



Hengtong Precision Copper Foil Technology (Deyang) Co., Ltd.

> Product Manual



Group Profile

Hengtong Group is a national innovative enterprise in the fields of fiber optic network, energy Internet, big data Internet of Things, new energy, and new materials in China.

Hengtong has more than 70 wholly-owned and holding companies (including 5 listed companies), and distributes its business in 15 provinces in China. It also has operated 12 manufacturing bases in Europe, South America, Africa, Asia and regions, as well as over 40 overseas marketing and technical service branches, with a business coverage of more than 150 countries and regions.

In 1991
Hengtong Group
Founded

China's Top 100
Private
Enterprises

China's Top 500
Enterprises

15%
Global Market Share of
Optical Fiber
Communications

Global Top 3
Submarine Cable
System

Global Top 3
Optical Fiber
Communication

Global Top 3
Marine
Communication
System

20%
Global Market Share of
Marine Communication



Communication
Industry



Power Industry



New Materials
Industry



International
Industry



New Business
Segment



Communications
Operation
Segment



Global Operation

Run an enterprise based on the world map, go out along the Belt and Road



12
Overseas Industrial Bases

40+
Overseas Technical and Marketing
Service Branches

Business Coverage of **150+**
Countries and Regions around the
World



Hengtong Optical
Communication Technology
Park (Wujiang, Suzhou)

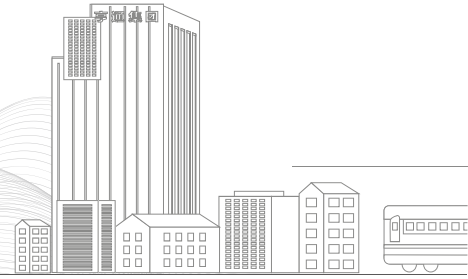


Hengtong Changshu
International Marine Industrial
Park



Hengtong Optoelectronic
Cable Industrial Park (Qidu,
Suzhou)

Corporate Honors



Comprehensive Scale

China's Top 500 Enterprises
China's Top 500 Private Enterprises
China's Top 500 Manufacturers

China's Leading Enterprises in Industrial Industry
China's Top 100 Electronic Components Enterprises
China's Top 100 Electronic Information Enterprises

Global Most Competitive Enterprise in Optical Fiber and Cable Industry
China's Most Competitive Enterprise in Cable Industry

Hi-Tech Innovation Capacity

National Innovative Enterprise
National Demonstration Enterprise of Technological Innovation
National Enterprise of Industrial Capacity Strengthening Program

National Key High-tech Enterprise
National Enterprise Technology Center
National Postdoctoral Research Center

National Demonstration Enterprise of Deep Integration of Information Technology and Industrialization
China's Top 100 Most Competitive High-Tech Enterprises
China's Top 10 Enterprises with Independent Innovation Capability in the Industry



Pioneering and Top Competitiveness

National Civilized Organization
National Advanced Enterprise of Cultural and Ethical Progress
National Advanced Enterprise of Party Building
National Demonstration Base of Corporate Culture

National Model Home of Workers
National Enterprise of Keeping Promise & Honoring Contract
China Grand Awards for Industry

Global Best Example of Green Technologies (Products) for Human Settlements
Global Top Performance Excellence Award (World Class)

National Green Manufacturing System Integration Project
Innovation Achievements of National Enterprise Management Modernization (First Prize)

Quality and Brand Influence

China Famous Trademark
China Top 500 Valuable Brands
National Quality Benchmark
Demonstration Enterprise of Export Quality and Safety in China

China Quality Award Nomination
Quality and Integrity Enterprise in China
China Most Valuable Brand in Communications Industry
China Most Influential Industry Brand in Communications Market

Top Ten Famous Brands of Wire and Cable in China

Public Welfare, Charity and Social Responsibility

China Charity Award (6th, 7th and 8th)
Top 10 Chinese Philanthropists (two consecutive sessions)
China Charity Award for Outstanding Contribution (Individual)

China Top 500 Enterprises with Social Responsibility
China Special Award for Corporate Social Responsibility
China Star Organization for Public Welfare and Charity

Innovation Achievements

Innovation Platform

The world's first laboratory for fiber-optical communications authorized by TUV Rheinland

2

National Enterprise Technology Centers

36

Provincial and Ministerial Key Laboratory and Technology Research Centers

6

Postdoctoral Research Centers

5

National CNAS Certified Laboratories

5

Academician Workstations

1

Intelligent factories

Communication Field

A new generation of green optical fiber materials, which was independently researched and developed, and selected for the National Green Intelligent Manufacturing Project

China's first 400G optical fiber with ultra-low loss, selected for the national "Industrial Capacity Strengthening Program"

The world's first optical fiber communication system with "ultra-low loss in all band, ultra-long distance and ultra-high capacity"

The world's first carrier-grade engineering application of onshore optical cable optical cable (G.654E) with "large effective area"

China's first UUA single-mode optical fiber with ultra-low loss and ultra-large effective area

The world's first commercial quantum trunk cable with phase encoding, long distance and wide area

First Prize for Scientific and Technological Progress granted by the Chinese Society for Optical Engineering

