

PLADUR® REFINES

# HOME APPLIANCES

A special class of surface-refined flat-steel products  
for the household appliance industry

- resistant
- individual
- dynamic
- high quality
- colorful
- environmentally friendly
- adaptable
- impressive
- valuable
- flexible
- customer oriented
- formable

**ThyssenKrupp Steel Europe**  
Thinking the future of steel





**PLADUR®.**  
**AVAILABLE**  
**IN COATINGS**  
**FOR ANY USE.**

As one of the world's leading steel manufacturers, we see producing and marketing trendsetting materials as part of our day-to-day business. To do so, our expert and dedicated staff members draw on the vast resources of ThyssenKrupp Steel Europe: innovative capacity, cutting-edge technologies, and a wealth of experience based on a long and outstanding tradition.

One of our exceptional products is PLADUR®: organic, band-coated, high-quality flat steel suitable for any conceivable solution.

Discover the virtually unlimited possibilities of PLADUR®. On the following pages, you'll find insights into specific applications in the household appliance industry.

# ENVIRONMENTALLY FRIENDLY

products that integrate harmoniously into the environment

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## A nature-based product, refined with a sense of responsibility.

Environmental responsibility in thought and action is a core commitment of ThyssenKrupp Steel Europe. This is reflected in the product world of PLADUR® in various ways. Even our steel production is resource efficient, with only around one-third of the primary energy consumption required for aluminum. Our systems for band coating are also designed to include wastewater treatment and flue gas cleaning processes that reduce emissions to well below legal limits.

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Where economical solutions become environmentally friendly solutions:  
**PLADUR®.**

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For the corrosion protection, PLADUR® uses zinc-magnesium in place of conventional galvanizing.

This drastically reduces consumption of zinc, a raw material available in limited amounts only. At the same time, our process offers even better corrosion resistance. In addition, we of course use

no chromate in pretreatment and we reject ingredients that are critical for health and the environment in all processes. In place of pigments containing heavy metals, for example, we use environmentally responsible alternatives with no loss in material quality.

A prime example of environmental responsibility in action is the ReflectionsOne® color collection, which is ideal for using PLADUR® in color schemes that blend in harmoniously in natural or built environments.

From environmentally friendly production to the outstanding visual appeal of PLADUR® solutions, we at ThyssenKrupp Steel Europe take a holistic approach to fulfilling economical and ecological demands.

## Functional, colorful and beautiful.

High-quality flat steel and high-quality organic coatings add up to an endless number of outstanding options – especially when PLADUR® composite materials from ThyssenKrupp Steel Europe are involved.

At the center of our production process is our steel, which stands out for its pronounced strength and plasticity, alongside our zinc-magnesium coating ZM EcoProtect®. It ensures excellent corrosion protection and even allows a reduction in coating mass while still delivering superior corrosion resistance.

reduced coating  
mass \_ increased  
corrosion resistance

RAL or NCS color fans

high level of formability

matte \_ glossy \_ metallic

# VERSATILE

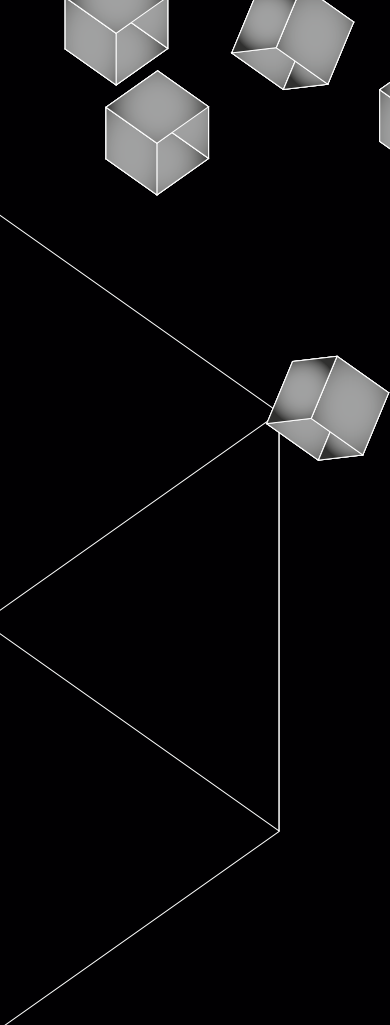
Our organic coatings are the key to the immeasurable diversity of PLADUR®, a huge range of options that have been fulfilling and surpassing the most varied requirements, demands, and wishes in many different industries and segments for decades.

