

# Thermodur XLL EFS

Made for extended lifetime



**Swiss  
Steel**  
Group

# Thermodur XLL EFS

**Thermodur Xtra Long Life EFS was designed to maximize the lifetime of dies and inserts and offer new opportunities to the end user. In particular in extrusion, forging, and low pressure die casting applications this high-performance hot work tool steel generates advantages against standard materials.**

In the extrusion process the excellent temperature resistance in combination with highest toughness properties and best dimensional stability leads to a better performance and quality of the extruded products. This premium solution therefore exceeds original limits and sets new standards, as proven during different field trials. In addition to the major industries, like automotive light weight constructions or the construction industry, there are numerous other fields of application for extruded metal products.

For forging dies or inserts, the excellent high temperature strength together with highest toughness properties, highest hot wear resistance, and best thermal shock resistance leads to better lifetimes and lower susceptibility to cracks or wear.

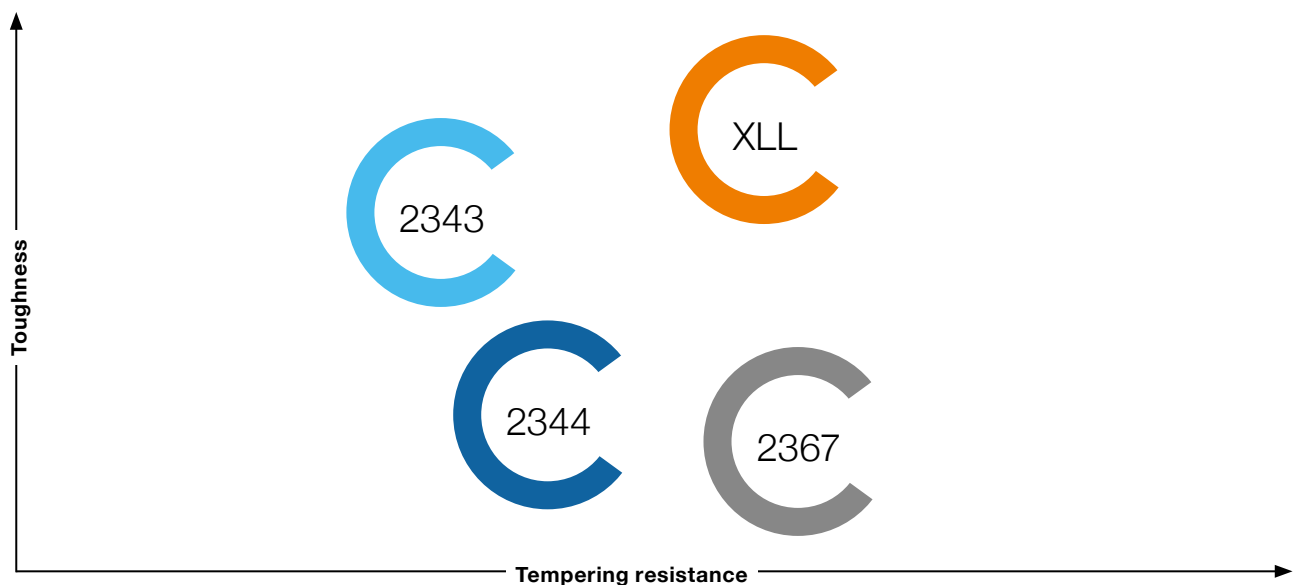
Even for low pressure die casting dies an extraordinary property profile is provided due to the outstanding temperature stability in combination with a high wear resistance at elevated temperatures and excellent resistance against thermal shock.

The chemical composition of this high-performance steel is precisely adjusted in the modern secondary metallurgic treatment facilities at Deutsche Edelstahlwerke. Thermodur® XLL EFS is treated to achieve an extremely homogeneous structure in both annealed and tempered condition by means of a special structural treatment.

As a result, Thermodur® XLL EFS features the required properties of improved temperature stability combined with high toughness. With use of this premium hot work tool steel toughness values of 300 J in the impact bending test with unnotched samples can be realized.

Top quality, individualized services and direct proximity to the customer are just some of our strengths. Our experts are happy to assist you.

*You are interested in other special steel solutions? Learn more on [www.swisssteel-group.com](http://www.swisssteel-group.com)*



## Chemical Composition

C	Si	Mn	S	Cr	Mo	V	Add
0.35	0.30	0.30	< 0.003	5.00	1.90	0.70	+

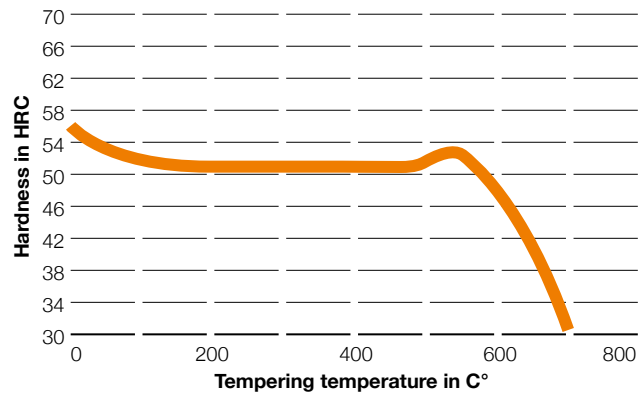
## Physical Properties

<b>Coefficient of thermal expansion at °C at 45 HRC 10-6 m/(m·K)</b>	20- 100 11.5	20-200 12.0	20-300 12.3	20-400 12.6	20-500 12.9	20-600	
<b>Thermal conductivity at °C W/(m·K)</b>	RT 28.3	100 29.3	200 30.9	300 31.0	400 30.7	500 29.5	600 27.8

## Properties

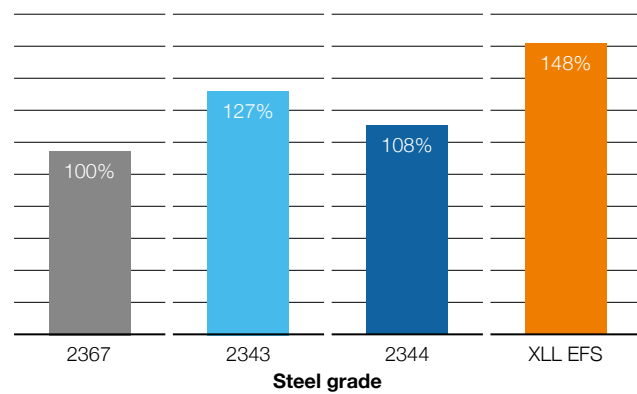
High toughness combined with improved high-temperature strength, excellent dimensional and temperature stability, high hot wear resistance, excellent thermal shock resistance

## Tempering Diagram



## Toughness Comparison

Comparison from impact bending test with standard hot work tool steels in quenched and tempered condition (45±1 HRC)



Tempering temperature in °C	300	400	500	550	600	650
Hardness in HRC	51	51	52	51	48	36

## Heat Treatment

Soft annealing °C	Cooling	Hardness HB	Hardening °C	Quenching	Hardness after quenching in HRC
750 - 800	Furnace	max. 230	1020 - 1040	Air, oil or saltbath	55

### General note (liability)

Not liable for printing errors, omissions and/or changes. All statements regarding the properties and/or utilization of the materials or products mentioned are for purpose of description only. Product specific data sheet have priority over the information provided in this brochure. The desired performance characteristics are binding only if exclusively agreed upon in writing at the conclusion of the contract.



**Swiss Steel Group**

[info.tool@swisssteelgroup.com](mailto:info.tool@swisssteelgroup.com)

[www.swisssteel-group.com](http://www.swisssteel-group.com)

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