First Prize for Scientific and Technological Progress in Jiangsu Province (Key Preparation Technology and Industrialization of A New Generation of Silicone Fiber Perform)

Power Field

Undertake the world's first semi-submersible floating offshore wind power project in Portugal

Two global firsts of "large cross-section and large span" set in the Trans-Amazon Smart Grid Project

The world's first Changji-Guquan $\pm 1100\text{kV}$ UHV DC transmission project of State Grid

Undertake the world's leading project

Undertake the world's largest commercial wind turbine project with single-unit capacity of 11MW

The world's first OPGW product system with ultra-high voltage, large span, ultra-low loss

The world's first UHV 500kV $1*1800\text{mm}^2$ submarine cable with the longest single cable

Second Prize for National Scientific and Technological Progress (Aluminum Alloy Energy-saving Transmission Conductor and Multi-scenario Application)

Marine Field

China's first leading enterprise to conduct sea trial for national defense with 8000m deep submarine optical communication system

China's first repeaterless submarine optical cable with ultra-large length and ultra-low loss

China's first leading enterprise engaged in the world's 500kV UHV submarine cable technology

The world's first 500kV AC fiber-optic composite submarine cable with long distance

Undertake the most complex water ecological detection works across the Yellow River and Yangtze River in the Hanjiang-to-Weihe River Water Diversion Project

National Key R&D Program (R&D and Pilot Application of Key Technologies for Dynamic Cable Used in Floating Offshore Wind Power)

First Prize for Science and Technology Progress in China's Machinery Industry (UHV Crosslinked Polyethylene Insulated Fiber Optic Composite Submarine Cable System)

Single Product Champion in Manufacturing Industry granted by the Ministry of Industry and Information Technology (submarine optical cable system)

First Prize in Science and Technology in Jiangsu Province (Key Technologies and Complete Equipment for Highly Reliable Marine Optical Cable)

Three domestic firsts of "extra-high voltage, large cross-section, and longest single cable" in offshore oil and gas projects

Hengtong Group Profile

Hengtong Group is a national innovative enterprise and a high-tech international industrial group in the fields of fiber optic network, energy Internet, big data Internet of Things, new energy, and new materials in China. Hengtong has more than 70 holding companies (including 4 listed at home and abroad), and distributes its business in 15 Province in China. It also has operated 12 overseas industrial bases in Europe, South America, Africa, Asia and regions, as well as over 40 overseas marketing and technical service branches, with a business coverage of more than 150 countries and regions.

TOP 500

China's Top 500 Enterprises

TOP 3

Global Top 3
Communication Enterprises

TOP 100

China's Top 100 Private Enterprises

TOP 3

Global Top 3 Most Competitive
Submarine Cable Enterprises

TOP 50

China's Top 50 Manufacturers

TOP 3

Global Top 3 Fiber Optic
Communication Companies

Global Leading Integrated Service Provider of the
Whole Value Chain of the Communication Industry

Global Service Provider of Energy Interconnection
System Solutions

Hengtong Precision Copper Foil Technology (Deyang) Co., Ltd.

Located in Economic and Technological Development Zone, Deyang City, Sichuan Province, Hengtong Precision Copper Foil Technology (Deyang) Co., Ltd. is subordinate to New Materials Industry Group of Jiangsu Hengtong Group Co., Ltd. It was incorporated in December 2020. Its products are mainly applied in industries such as new energy vehicles, 5G communications, and 3C digital products.

500 million

Registered capital

248 mu

Floor area

50kt/a

High-performance Electrolytic Copper
Foil Project

Intelligent Factory

Replace workers by machines robots
maximally
Complete manual operations with robot
arms maximally

Platform-based Management

Office automation, paperless process
Information integration, mobile platform

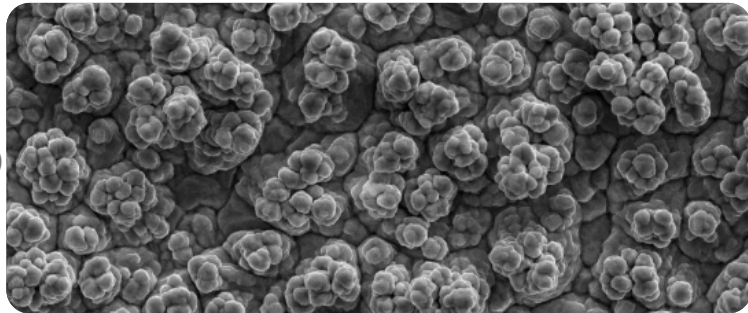
Lean Manufacturing

Lowest cost, fastest speed
Maximum output, best quality



High-temperature extended copper foil (HTE)

Microtopography (SEM)



