

The Sustainable Plasticizers Trend for Wire and Cable Manufacturers

Suchada Passararat

Associate Director, Specialty Chemicals

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With our benchmarks, unparalleled data, and deep insights of global energy and commodities markets, we enable our customers to make decisions with conviction and create long-term, sustainable value.

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60%

60% of waterborne crude oil trade estimated to be priced using Platts benchmarks

6.5M

Well data records, 76,000 reservoirs and more than 33,000 fields

1,300

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13,000

Customers served across 150 countries, including all major energy providers



How the combined offering delivers enhanced value to customers in end-to-end energy transition solutions

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- Leading price assessments, news, analysis, forecasts and data covering:

-  Carbon Markets
-  Hydrogen
-  Renewables
-  Low-carbon commodities

- Global Integrated Energy Model (GIEM) tool to compute long-term scenario
- Modern and flexible content distribution applications for web, mobile (Platts Dimensions Pro) and machine-to-machine data feeds

- Comprehensive data, insights and analytics for Clean Energy Technology
 - Global, national, and regional supply and demand data
 - Market prices, Capex and Opex forecasts
 - Technology and policy analysis and insights
- Energy and climate scenarios and outlook datasets
- Energy and climate advisory solutions
- Recycled plastics insights
- Well-level and corporate emissions solutions providing greenhouse gas emissions by assets, company, sector, and geography

- ✓ Market prices, supply and demand data, forecasts and analytics
- ✓ Global, national and regional news, data and insights
- ✓ End-to-end value chain coverage across the energy transition landscape
- ✓ Industry-leading analysts and thought leaders based in all major markets

Fuels, chemicals and resources solutions

Combines the best of **IHS Markit** oil markets, midstream, downstream, chemicals and agribusiness with **Platts**® analytics capabilities in similar market segments.



Fuels & feedstocks

Market analysis, forecasts, and asset data on today's crude oil-based fuels industries and the transition to low-carbon fuels.

- Crude oil
- Fuels and refining
- NGLs & chemical feedstocks
- Biofuels



Chemicals

Timely analysis, insight, and forecasts (including profitability, supply/demand, process technology, and cost analysis) to assist short- and long-term planning and decision making.

- Base chemicals
- Specialty chemicals
- Intermediates
- End use markets



Shipping

Comprehensive view of what is driving the complex dynamics of the global, cross-commodity marine freight and fuel markets, includes analysis, market commentary, price rationales, fundamental data, and analytical tools.

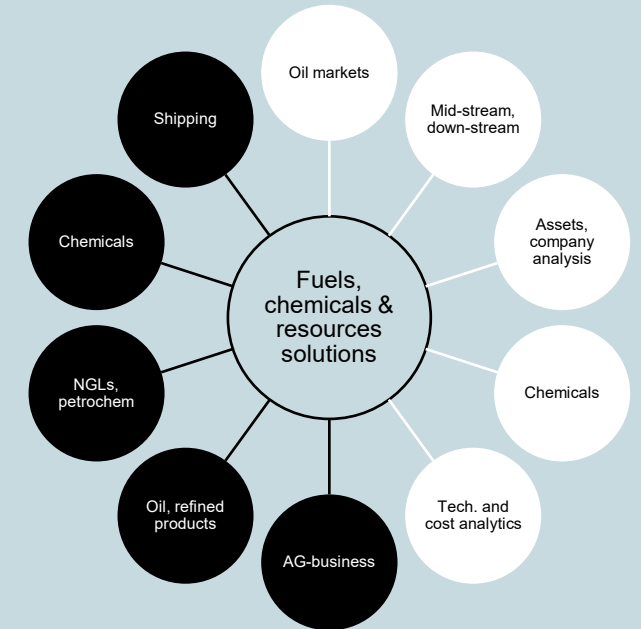
- Freight markets
- Vessel tracking
- Cargo tracking



Agribusiness

Analysis, price data, forecasts, and market intelligence from agricultural inputs through producers and food manufacturers to transport, bioenergy, and policy.