Textured surfaces that imitate natural materials like stone or wood are a further strength of PLADUR®. In short, PLADUR® gives you full freedom of design, enabling you to realize your projects in line with your decorative and aesthetic ideas.

Whether paint, film, or combinations of both coatings, there is simply nothing PLADUR® can't offer. Almost all colors, including shades of the RAL or NCS spectrums, are just as easy to realize as different degrees of gloss, from matte to shiny. High-quality metallic surfaces or even highly distinctive glittering finishes are also possible.

**Outstanding plasticity,  
endless surface variety:  
design freedom with  
PLADUR®.**

You are also free to first complete the surface of PLADUR® before using the material to construct your final object. Finish first, fabricate later – this approach can often be more economical than, for example, subsequently painting individual elements. Also worth mentioning is the fact that you can easily shape PLADUR® without formation of cracks.



looks like new even after  
extended periods

Made in Germany

increases value

# OF LASTING VALUE



VG

**Two outstanding strengths  
of PLADUR®: preserving  
value, increasing value.**

Completely reliable functionality is the top priority of PLADUR®. This means consistently ensuring the material's stability, resistance, and robustness – the reasons PLADUR® remains in good condition even after many years or even decades. Its attractive appearance over the long term makes a considerable contribution to your object's durability and value appreciation. With these proven material properties – qualities of the highest order, made in

Germany, by the most experienced coil coater – you get even more: objects and creations with intrinsic value for many years to come. Our exclusive metallic finishes like copper, titanium, or stainless steel, for example, are resistant to fingerprints and look like new after long periods of use.

This is why objects and constructions built with PLADUR® are not only easy to maintain, but may even increase in value.

PLADUR® has proven this point many times with its familiar materials in everyday use. But you can also count on our new surface refinements. We not only stand behind them with our trusted name, we also put them through punishing tests. That means each of our products has to prove itself before it gets the chance to convince you in everyday use under the name PLADUR®.

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## The higher the demands, the better PLADUR®.

If you are involved in the development, production or marketing of household appliances, you know: alongside technology and the value of internal components, it's all about appealing and functional design. Whether washing machine or dryer, refrigerator or freezer, dishwasher, range or oven hood – each appliance has to convince the consumer at first sight of its high quality and functionality. The future-oriented material PLADUR® lives up to every one of these exacting basic requirements. But that's just the beginning: PLADUR® also fulfills the highest demands placed on external and internal material qualities. In three different quality classes, it opens up an array of application options and gives engineers, developers and designers a world of opportunities to meet their own ambitious targets as well as the high standards of consumers.

