ASME B16.5 para. 6.4.6

Section 6.4.6 addresses acceptable flange facing surface finish imperfections. The requirements are:

"Imperfections in the flange facing finish shall not exceed the dimensions shown in Table 3 (Table II-3 of Mandatory Appendix II). A distance of at least four times the maximum radial projection shall separate adjacent imperfections. A radial projection shall be measured by the difference between an outer radius and inner radius encompassing the imperfection where the radii are struck from the centerline of the bore. Imperfections less than half the depth of the serrations shall not be considered cause for rejection. Protrusions above the serrations are not permitted.

The issue with this requirement is that it allows a flaw across the full surface finish to half the serration depth. It also allows a flaw to full serration depth across anywhere from 0.12 to 0.5 inches in the radial direction, depending on flange size. It also allows a defect in the flange surface finish of between 0.06 and 0.25 inches deep, with the same radial width. The latter two limits correspond, respectively, to defects that are the serration depth and approximately one half of the gasket width for a spiral wound gasket and significantly deeper than the serrations and one quarter of the gasket width for a spiral wound.

The thing to keep in mind with this is that this is a specification for NEW flanges. It is hard to imagine why new flanges with a 0.25 inch deep defect in the flange surface finish which goes across a quarter of the gasket seating surface should be considered acceptable. It is obvious that from a sealing perspective, a radial flaw extending half or quarter of the way across the gasket seating surface will be detrimental to the joint integrity. The only explanation for the level of imperfections tolerated by B16.5 is to sanction poor fabrication and handling practices. It is recommended that the limits outlined in ASME PCC-1-2010 Appendix D be used in lieu of the limits presently outlined in ASME B16.5. End user specifications for flanges should be written such that the limits outlined in ASME PCC-1-2010 Appendix D for hard gaskets replace the requirements of B16.5 Section 6.4.6.

ASME B16.47
B16.5 Section 6.4.6 is equivalent to B16.47 Section 6.1.5