- Agriculture and food
- Crop science and animal health
- Fertilizers
- Biofuels



- IHS Markit legacy
- S&P Global Platts legacy

Chemical Economics Handbook & Specialty Chemicals Update Program

- CEH Established over 70 years
- Trusted & reliable point of reference
- Wealth of experience across the organisation
- Comprehensive insights across S&P Global
- 251 CEH Report titles
- 37 SCUP Report titles



CEH & SCUP

The screenshot shows the S&P Global Connect interface for the Chemical Economics Handbook (CEH). The search results are as follows:

Report Title	Date	Source
Urea - CEH	18 Sep 2023	Chemical Economics Handbook Profile
Polystyrene - CEH	18 Sep 2023	Chemical Economics Handbook Profile
Fluorocarbons - CEH	31 Aug 2023	Chemical Economics Handbook Profile
Fibers Overview - CEH	31 Aug 2023	Chemical Economics Handbook Profile
Alkyd-Polyester Surface Coatings - CEH	31 Aug 2023	Chemical Economics Handbook Profile

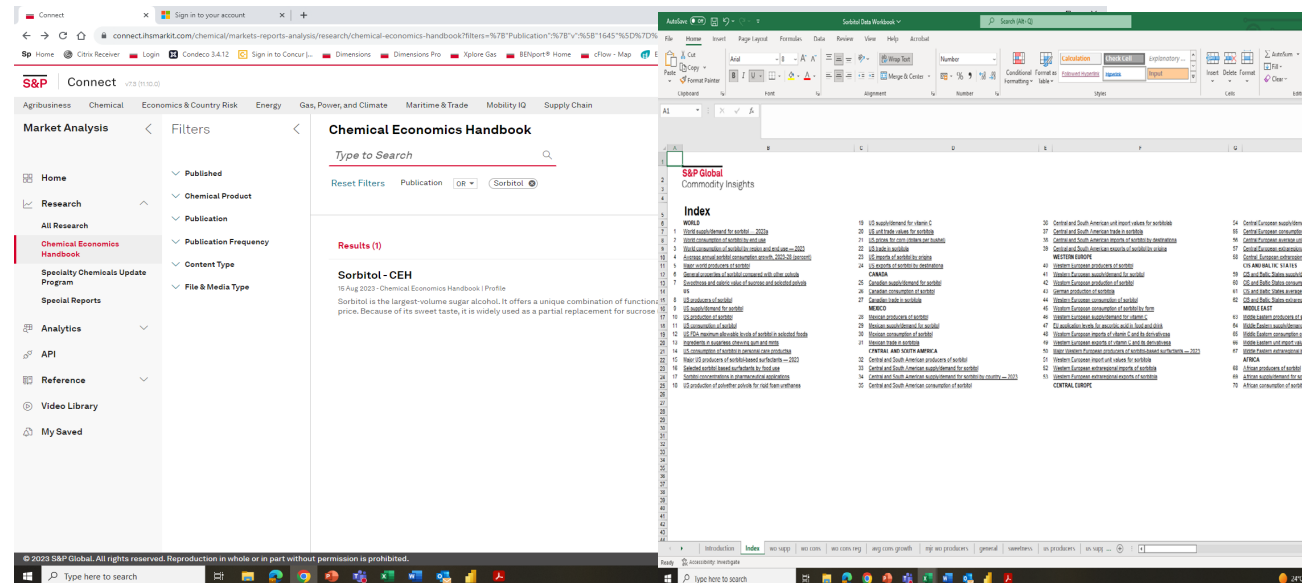
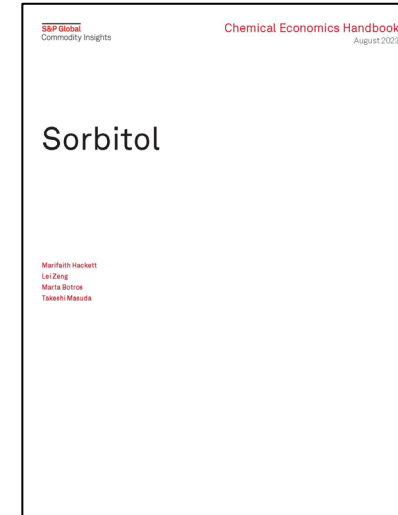
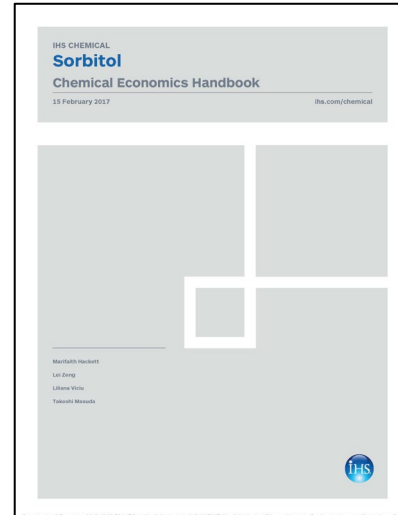
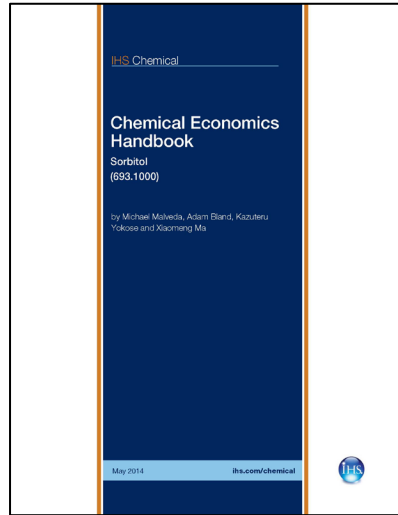
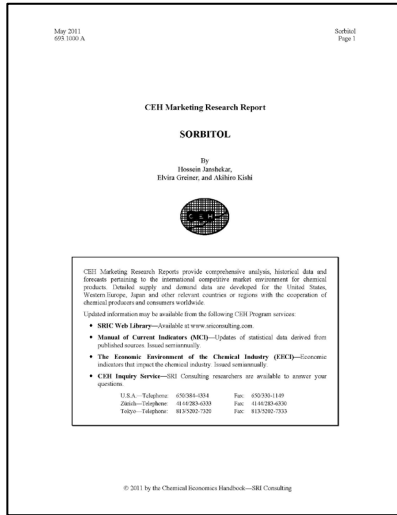
- 251 CEH Reports from A-Z (Acetaldehyde to Zinc Chemicals)
- World, regional and selected country specific insights
- Producers & capacity
- Production, trade, demand by application salient statistics
- 10yrs history, current year and 5yr forecast
- Manufacturing processes & regulatory
- Key insights driving the industry

The screenshot shows the S&P Global Connect interface for the Specialty Chemicals Update Program (SCUP). The search results are as follows:

