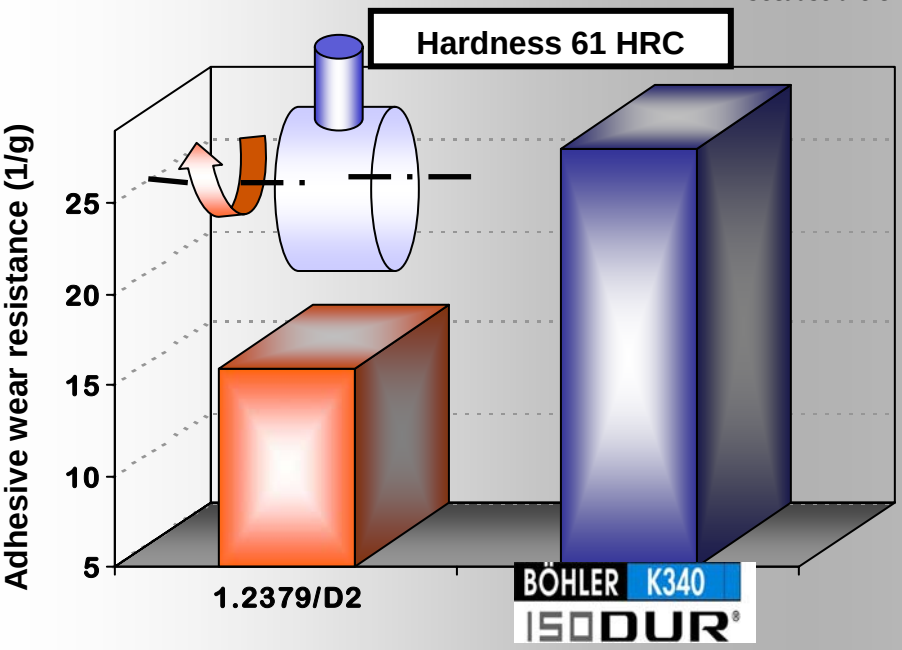
BOHLER UDDEHOLM AFRICA

Adhesive failure marks will become evident or appear on the sides of the formed component and will look like scratch or stretch marks.

BÖHLER K340 ISODUR®

When it comes to forming, problems often occur with respect to cold welding (adhesive problems). This is especially true when it comes to the forming of stainless steel. There is a solution to this problem which will in turn increase the production life of the tool and decrease costs. This solution is found in K340 ISODUR.

Cold welding occurs when the chromium content in the material being formed reacts with the chromium in the tool resulting in a bonding reaction, this is known as "cold welding." For many companies cold welding is just part of getting the job done because the chromium content is needed in the tool in order to give it the toughness and wear resistance that it needs to get the job done. This is no longer true.



By manipulating the chemical composition of the grade and using other carbide formers, Bohler Uddeholm has come up with a way of decreasing the chromium content of the tool steel while improving the adhesive wear resistance properties of the grade.

The above statement is confirmed by a simple independent laboratory test involving a wheel which simulates the adhesive conditions and the steel grades. The results of this test can be seen on the left.

To find out more about this grades physical properties and areas of application please contact our Metallurgical Engineer Mr Graham Knight on:
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What is an ESR grade?

ESR (Electro Slag Remelted) grades are in this case tool steels that have initially solidified (conventionally) into an ingot or, specifically in this case, an electrode. During conventional solidification, natural phenomenon occur which decrease the physical properties of the steel. This means that the surface of the material will always have better physical properties than the centre.

By remelting this ingot/electrode through a high resistivity slag at a certain rate, we are then able to control the rate of solidification (surface and centre). As the droplets fall through this high resistivity slag, impurities are removed. Further more, any foreign contaminants that manage to pass through the slag get caught up in a circulating current and are forced to the outer diameter of the remelted ingot. These contaminants are later removed by skimming the surface of the ingot once it has cooled down.

After this process the remaining ingot has improved physical properties due to its homogeneous microstructure which is free of contaminants due to this refining/remelting operation