

IPP DELTAFLEX® Flanges PPDA

Back-up flanges specific in design, developed for the usage in thermoplastic piping systems. IPP Deltaflex flanges are being cast in ductile iron GGG40 (ASTM A536), then placed into an injection molding machine and encapsulated with 30% reinforced polypropylene. This process guarantees a substantial corrosion protection barrier.

IPP DELTAFLEX® Flanges

This extraordinary pipe flange concept has proven itself widely successful since 1979 in the USA, Canada and many other countries in the world. Now the very same flanges, however in metric dimensions to suit national standards, are being offered in Europe.

How does the IPP Deltaflex® Flange differentiate itself from conventional pipe flanges?

The product weights of the IPP Deltaflex flanges are substantially less in comparison to the conventional pipe flanges based on the intelligent cross sectional design. The casting production technology allows the allocation of material masses in those areas where the highest stress levels are being encountered. In order to produce a plate steel range of equal capability and stress levels, approximately 80% more material needs to be employed. The IPP Deltaflex flange technology saves resources and costs, impacting especially favorable on ease of product handling of larger flanges.

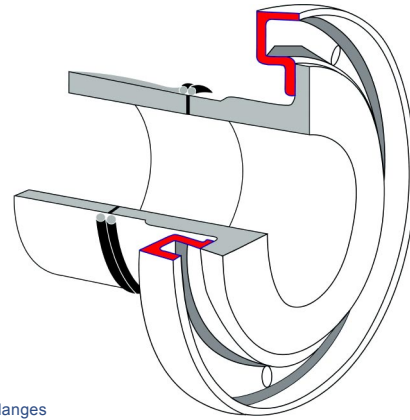
The easier installation caused by the reduced flange weight offers additional benefits through the elimination of the need to re-torque the fasteners after the initial installation. The unique IPP Deltaflex® flange shape, acting like a „Belleville washer“, brings about the additional energy storage needed to overcome any thermoplastic material cold flow conditions.

IPP Deltaflex® flanges are being cast in GGG40, a material with substantially better corrosion protection characteristics than, for instance, steel ST37, while the material's mechanical properties are almost identical to each other. The black, glass reinforced polypropylene thick encapsulation layer over the metallic insert takes care of most corrosion protection needs and provides its very neat appearance.

The design shape of the flanges are based on FEM calculations (Finite Element Method) whereby special considerations have been given to evaluate the flange joint including the thermoplastic stub end. IPP guarantees for all of its flanges a safety factor of 2 based on the yield strength of the material (20% casting factor reduction included) for the stated maximum operating pressures.

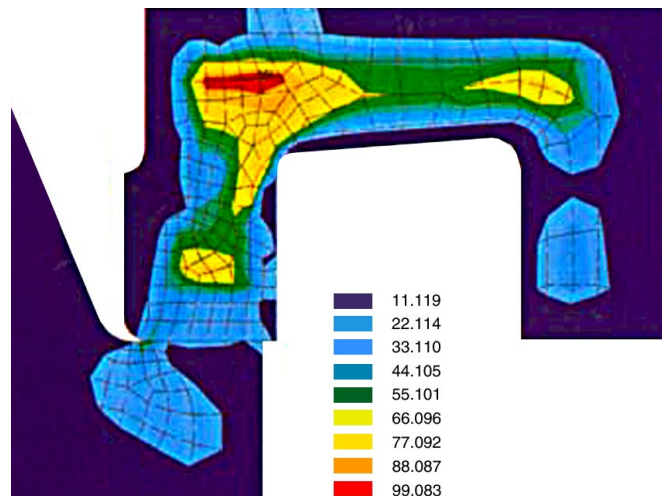
Reasons to use the IPP Deltaflex® flange:

- Patented design, undeniably unique
- Calculation of flange joint by FEM (Finite Element Method)
- Convincing weight savings
- Calculated, guaranteed safety factor of 2,0
- 16 bar operating pressure up to d 400mm
- Extremely high corrosion resistance through the polypropylene layer over metallic insert
- Elimination of re-torquing after initial installation
- Intelligent unique design, saves resources and assures balanced stress distribution
- Substantially simplified handling

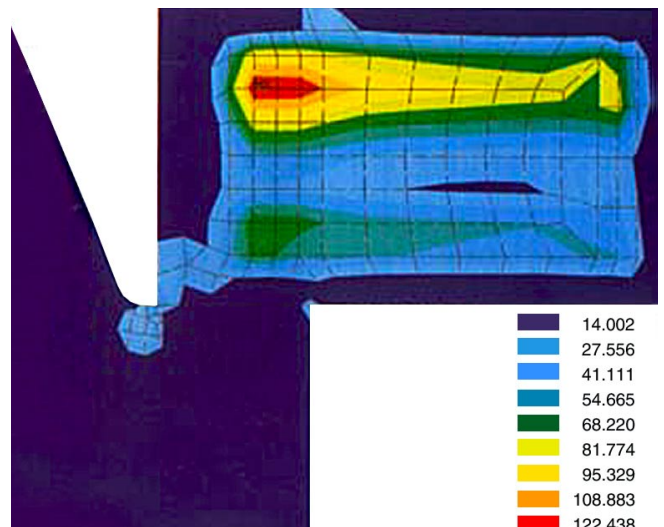


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Depicted below are the „von Mises“ stress differences (FEM analyses) between the IPP DELTAFLEX® flange and a conventional plate steel flange (ST 37) of the same size (d 250-PN 10) and service pressure (16 bar). d 250mm, PN10 (Bolt Circle) - 16 bar, Stress Results



IPP DELTAFLEX® flange PPDA, Units are Mpa (N/mm²)



Conventional PP/Steel Flange, Units are Mpa (N/mm²)