



## Expansion of Metals

Metal flashings are very important in the protection of the roofing system. A wide variety of metals are available from which a designer might choose. The metal a designer chooses is usually based on a number of considerations.

We believe that one of the major considerations should be the rate of expansion and contraction of the metal particularly in geographical areas which experience extremes of temperature. It should be remembered that the temperature range to which the metal is subjected can be, due to solar heat absorption, considerably greater than the ambient temperature change.

The colour of the metal should also be considered inasmuch as darker colours tend to reflect less heat and consequently increase the temperature differential, thereby creating greater movement. The expansion and contraction of the metal becomes most important when the metal flashing is an integral part of the roof system and is flashed in directly to the roofing as is the case with gravelstops. In these cases the metal should preferably have a low coefficient of expansion.

Of equal importance is the design and location of the joints between lengths of metal and at junction points such as corners. These joints must remain weather tight while providing for the anticipated dimensional changes.

**LINEAR EXPANSION OF BUILDING MATERIALS**

Building Material	Coefficient of Thermal Expansion	Increase in 10 ft length in 64ths of an inch resulting from a temperature increase of 100° F.														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COPPER	.0000098															
TIN	.0000117															
ALUMINUM	.0000138															
LEAD	.0000164															
ZINC ROLLED	.0000174															
PINE PARALLEL TO GRAIN	.0000031															
BRICK MASONRY	.0000031															
LIMESTONE	.0000044															
GLASS	.0000047															
MARBLE	.0000056															
SLATE	.0000058															
STEEL	.0000067															
GALVANIZED STEEL	.0000067															
MONEL	.0000078															
CONCRETE	.0000078															
STAINLESS STEEL	.0000098															
PLASTER	.0000092															