



SPECIFICATION OF STEEL FOR VITREOUS ENAMELLING

The selection of the correct grade of steel for items, which will subsequently be coated with vitreous enamel, is very important. Normal "commercial" mild steel is not generally suitable. The selection of this type of steel will lead to a range of defects, which will not only cause surface finish problems but may also cause defects which will not occur until the part is in service. The analysis and metallurgical structure of the steel is critical to success.

COLD ROLLED STEEL PRODUCTS

Cold rolled steel suitable for vitreous enamelling is detailed in *BS EN 10209: (1996) Cold rolled low-carbon steel flat products for vitreous enamelling - technical delivery conditions*.

This specification replaces BS 1449:Part 1:Section 1.3:1991. The new numbering of grades has replaced the former "CR" series numbers.

The specification details 6 grades of steel for various applications.

NORMAL LOW CARBON ENAMELLING QUALITY STEEL

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| DC01EK | Enamelling grade steel (< 0.08% Carbon) <i>For general uses</i>
(Equivalent to BS 1449 grade CR4) |
| DC04EK | Enamelling grade steel (< 0.08% Carbon) <i>For deeper drawing</i>
(Equivalent to BS 1449 grades CR3/CR2) |
| DC06EK | Enamelling grade steel (< 0.02% Carbon) <i>For deep drawing</i>
(Equivalent to BS 1449 grade CR1) |

PREMIUM VERY LOW CARBON ENAMELLING QUALITY STEEL

These grades were originally designed for the now redundant "direct-on white" process. They are now suitable for all 2 coat 1 fire applications and 1 coat applications especially where a high quality finish is required and where dimensional stability is important. They are not prone to the "sagging" defect caused by phase transitions around the firing temperature which are present in the higher carbon EK grades.

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| DC03ED | "Zero Carbon" grade enamelling steel (<0.004% Carbon)
This grade is infrequently used. |
| DC04ED | "Zero Carbon" grade enamelling steel (<0.004% Carbon)
This grade is a general extra deep drawing grade used where quality of finish and dimensional stability are critical. |
| DC06ED | "Zero Carbon" IF grade enamelling steel (<0.006% Carbon)
This grade is recommended for 2 coat 1 fire applications, particularly when white or very light colours are required. |

HOT ROLLED STEEL PRODUCTS

The standards for hot rolled steel are currently being revised. However the following standards currently are applicable.

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| EN 10111 (1998) | Continuously hot rolled low carbon steel sheet and strip for cold forming – technical delivery conditions
1.6mm to 4mm thickness hot rolled products |
| BS EN 10149 (1996) | Hot rolled flat products made of high yield strength steels for cold forming
1.6mm to 4mm thickness hot rolled products

Part 1 General delivery conditions
Part 2 Delivery conditions for thermo mechanically rolled steels |