### THREESTAR

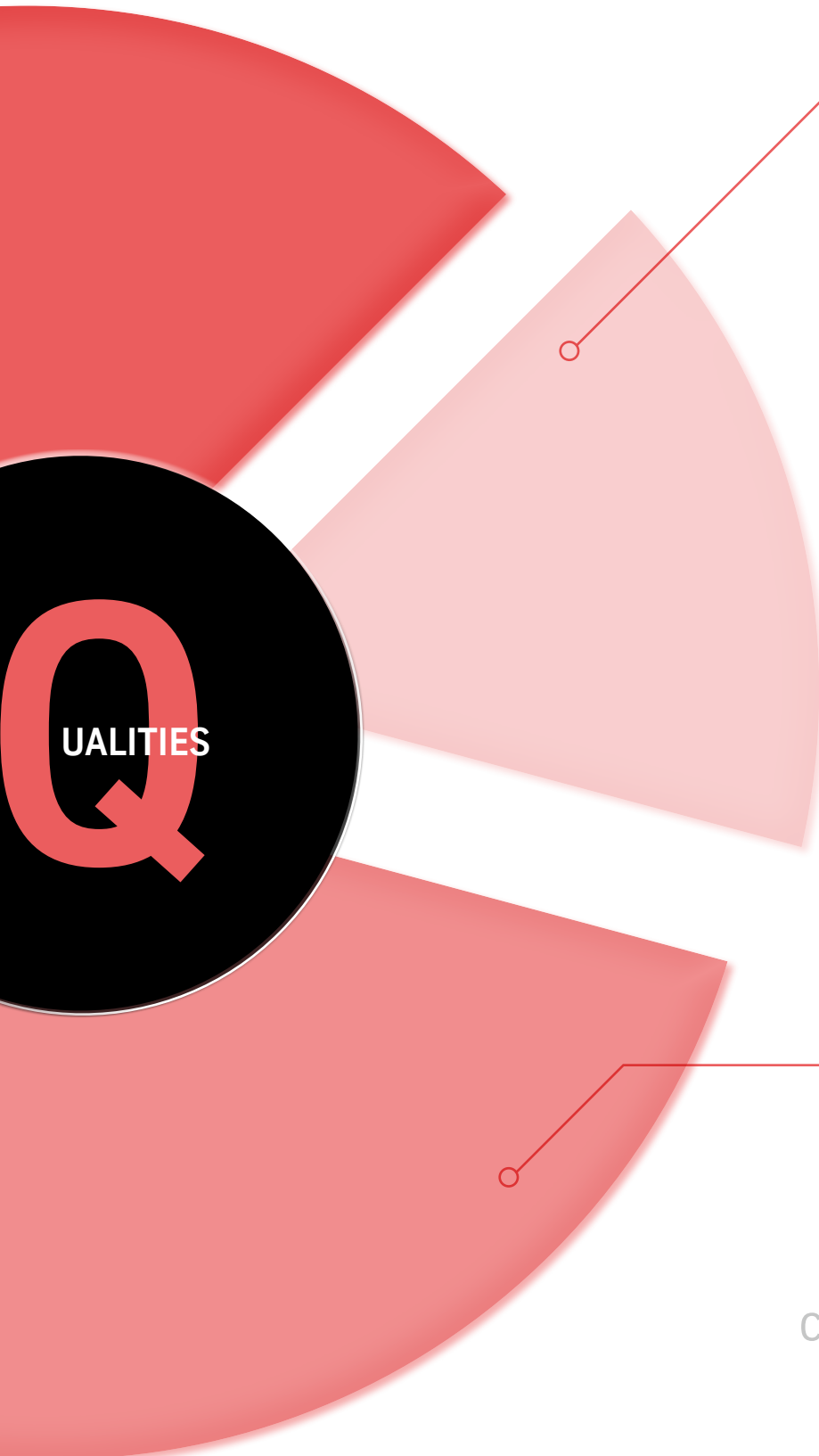


The quality class  
that convinces  
with top scores on  
almost all points.



3





## **ONESTAR**



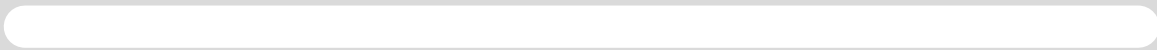
The quality class that stands out for its excellent price-performance ratio.

## **TWO STAR**



The quality class that shines in specific categories with improved performance features.

FUNCTIONAL



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**All you need to set  
a shining example.  
Again and again.**

Many household appliances are on the job 24/7 – hard at work, day in, day out. If they look good after years of service, it's often thanks to PLADUR®. Even in the ONESTAR\* quality class, the material is equipped with the essential properties that make a reliable appliance a good long-term investment. These include inherently good non-corrosion qualities and sturdiness as well as excellent chemical resistance. In addition, it's available in high-gloss and matte finishes and different colors for long-standing attractive styling. Add to this the material's trouble-free workability and formability that enable you to realize virtually any appliance housing. And of course with no compromise on stability.

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**Nothing can  
beat outstanding  
basic qualities.**

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From a business perspective, the ONESTAR\* quality class stands out especially for its economic appeal. Its cost-benefit ratio can be summed up in one word: outstanding.



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## **A brilliant example of strong performance.**

Household appliances subject to heavy use should be well prepared for it. In the TWOSTAR\*\* quality class, PLADUR® offers such a high level of resistance to wear and tear that it remains free of tiny scratches – and has excellent resistance to corrosion and chemicals. To give designers maximum freedom in styling different appliances, the quality class TWOSTAR\*\* is available in numerous textures and a wide array of colors, which can be further refined with eye-catching metallic effects and matte or polished finishes.

