



## Tolerances for Tubes of CW024A

Dimensions: EN 12449:1999\*

### Tolerances on diameter

| Nominal diameter $d$ (mm) | Tolerances on nominal diameter (mm) |                                                                                        |
|---------------------------|-------------------------------------|----------------------------------------------------------------------------------------|
|                           | Applicable to mean diameter         | Applicable to any diameter including deviation from circular form for straight lengths |
| $3 \leq d \leq 10$        | $\pm 0,06$                          | $\pm 0,12$                                                                             |
| $10 < d \leq 20$          | $\pm 0,08$                          | $\pm 0,16$                                                                             |
| $20 \leq d \leq 30$       | $\pm 0,12$                          | $\pm 0,24$                                                                             |
| $30 \leq d \leq 50$       | $\pm 0,15$                          | $\pm 0,30$                                                                             |
| $50 \leq d \leq 100$      | $\pm 0,20$                          | $\pm 0,50$                                                                             |
| $100 \leq d \leq 200$     | $\pm 0,50$                          | $\pm 1,00$                                                                             |
| $200 \leq d \leq 300$     | $\pm 0,75$                          | $\pm 1,50$                                                                             |
| $300 \leq d \leq 450$     | $\pm 1,00$                          | $\pm 2,00$                                                                             |

\* Values are referred from Table 16 of EN 12449:1999

Dimensions: EN 12449:1999\*

### Tolerances on wall thickness

| Nominal outside diameter $D$ (mm) | Tolerances on nominal wall thickness $t$ (mm) |                |                |                 |          |
|-----------------------------------|-----------------------------------------------|----------------|----------------|-----------------|----------|
|                                   | %                                             |                |                |                 |          |
|                                   | $0,3 \leq t \leq 1$                           | $1 < t \leq 3$ | $3 < t \leq 6$ | $6 < t \leq 10$ | $10 < t$ |
| $3 \leq D \leq 40$                | $\pm 15$                                      | $\pm 13$       | $\pm 11$       | $\pm 10$        | -        |
| $40 < D \leq 120$                 | $\pm 15$                                      | $\pm 13$       | $\pm 12$       | $\pm 11$        | $\pm 10$ |
| $120 \leq D \leq 250$             | -                                             | $\pm 13$       | $\pm 13$       | $\pm 12$        | $\pm 11$ |
| $250 \leq D \leq 450$             | -                                             | -              | $\pm 15$       | $\pm 15$        | $\pm 15$ |

\* Values are referred from Table 17 of EN 12449:1999

Dimensions: EN 12449:1999\*

### Tolerances on fixed lengths, tubes in straight lengths

| Nominal outside diameter $D$ (mm) | Tolerance on fixed length $l$ (mm) |                     |                      |              |
|-----------------------------------|------------------------------------|---------------------|----------------------|--------------|
|                                   | $l \leq 250$                       | $250 < l \leq 1000$ | $1000 < l \leq 4000$ | $4000 < l$   |
| $3 \leq D \leq 25$                | +1<br>0                            | +3<br>0             | +5<br>0              | By agreement |
| $25 < D \leq 100$                 | +2<br>0                            | +5<br>0             | +7<br>0              |              |
| $100 < D \leq 450$                | +3<br>0                            | +5<br>0             | +10<br>0             |              |

\* Values are referred from Table 18 of EN 12449:1999

Dimensions: EN 12449:1999\*

### Tolerances on fixed lengths, tube in coils (not level wound)

| Specified length $L$ (m) | Tolerance % |
|--------------------------|-------------|
| $L \leq 50$              | +2<br>0     |
| $50 < L \leq 100$        | +3<br>0     |
| $100 < L$                | +5<br>0     |

\* Values are referred from Table 19 of EN 12449:1999

Dimensions: EN 12449:1999\*

### Tolerances on diameter including deviation from circular form, tube in coils

| Nominal outside diameter $D$ (mm) | Tolerances on nominal diameter including deviation from circular form | Applicable for coil inside diameter min. |
|-----------------------------------|-----------------------------------------------------------------------|------------------------------------------|
| $3 \leq D \leq 6$                 | $\pm 0,30$                                                            | 400                                      |
| $6 < D \leq 10$                   | $\pm 0,50$                                                            | 600                                      |
| $10 \leq D \leq 20$               | $\pm 0,70$                                                            | 800                                      |
| $20 \leq D \leq 30$               | $\pm 0,90$                                                            | 1000                                     |

\* Values are referred from Table 20 of EN 12449:1999

**Dimensions: EN 12449:1999\***  
**Tolerances on straightness**

| Ratio of         | Depth of arc (see Figure 1)                     |                                                |
|------------------|-------------------------------------------------|------------------------------------------------|
|                  | $h_1$<br>in any length $l_1$ of 1000 mm<br>max. | $h_2$<br>in any length $l_2$ of 400 mm<br>max. |
| $r \leq 5$       | 2                                               | 0,8                                            |
| $5 < r \leq 10$  | 3                                               | 1,2                                            |
| $10 < r \leq 20$ | 4                                               | 1,6                                            |
| $20 < r \leq 40$ | 5                                               | 2,0                                            |
| $40 < r$         | 6                                               | 2,5                                            |

\* Values are referred from Table 21 of EN 12449:1999

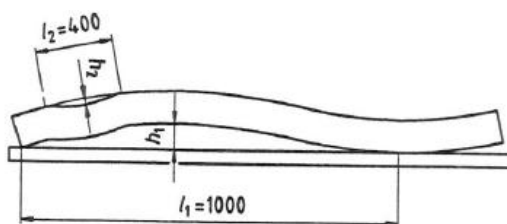


Figure 1 - Measurement of straightness from EN 12449:1999

**Dimensions: EN 12449:1999\***  
**Sampling rate**

| Mass per unit length<br>kg/m    | Size of inspection lot for one test sample<br>kg |
|---------------------------------|--------------------------------------------------|
| $\bar{\lambda}_m \leq 0,25$     | $\leq 500$                                       |
| $0,25 < \bar{\lambda}_m \leq 5$ | $\leq 1000$                                      |
| $5 < \bar{\lambda}_m$           | $\leq 2500$                                      |

\* Values are referred from Table 22 of EN 12449:1999