Typical Applications

CEM-3 FR-4
Multi-layer board
Medium Tg

Product Features

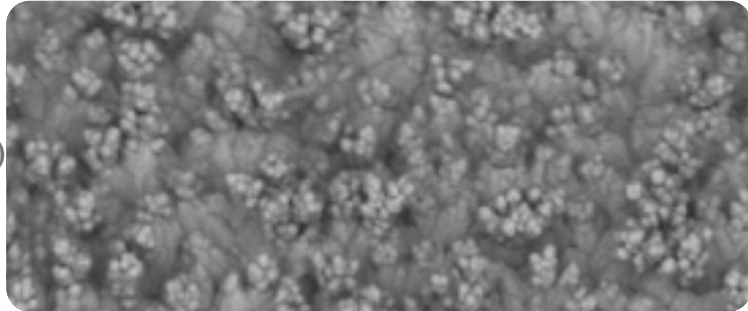
Higher elongation at high temperature,
less prone to break in stretching
Higher anti-peel resistance
Good etching resistance
Excellent corrosion resistance
Gray or pink copper foil surface

Product Properties

Item		Unit	Requirement					Test Method
Nominal Thickness		μm	12	18	35	70	105	IPC-4562A
Nominal Weight		g/m ²	107±5	153±7	285±10	585±20	870±30	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤0.43					IPC-TM-650 2.2.17
	M side(Rz)	μm	≤6	≤9	≤11	≤15	≤20	
Tensile Strength	R.T.(23°C)	N/mm ²	≥207	≥207	≥276	≥276	≥276	IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥103	≥103	≥138	≥138	≥138	
Elongation	R.T.(23°C)	%	≥2	≥2	≥3	≥3	≥4	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥2	≥2	≥2	≥3	≥3	
Peel Strength (FR-4)		N/mm	≥0.9	≥1.1	≥1.4	≥2.0	≥2.0	IPC-TM-650 2.4.8
		Lb/in	≥5.1	≥6.3	≥8.0	≥11.4	≥11.4	
Pinhole & Porosity		Numbers	No					IPC-TM-650 2.2.2
Oxidation Resistance	R.T.(23°C)	Days	180					
	H.T.(200°C)	Minutes	40					

High-Tg copper foil (HTE-HG)

Microtopography (SEM)



Typical Applications

CEM-3, FR-4, FR-4. hydrocarbon plate
Multi-layer board, high-density interconnection
High-speed board
High-TG, free of lead and halogen

Product Features

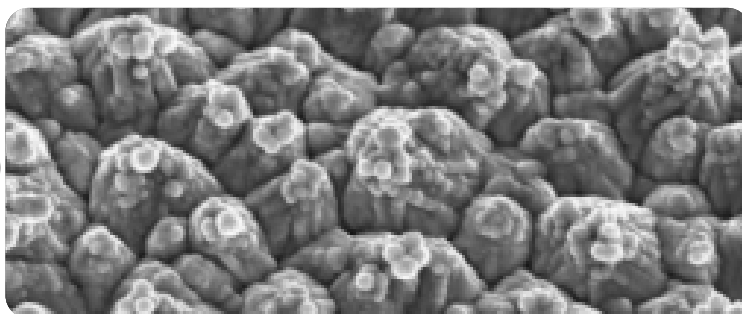
High peel strength
Good etching resistance
Excellent corrosion resistance
Pink copper foil surface

Product Properties

Item		Unit	Requirement					Test Method
Nominal Thickness		μm	12	18	35	70	105	IPC-4562A
Nominal Weight		g/m ²	107±5	153±7	285±10	585±20	870±30	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤0.43					IPC-TM-650 2.2.17
	M side(Rz)	μm	≤6	≤9	≤11	≤15	≤20	
Tensile Strength	R.T.(23°C)	N/mm ²	≥207	≥207	≥276	≥276	≥276	IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥103	≥103	≥138	≥138	≥138	
Elongation	R.T.(23°C)	%	≥2	≥2	≥3	≥3	≥4	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥2	≥2	≥2	≥3	≥3	
Peel Strength (High TG sheet)		N/mm	≥0.9	≥1.1	≥1.4	≥2.0	≥2.0	IPC-TM-650 2.4.8
		Lb/in	≥5.1	≥6.3	≥8.0	≥11.4	≥11.4	
Pinhole & Porosity		Numbers	No					IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	180					
	H.T.(200°C)	Minutes	40					

Low-coarsened copper foil (HTE-LC)

Microtopography (SEM)



Typical Applications

CEM-3, FR-4, FR-4. hydrocarbon plate
Multi-layer board, high-density interconnection
High-speed board
High-TG, free of lead and halogen

Product Features

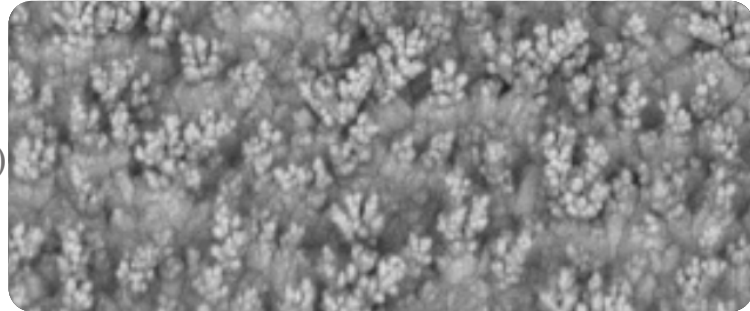
Micro-coarsening: Achieve a finer and more uniform coarsening layer, a larger specific surface area
High anti-peel resistance
Good etching resistance
Pink copper foil surface

