

5. Coated steel

5.2. COLOUR-COATED STEEL

OJSC "NLMK" is the largest producer of colour-coated steel in Russia. The company has been producing this type of product for over ten years and has sufficient experience and knowledge.

Color-coating lines produce thin-gage rolled material with organic coatings applied on cold-rolled and cold-rolled galvanized base of different strength classes to be used for building structures, housings of instruments, household appliances, roofing tiles, etc.

Dimensions:

Base thickness:	0.30–2.0 mm for cold-rolled base; 0.40–2.0 mm for galvanized steel base
Width:	900–1800 mm
Slit width:	100–850 mm
Coil ID:	600 ⁺¹⁰ , 500 ⁺¹⁰ mm
Coil weight:	5–15 t
Sheet bundle weight:	up to 10 t
Sheet length:	1500–3500 mm

Upon customers' demand color-coated steel can be supplied with readily removable transparent protective film.



Figure 5.8. Coating structure

Note:

* — passivating non-chromium concentrates (without Cr⁶⁺ under the EU Directive 2002/95/EC, 94/62/EC) are possible.

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Characteristics of color coatings

Table 5.11. Available kinds of color coatings

Coating type	Coated side	Application
Finishing coatings		
Polyether	One- or two-sided	construction (all kinds of tiles, corrugated panels, exposed and interior building facing, garage doors), air ducts, lightning fixtures
	One- or two-sided	household appliances (refrigerators, freezers, washers, microwave ovens, etc.), allows contact with food products
Polyvinylidene fluoride (PVDF)	One- or two-sided	construction (all kinds of tiles, corrugated panels, exposed building facing, garage doors)
Polyurethane	One-sided	construction (all kinds of tiles, corrugated panels, exposed and interior facing of buildings, garage doors), housings of electrical appliances.
Plastisol	One-sided	construction (all kinds of tiles, corrugated panels, exposed and interior facing of buildings, garage doors)
PVH film	One-sided	wall paneling, blinds, trimming of underground vehicles, buses, railway wagons
Protective coatings		
Epoxy	One-sided (back coat)	Rolled steel back side protection during handling and processing

Table 5.12. Performance of color coatings

Index description (testing method acc. to GOST R 52146, DIN EN 13523 ¹⁾)	Coating types					
	Standard polyether	Polyether to TU 14-106-694 (for household appliances)	Polyurethane	PVDF	Plastisol	Back coat
Thickness, μm	25–30	25–35	30–50	25–35	100–250	12 \pm 2
Adhesion, point	0	0	0	0	0	0
T-bending strength, max	2.0	0	1.0	1.5	0.5	3
Erichsen elasticity, at least, mm	6	6	8	7	8	Not regulated
Reverse impact strength, at least, J	10	10	18	12	20	5
Pencil hardness	F–H	F–H	H–2H	H–2H	Not regulated	F–2H
Gloss, %, at angle 60°	35 \pm 6 ²⁾	80–90	10–80 ²⁾	20–40 ²⁾	20–40	35 \pm 6
Color difference (ΔE), max	1	1	1	1	1	Not regulated
Durability in the salt-spray chamber, hour ³⁾	500	250 ⁴⁾	1000	1000	1000	500

Notes:

1 – DIN EN 13523 supersedes the Methods of the European Coil-Coating Association (ECCA);

2 – any value on customer's request;

3 – on galvanized base;

4 – on cold-rolled base.