

IEEE Standards Interpretations for IEEE Std C37.20.1™-1993 IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

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### **Interpretation Request #1**

**Topic:** Temperature Limits **Relevant Clauses:** Table 4

In Table 4 (Temperature limits for buses and connections as used in switch gear assemblies), it is indicated that buses and connections silver surfaced, tin surfaced or equivalent connecting joints can have hottest spot total temperature of 105 deg.C. In order to meet this requirement, whether both the mating surfaces of a joint need to be silver surfaced, tin surfaced or equivalent or is it adequate if anyone of the two mating surfaces at the joint are silver surfaced, tin surfaced or equivalent?

### **Interpretation Response**

IEEE C37.20.1-1993, Table 4 offers several classifications of joints in the several rows, but for our purposes, it is sufficient to consider the two rows dealing with "buses and connections".

- The first row discusses "buses and connections with unplated copper to copper connecting joints". Note that the first conductor is "unplated copper", while the second conductor is "copper" with no modifier. Thus, the first row applies to a joint in which one conductor is unplated, while the other conductor may be plated or unplated.
- The second row discusses "buses and connections silver surfaced, tin surfaced or equivalent connecting joints". Note that this statement treats "buses and connections" as a group, and the following phrases contain the modifier "silver surfaced, tin surfaced or equivalent".

- From the construction of the two rows, it is clear that a joint which includes (for example) two buses one with plated surfaces and the other with unplated surfaces, will be governed by the first row and the lower temperature rise limit. In contrast, the same joint, but with both conductors having plated surfaces, will be governed by the second row, with the higher temperature rise limit.