Product Properties

Item		Unit	Requirement					Test Method
Nominal Thickness		μm	12	18	35	70	105	IPC-4562A
Nominal Weight		g/m ²	107±5	153±7	285±10	585±20	870±30	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤0.43					IPC-TM-650 2.2.17
	M side(Rz)	μm	≤5.5	≤7.5	≤9.5	≤14	≤18	
Tensile Strength	R.T.(23°C)	N/mm ²	≥207	≥207	≥276	≥276	≥276	IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥103	≥103	≥138	≥138	≥138	
Elongation	R.T.(23°C)	%	≥4	≥4	≥8	≥12	≥12	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥3	≥3	≥3	≥3	≥3	
Peel Strength (High TG sheet)		N/mm	≥0.9	≥1.1	≥1.4	≥2.0	≥2.0	IPC-TM-650 2.4.8
		Lb/in	≥5.1	≥6.3	≥8.0	≥11.4	≥11.4	
Pinhole & Porosity		Numbers	No					IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	180					
	H.T.(200°C)	Minutes	40					

High-coarsened copper foil (HTE-HC)

Microtopography (SEM)



Typical Applications

PTC resistor

Product Features

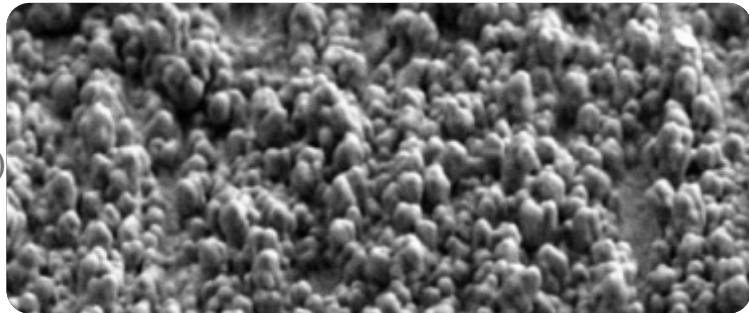
Higher elongation at high temperature to prevent copper cracking
 Excellent corrosion resistance
 High anti-peel resistance
 Good etching resistance
 Pink copper foil surface

Product Properties

Item	Unit	Requirement			Test Method	
Nominal Thickness	μm	18	25	35	IPC-4562A	
Nominal Weight	g/m ²	150±7	228±8	285±10	IPC-TM-650 2.2.12	
Roughness (ISO)	S side(Ra)	μm	≤0.43			IPC-TM-650 2.2.17
	M side(Rz)	μm	≤8	≤10	≤12	
Tensile Strength	R.T.(23°C)	N/mm ²	≥207	≥276	≥276	IPC-TM-650 2.4.18
Elongation	R.T.(23°C)	%	≥2	≥3	≥3	IPC-TM-650 2.4.18
Peel Strength	CEM-1 substrate	N/mm	≥1.5	≥1.7	≥2.0	IPC-TM-650 2.4.8
		Lb/in	≥8.6	≥9.7	≥11.4	
Peel Strength	PTC substrate	N/mm	≥0.5	≥0.6	≥0.8	
		Lb/in	≥2.9	≥3.4	≥4.6	
Pinhole & Porosity	Numbers	No			IPC-TM-650 2.2.12	
Oxidation Resistance	R.T.(23°C)	Days	Determined by the supplier and the demander			
	H.T.(200°C)	Minutes	Determined by the supplier and the demander			

Low-profile copper foil (LP-S-P)

Microtopography (SEM)



Typical Applications

Flexible copper clad laminate (3 layers)
Electromagnetic shielding foil

Product Features

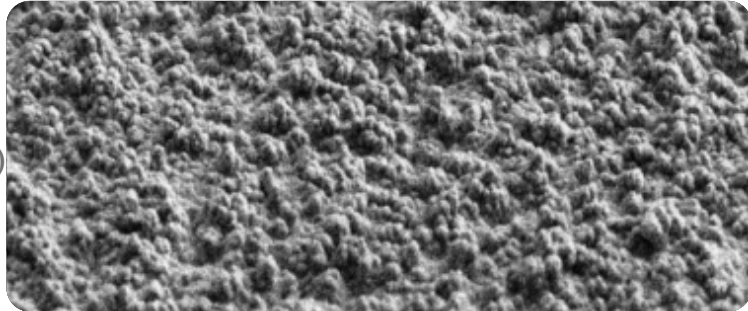
Low thickness more suitable for flexible copper clad laminate
High bending resistance
Good etching resistance
Pink copper foil surface