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**Equipped to open  
up possibilities.**

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A further plus point is a foil-covered version whose extremely low thermal conductivity greatly reduces the likelihood of contact burns. The positive side-effect of using this material is that it renders the customary bitumen sheeting unnecessary, eliminating an entire production step.

Whichever forms and colors you choose: processing PLADUR® is – just as you expect – completely hassle-free.



☆☆  
**TWOSTAR**  
for home appliances



COL  
OR  
HAP  
PY



TWOSTAR  
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## First-class form versatility.

If you want to create household appliances with truly outstanding special design features, there is only one solution: PLADUR® in the THREESTAR\*\*\* quality class. It stands for performance without parallel far and wide as well as for virtually unlimited design possibilities. The options include surfaces covered with matte or metallized foils that are hardly distinguishable from actual stainless steel, with the added advantage that fingerprints barely show. Other foils feature mirror gloss and depth-of-field effects coupled with easy cleaning. To round off the list, a further possibility is individual printing to style an appliance – for example, a refrigerator – with seamless, wear-and-tear-resistant, high-quality graphic effects on all surfaces.

**With extraordinary  
properties.  
No compromises.**

Of course the THREESTAR\*\*\* quality class also features material properties that leave no wish unanswered, like corrosion and chemical resistance and the ability to stand up against wear and abrasion. Regardless of which side you look at: PLADUR® offers everything. Except the ordinary.





# THREESTAR

for home appliances



central contacts

direct channels

fast  
coordination



**BEING CLOSE TO  
THE CUSTOMER  
IS JUST PART OF  
OUR DAY-TO-DAY  
BUSINESS.**



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## Success starts with good organization.

To consistently succeed, you have to stay close to your market and the people in it. That's why intensive cooperation with our business partners, customers, and suppliers is one of our top priorities. As Europe's leading coil coater, we systematically align our organization to bring together our technology, innovation, and sales functions to meet and exceed the needs and wishes of those who use our PLADUR® products.

A contributing factor in this strongly focused customer orientation is close integration of our production, product development, logistics, and sales teams to ensure direct channels of communication.

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## Interdepartmental teamwork for increased efficiency.

**Organized to come up  
with the best ideas for you.**

This also includes setting up simultaneous engineering project teams to help reduce development times and boost efficiency in innovation processes for our customers.

The result: We can bring innovations to market maturity faster in close cooperation with our partners.

To carry out all processes more quickly and efficiently, we host highly successful customer and innovation workshops, in addition to the customer-specific product and application consultation that ThyssenKrupp Steel Europe offers.

Interested? We're looking forward to working with you and PLADUR® to bring new ideas for success to the market – as fast as possible.

# TAKING REFINED- SURFACE STEEL INTO THE FUTURE.

consistent  
quality management

best technology

up-to-date  
production methods

intensive  
partnerships



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## Only the best technologies are good enough.

At ThyssenKrupp Steel Europe, we're proud of our capacity to put the unique advantages of steel with refined surfaces to work in meeting people's needs and wishes – today, tomorrow, and beyond. In keeping with our traditional principles, three band-coating systems at our Duisburg and Kreuztal sites utilize the best available technologies in highly progressive and always up-to-date production methods.

To stay at least one step ahead of the times in the research and development of new materials, we always act and think beyond the boundaries of our corporate group. For example, we have formed an extensive network with specialists from the fields of science and engineering. Intensive partnerships with universities and non-university research institutes are part of our established structure.

extensive  
network

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### Knowledge through cooperation.

