



Neutral layer

The layer in the middle of the sheet (A) is called neutral layer. During sheet curvature it remains unchanged in length. To determine print length elongation in flat position the measurement of the neutral fibre ($\frac{1}{2}$ the thickness of the stock) is being used. In our example C an elongation of the print length of .038" (.94 mm.) will then result for the .020" (.5 mm.) thick carton.

If it is desired to have print length on the .004" (.1 mm.) thick paper and the .020" (.5 mm.) thick carton identical, then the plate packing for the printing of the carton must be correspondingly stronger by .008" (.2 mm) = $\frac{1}{2}$ the difference in thickness of material (see B).

Cylinder ratio chart

thickness of stock	plate over bearer	pressure between plate and blanket	scale setting on plate cylinder	blanket over bearer	impression between blanket and impression cylinder	scale setting in blanket cylinder	height of pre-gripper
.004"	.008"	.004"	— .004"	0	.004"	0	3
.10 mm.	.20 mm.	.10 mm.	— .10 mm.	0	.10 mm.	0	3
.008"	.010"	.004"	— .006"	0	.004"	— .004"	4
.20 mm.	.25 mm.	.10 mm.	— .15 mm.	0	.10 mm.	— .10 mm.	4
.012"	.012"	.004"	— .008"	0	.004"	— .008"	5
.30 mm.	.30 mm.	.10 mm.	— .20 mm.	0	.10 mm.	— .20 mm.	5
.016"	.014"	.004"	— .010"	0	.006"	— .010"	6
.40 mm.	.35 mm.	.10 mm.	— .25 mm.	0	.15 mm.	— .25 mm.	6
.020"	.016"	.004"	— .012"	0	.006" to .010"	— .014" to — .010"	7
.50 mm.	.40 mm.	.10 mm.	— .30 mm.	0	.15 to .25 mm.	— .35 to — .25 mm.	7
.024"	.016"	.004"	— .012"	0	.006" to .010"	— .018" to — .014"	8
.60 mm.	.40 mm.	.10 mm.	— .30 mm.	0	.15 to .25 mm.	— .45 to — .35 mm.	8
.028"	.016"	.004"	— .012"	0	.006" to .010"	— .022" to — .018"	9
.70 mm.	.40 mm.	.10 mm.	— .30 mm.	0	.15 to .25 mm.	— .55 to — .45 mm.	9
.032"	.016"	.004"	— .012"	0	.006" to .010"	— .026" to — .022"	10
.80 mm.	.40 mm.	.10 mm.	— .30 mm.	0	.15 to .25 mm.	— .65 to — .55 mm.	10

Because of the influence of humidity and fibre stretch in the paper, sheets may become stretched and in multi-colour printing this can lead to the result that the overprinted image appears too small. In subsequent printing it is then necessary to lengthen print length by reducing plate cylinder underlay. For this reason the plate packing is increased by .004"–.008" (.1–.2 mm.) to permit removal of underlay sheets in order to effect print length correction.

e. g.: thickness of stock .004" (.1 mm.)

standard packing: plate over bearer ring according to table .008" (.2 mm.)

increased packing: plate over bearer ring .012"–.016" (.3–.4 mm.)

In the four-colour offset machine, there is far less risk of paper stretch as the printing of four colours is in one passage through the machine, if necessary, however, cylinders can be packed to suit paper needs.

An example may illustrate this : .004" (.1 mm.) thick paper — table value .008" (.2 mm.) plate over bearer ring

First plate .012" (.3 mm.) over bearer ring
 Second plate .010" (.25 mm.) over bearer ring
 Third plate .008" (.2 mm.) over bearer ring
 Fourth plate .008" (.2 mm.) over bearer ring

Electric furnace in our own foundry