Product Properties

Item		Unit	Requirement								Test Method
Nominal Thickness		μ m	9	12	18	25	35	50	70	105	IPC-4562A
Nominal Weight		g/m ²	87 ±4	107 ±5	153 ±7	225 ±8	285 ±10	435 ±15	585 ±20	870 ±30	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μ m	≤0.43								IPC-TM-650 2.2.17
	M side(Rz)	μ m	≤3.5	≤4.5	≤5.0	≤6.0	≤7.0	≤8.0	≤12	≤14	
Tensile Strength	R.T.(23°C)	N/mm ²	≥207				≥276				IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥138								
Elongation	R.T.(23°C)	%	≥3	≥4	≥4	≥5	≥8	≥10	≥12	≥12	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥3	≥4	≥4	≥5	≥6	≥8	≥8	≥8	
Peel Strength (High TG sheet)		N/mm	≥0.7	≥0.8	≥1.0	≥1.1	≥1.2	≥1.4	≥2.0	≥2.0	IPC-TM-650 2.4.8
		Lb/in	≥4	≥4.6	≥5.7	≥6.3	≥7	≥8	≥11.4	≥11.4	
Pinhole & Porosity		Numbers	No								IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	180								
	H.T.(200°C)	Minutes	30								

Very-low-profile copper foil (VLP-S-P/B)

Microtopography (SEM)



Typical Applications

Flexible copper clad laminate
 Electromagnetic shielding foil
 Fine circuit
 Wireless charging
 High-frequency board

Product Features

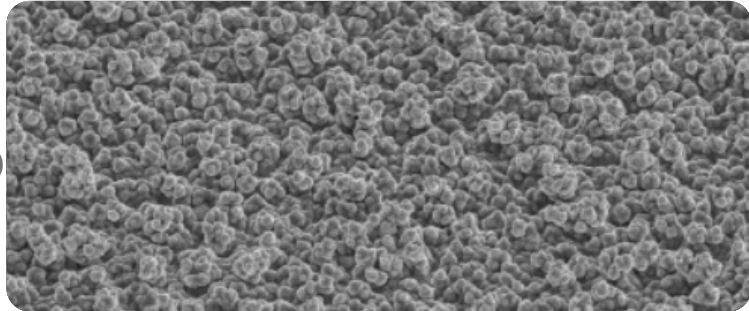
Very low surface profile
 High bending resistance
 Good etching resistance
 Pink or black copper foil surface

Product Properties

Item		Unit	Requirement							Test Method
Nominal Thickness		μm	9	12	18	25	35	50	70	IPC-4562A
Nominal Weight		g/m^2	87 ± 4	107 ± 5	153 ± 7	225 ± 8	285 ± 10	435 ± 15	585 ± 20	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤ 0.43							IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0							
Tensile Strength	R.T.(23°C)	N/mm^2	≥ 300							IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm^2	≥ 180							
Elongation	R.T.(23°C)	%	≥ 4	≥ 5	≥ 6	≥ 7	≥ 8	≥ 10	≥ 10	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥ 3	≥ 4	≥ 4	≥ 5	≥ 6	≥ 8	≥ 8	
Peel Strength (High TG sheet)		N/mm	≥ 0.7	≥ 0.8	≥ 0.8	≥ 0.9	≥ 1.0	≥ 1.2	≥ 1.4	IPC-TM-650 2.4.8
		Lb/in	≥ 4	≥ 4.6	≥ 4.6	≥ 5.1	≥ 5.7	≥ 6.8	≥ 8.0	
Pinhole & Porosity		Numbers	No							IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	180							
	H.T.(200°C)	Minutes	30							

Very-low-profile copper foil (HVLP)

Microtopography (SEM)



Typical Applications

High frequency transmission
circuit board
Base station/server

Product Features

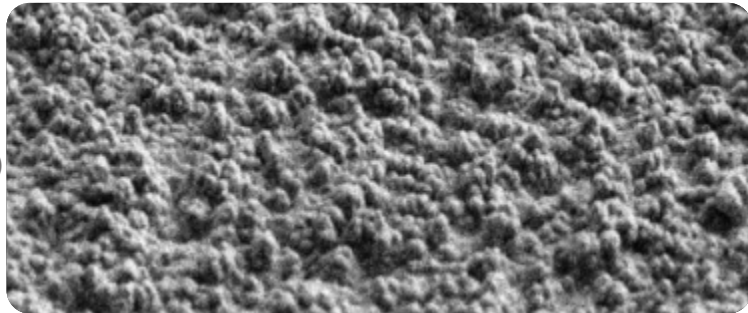
Very low surface profile
High anti-peel resistance
Pink copper foil surface
Very-low-profile copper foil
with micro coarsened finish
Suitable for high-frequency
transmission

Product Properties

Item		Unit	Requirement			Test Method
Nominal Thickness		μm	12	18	35	IPC-4562A
Nominal Weight		g/m^2	107 ± 5	153 ± 7	285 ± 10	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤ 0.43			IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 2.0			
Tensile Strength	R.T.(23°C)	N/mm^2	≥ 300			IPC-TM-650 2.4.18
Elongation	R.T.(23°C)	%	≥ 5	≥ 6	≥ 8	IPC-TM-650 2.4.18
Peel Strength	FR-4 substrate	N/mm	≥ 0.8	≥ 1.0	≥ 1.2	IPC-TM-650 2.4.8
		Lb/in	≥ 4.6	≥ 5.7	≥ 6.9	
Pinhole & Porosity		Numbers	No			IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90			
	H.T.(200°C)	Minutes	30			

Reverse treated copper foil (RTF)

Microtopography (SEM)