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Our consistent quality management also contributes to our ability to stay ahead – and not settle with state-of-the-art solutions. We practice total quality management that incorporates our suppliers, enabling us to realize our most ambitious goals and those of our customers and business partners. This is reflected in certifications like ISO 9001:2000 and ISO/TS 16949:2002, as well as the accreditation of research and development laboratories according to DIN EN ISO/IEC 17025. And if that isn't enough, we use the European Foundation for Quality Management (EFQM) model to further refine our management and business processes.

total quality  
management

EFQM model

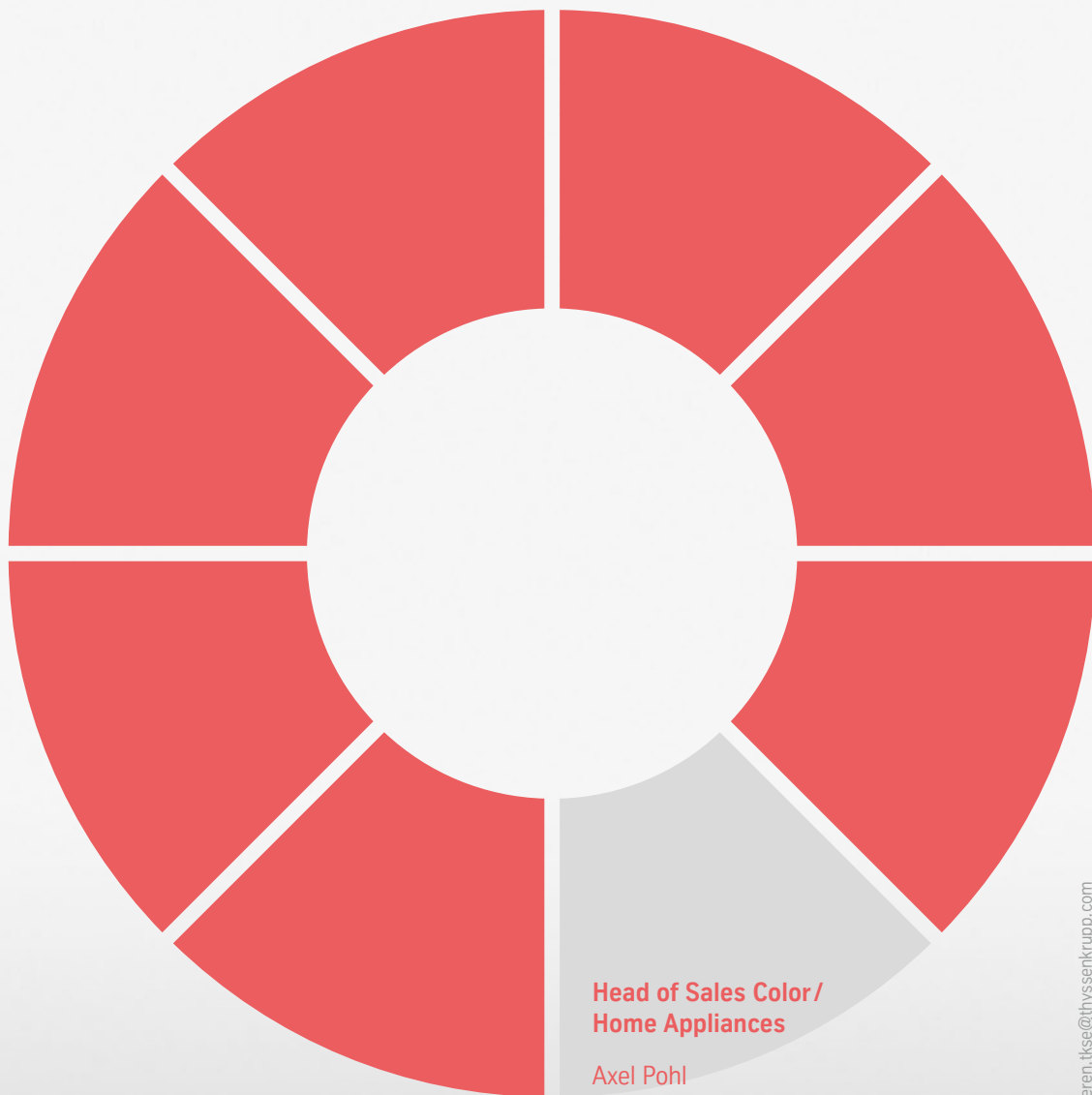
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### Focussing on top performance is our standard operating mode.

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**Everything aligned to serve one goal: to stay equipped to be a pioneer in every aspect of steel for our customers – always.**

pioneer



**Head of Sales Color /  
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