 20               | 30             | ± 0,12                          | ± 0,24                                                                                                      |
| 30               | 50             | ± 0,15                          | ± 0,30                                                                                                      |
| 50               | 100            | ± 0,20                          | ± 0,50                                                                                                      |
| 100              | 200            | ± 0,50                          | ± 1,00                                                                                                      |
| 200              | 300            | ± 0,75                          | ± 1,50                                                                                                      |
| 300              | 450            | ± 1,00                          | ± 2,00                                                                                                      |

<sup>a</sup> The tolerances indicated in this column are not applicable to:

- tubes in rolls or coils
- tubes with OD > 150
- tubes in an annealed state

<sup>b</sup> When the diameter is measured at a distance from the ends of the tube of up to 100mm or the equivalent of to a nominal diameter (choosing the lesser of both values), unless otherwise agreed, the tolerance is allowed to be increased by multiplying it by 3.

<sup>c</sup> Includes 3.

| Nominal exterior diameter |                | Tolerances of nominal wall thickness t (%) |                                   |                                   |                                    |              |
|---------------------------|----------------|--------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--------------|
| mm                        |                | t from 0.3 mm up to and inc. 1 mm          | t above 1 mm, up to and inc. 3 mm | t above 3 mm, up to and inc. 6 mm | t above 6 mm, up to and inc. 10 mm | t above 10mm |
| Above                     | Up to and inc. |                                            |                                   |                                   |                                    |              |
| 3 <sup>a</sup>            | 40             | ± 15                                       | ± 13                              | ± 11                              | ± 10                               | –            |
| 40                        | 120            | ± 15                                       | ± 13                              | ± 12                              | ± 11                               | ± 10         |
| 120                       | 250            | –                                          | ± 13                              | ± 13                              | ± 12                               | ± 11         |

| Nominal exterior diameter |                | Tolerances of nominal wall thickness t (%) |                                   |                                   |                                    |              |
|---------------------------|----------------|--------------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|--------------|
| mm                        |                | t from 0.3 mm up to and inc. 1 mm          | t above 1 mm, up to and inc. 3 mm | t above 3 mm, up to and inc. 6 mm | t above 6 mm, up to and inc. 10 mm | t above 10mm |
| Above                     | Up to and inc. |                                            |                                   |                                   |                                    |              |
| 250                       | 450            | –                                          | –                                 | ± 15                              | ± 15                               | ± 15         |
| <sup>a</sup> Includes 3.  |                |                                            |                                   |                                   |                                    |              |

### Tolerances of diameter including deviations from circular shape, tubes in rolls or coils

| Nominal exterior diameter |                | Tolerances of nominal diameter including deviations from the circular shape | Applicable to inner diameter of winding |
|---------------------------|----------------|-----------------------------------------------------------------------------|-----------------------------------------|
| Above                     | Up to and inc. |                                                                             | min                                     |
| 3 <sup>a</sup>            | 6              | ± 0,30                                                                      | 400                                     |
| 6                         | 10             | ± 0,50                                                                      | 600                                     |
| 10                        | 20             | ± 0,70                                                                      | 800                                     |
| 20                        | 30             | ± 0,90                                                                      | 1000                                    |
| <sup>a</sup> Includes 3.  |                |                                                                             |                                         |