Typical Applications

Multi-layer board
Electromagnetic shielding foil
High-frequency board

Product Features

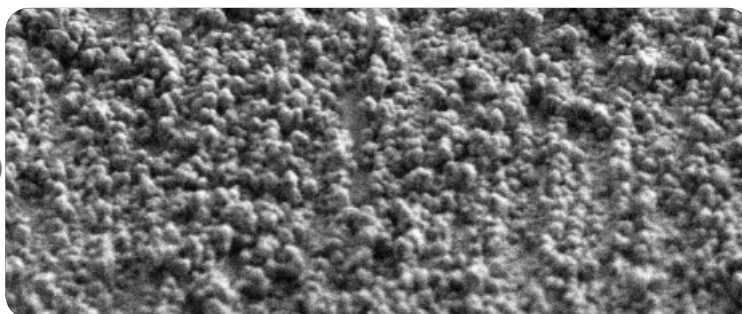
Low roughness
Reverse-treated foil
Good etching resistance
Pink copper foil surface
High bending resistance

Product Properties

Item		Unit	Requirement							Test Method
Nominal Thickness		μm	9	12	18	25	35	70	105	IPC-4562A
Nominal Weight		g/m^2	87 ± 4	107 ± 5	153 ± 7	225 ± 8	285 ± 10	585 ± 20	870 ± 30	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Rz)	μm	≤ 3.0							IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0	≤ 3.0	≤ 4.0	≤ 5.0	≤ 5.0	≤ 10.0	≤ 12.0	
Tensile Strength	R.T.(23°C)	N/mm^2	≥ 276							IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm^2	≥ 138							
Elongation	R.T.(23°C)	%	≥ 2	≥ 2	≥ 2	≥ 2	≥ 3	≥ 4	≥ 5	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥ 2	≥ 2	≥ 2	≥ 2	≥ 3	≥ 3	≥ 3	
Peel Strength	FR-4 substrate	N/mm	≥ 0.7	≥ 0.8	≥ 1.0	≥ 1.1	≥ 1.2	≥ 1.3	≥ 1.4	IPC-TM-650 2.4.8
		Lb/in	≥ 4.0	≥ 4.6	≥ 5.7	≥ 6.3	≥ 6.9	≥ 7.4	≥ 8.0	
Pinhole & Porosity		Numbers	No							IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	180							
	H.T.(200°C)	Minutes	40							

Low-profile reverse-treated foil (LP-RTF-P)

Microtopography (SEM)



Typical Applications

Flexible copper clad laminate
(2-layer and 3-layer method)
Electromagnetic shielding foil
Wireless charging

Product Features

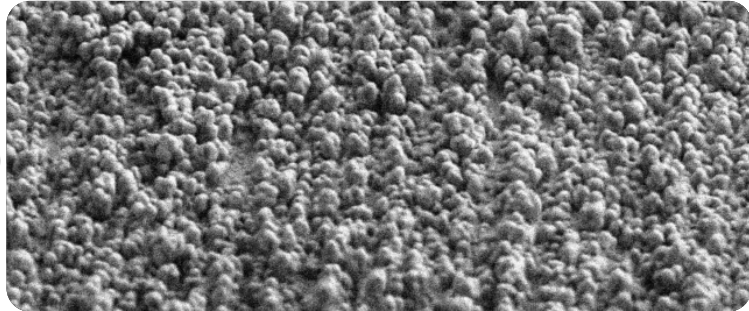
Low roughness suitable for flexible
copper clad laminate
Reverse-treated foil
Good etching resistance
Pink copper foil surface
High bending resistance
Arsenic-free and environment-friendly

Product Properties

Item		Unit	Requirement							Test Method
Nominal Thickness		μm	9	12	18	25	35	50	70	IPC-4562A
Nominal Weight		g/m^2	87 ± 4	107 ± 5	153 ± 7	225 ± 8	285 ± 10	435 ± 15	585 ± 20	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Rz)	μm	≤ 3.0							IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0	≤ 3.0	≤ 4.0	≤ 5.0	≤ 6.0	≤ 10.0	≤ 12.0	
Tensile Strength	R.T.(23°C)	N/mm^2	≥ 276							IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm^2	≥ 138							
Elongation	R.T.(23°C)	%	≥ 3	≥ 4	≥ 4	≥ 6	≥ 8	≥ 10	≥ 12	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥ 3	≥ 4	≥ 4	≥ 6	≥ 6	≥ 8	≥ 8	
Peel Strength (FR-4)		N/mm	≥ 0.7	≥ 0.7	≥ 0.8	≥ 0.9	≥ 1.0	≥ 1.2	≥ 1.3	IPC-TM-650 2.4.8
		Lb/in	≥ 4.0	≥ 4.0	≥ 4.6	≥ 5.1	≥ 5.7	≥ 6.8	≥ 7.4	
Pinhole & Porosity		Numbers	No							IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90							
	H.T.(200°C)	Minutes	30							

Low-profile reverse-treated foil (LP-RTF-B)

Microtopography (SEM)



Typical Applications

Flexible copper clad laminate
(2-layer and 3-layer method)
Electromagnetic shielding foil
Wireless charging
Backlight board

Product Features

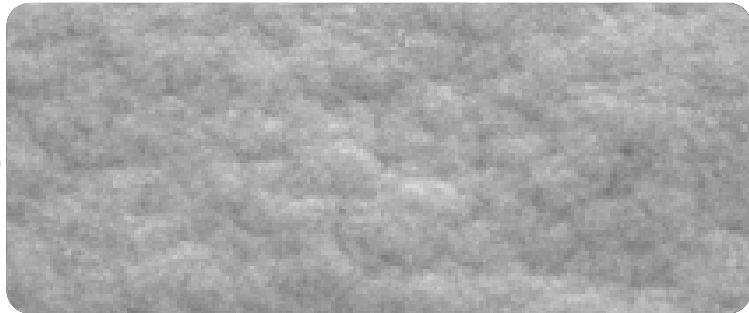
Low roughness suitable for flexible
copper clad laminate
Reverse-treated foil
Good etching resistance
Black copper foil surface
High bending resistance
Arsenic-free and environment-
friendly

Product Properties

Item		Unit	Requirement							Test Method
Nominal Thickness		μm	9	12	18	25	35	50	70	IPC-4562A
Nominal Weight		g/m ²	87 ±4	107 ±5	153 ±7	225 ±8	285 ±10	435 ±15	585 ±20	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Rz)	μm	≤3.0							IPC-TM-650 2.2.17
	M side(Rz)	μm	≤3.0	≤3.0	≤4.0	≤5.0	≤6.0	≤10.0	≤12.0	
Tensile Strength	R.T.(23°C)	N/mm ²	≥276							IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥138							
Elongation	R.T.(23°C)	%	≥3	≥4	≥4	≥6	≥8	≥10	≥12	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥3	≥4	≥4	≥6	≥6	≥8	≥8	
Peel Strength (FR-4)		N/mm	≥0.7	≥0.7	≥0.8	≥0.9	≥1.0	≥1.2	≥1.3	IPC-TM-650 2.4.8
		Lb/in	≥4.0	≥4.0	≥4.6	≥5.1	≥5.7	≥6.8	≥7.4	
Pinhole & Porosity		Numbers	No							IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90							
	H.T.(200°C)	Minutes	30							

Profile-free copper foil (FP)

Microtopography (SEM)



Typical Applications

Graphene carrier

Product Features

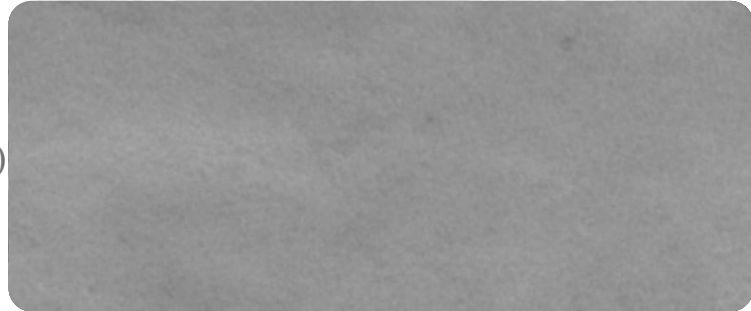
High tensile strength
Higher elongation
Environmental safety
No surface profile
Pink copper foil surface

Product Properties

Item		Unit	Requirement					Test Method
Nominal Thickness		μ m	9	12	18	35	70	IPC-4562A
Nominal Weight		g/m ²	87 ± 4	107 ± 5	153 ± 7	285 ± 10	585 ± 20	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μ m	0.25 ± 0.1					IPC-TM-650 2.2.17
	S side(Ra)	μ m	1.5 ± 0.5					
	M side(Rz)	μ m	≤ 1.4					
	M side(Rz)	μ m	≤ 1.4					
Tensile Strength	R.T.(23°C)	N/mm ²	≥ 350					IPC-TM-650 2.4.18
	R.T.(180°C)	N/mm ²	≥ 200					
Elongation	R.T.(23°C)	%	≥ 5	≥ 6	≥ 8	≥ 10	≥ 15	IPC-TM-650 2.4.18
	R.T.(180°C)	%	≥ 5	≥ 6	≥ 8	≥ 10	≥ 15	
Pinhole & Porosity		Numbers	No					IPC-TM-650 2.2.12
Oxidation Resistance		Minutes	30					

Double-sided polished lithium battery copper foil (BCF)

Microtopography (SEM)



Typical Applications

Lithium-ion batteries: laptops,
mobile phones, electric vehicles

Product Features

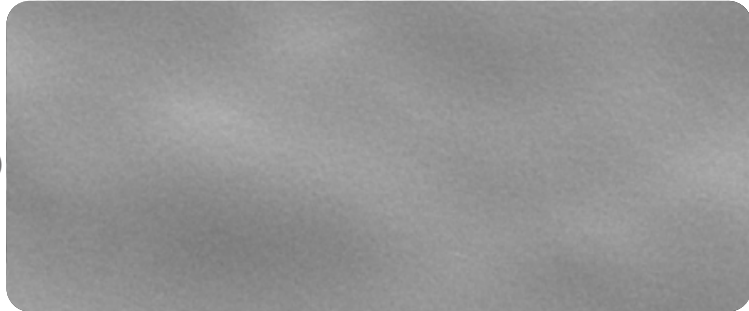
Double-sided polished
Stable performance, suitable for
high-capacity rechargeable
batteries
Environmental safety
Good uniformity
Good wettability

Product Properties

Item		Unit	Requirement				Test Method
Nominal Thickness		μm	4.5	6	8	9	IPC-4562A
Nominal Weight		g/m^2	41.5 ± 1.5	55 ± 2	72 ± 2	87.5 ± 2.5	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤ 0.35				IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0				
Tensile Strength	150°C/15min	N/mm^2	≥ 300				IPC-TM-650 2.4.18
Elongation	150°C/15min	%	≥ 3	≥ 4	≥ 5	≥ 6	IPC-TM-650 2.4.18
Pinhole & Porosity		Numbers	No				IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90				
	H.T.(150°C)	Minutes	15 (no discoloration)				

Double-sided polished lithium battery copper foil with medium tensile strength (BCF-MS)

Microtopography (SEM)



Typical Applications

Lithium-ion batteries: laptops, mobile phones, electric vehicles

Product Features

Double-sided polished
Stable performance, suitable for high-capacity rechargeable batteries
Environmental safety
Higher tensile strength
Good wettability

Product Properties

Item		Unit	Requirement				Test Method
Nominal Thickness		μm	4.5	6	8	9	IPC-4562A
Nominal Weight		g/m^2	41.5 ± 1.5	55 ± 2	72 ± 2	87.5 ± 2.5	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤ 0.35				IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0				
Tensile Strength	150°C/15min	N/mm^2	340-400				IPC-TM-650 2.4.18
Elongation	150°C/15min	%	≥ 3	≥ 4	≥ 5	≥ 6	IPC-TM-650 2.4.18
Pinhole & Porosity		Numbers	No				IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90				
	H.T.(150°C)	Minutes	15 (no discoloration)				

Double-sided polished lithium battery copper foil with high tensile strength (BCF-HS)

Microtopography (SEM)



Typical Applications

Lithium-ion batteries: laptops, mobile phones, electric vehicles

Product Features

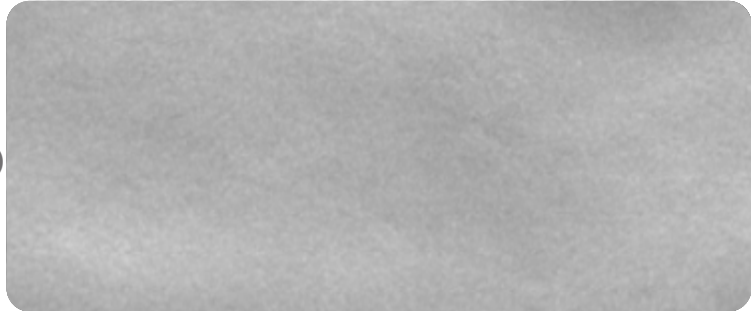
Double-sided polished
Stable performance, suitable for high-capacity rechargeable batteries
Environmental safety
High tensile strength
Good wettability

Product Properties

Item		Unit	Requirement				Test Method
Nominal Thickness		μm	4.5	6	8	9	IPC-4562A
Nominal Weight		g/m^2	41.5 ± 1.5	55 ± 2	72 ± 2	87.5 ± 2.5	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μm	≤ 0.35				IPC-TM-650 2.2.17
	M side(Rz)	μm	≤ 3.0				
Tensile Strength	150°C/15min	N/mm^2	≥ 400				IPC-TM-650 2.4.18
Elongation	150°C/15min	%	≥ 3	≥ 4	≥ 5	≥ 6	IPC-TM-650 2.4.18
Pinhole & Porosity		Numbers	No				IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90				
	H.T.(150°C)	Minutes	15 (no discoloration)				

Double-sided polished lithium battery copper foil with high tensile strength and high elongation (BCF-HSHE)

Microtopography (SEM)



Typical Applications

Lithium-ion batteries: laptops, mobile phones, electric vehicles

Product Features

Double-sided polished
Stable performance, suitable for high-capacity rechargeable batteries
Environmental safety
High tensile strength
Good wettability

Product Properties

Item		Unit	Requirement				Test Method
Nominal Thickness		μ m	4.5	6	8	9	IPC-4562A
Nominal Weight		g/m ²	41.5 ± 1.5	55 ± 2	72 ± 2	87.5 ± 2.5	IPC-TM-650 2.2.12
Roughness (ISO)	S side(Ra)	μ m	≤0.35				IPC-TM-650 2.2.17
	M side(Rz)	μ m	≤3.0				
Tensile Strength	150°C/15min	N/mm ²	≥400				IPC-TM-650 2.4.18
Elongation	150°C/15min	%	≥5	≥6	≥7	≥9	IPC-TM-650 2.4.18
Pinhole & Porosity		Numbers	No				IPC-TM-650 2.2.12
Oxidation Resistance	R.T.(23°C)	Days	90				
	H.T.(150°C)	Minutes	15 (no discoloration)				

Create a world-famous brand, develop into an outstanding international enterprise



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