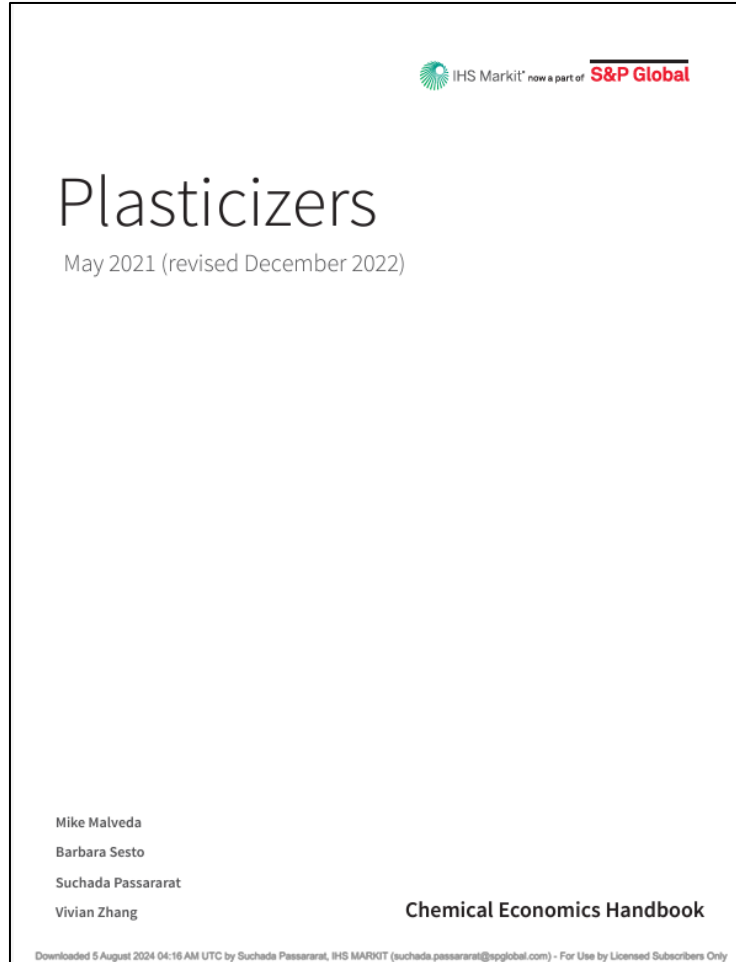
Report Title	Date	Source
Overview of the Specialty Chemicals Industry - SCUP	31 Aug 2023	Specialty Chemicals Update Program Profile
Water Management Chemicals - SCUP	31 Aug 2023	Specialty Chemicals Update Program Profile
Corrosion Inhibitors - SCUP	30 Jun 2023	Specialty Chemicals Update Program Profile
Feed Additives - SCUP	28 Jun 2023	Specialty Chemicals Update Program Profile
Biocides - SCUP	28 Apr 2023	Specialty Chemicals Update Program Profile

- 37 SCUP Reports from Antioxidants to Water Management Chemicals
- Annual overview of the Specialty Chemicals Industry
- World, regional and selected country specific insights
- Products & functions
- Structure of the industry and the market
- Market size by product
- Market size by end-use application
- Periodical consumption, current year and 5yr forecast
- Key insights driving the industry

70+ Years of CEH evolution



CEH Plasticizers



Last update : May 2021

Next update : **October 2024**



We look forward to working with you.

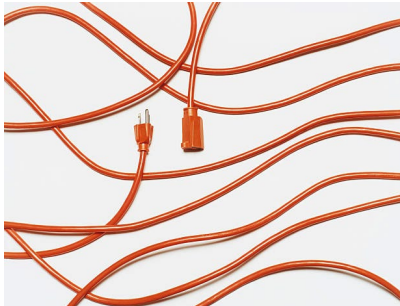
Sustainable Plasticizers for Wire and Cable

- Plasticizers in Flexible PVCs
- Key features of plasticizers
- Types of plasticizers
- Trend of phthalate and non-phthalate plasticizers

Plasticizers

Found 80-90% in Flexible PVCs

Wire and cable



Flexible film & sheet



Flexible tubes and profile



Wall and Floor



Coating

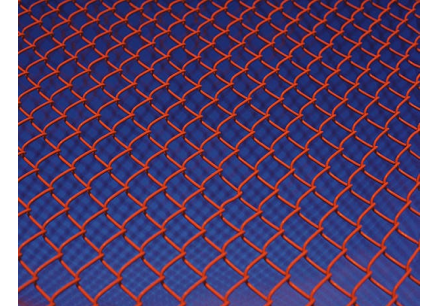
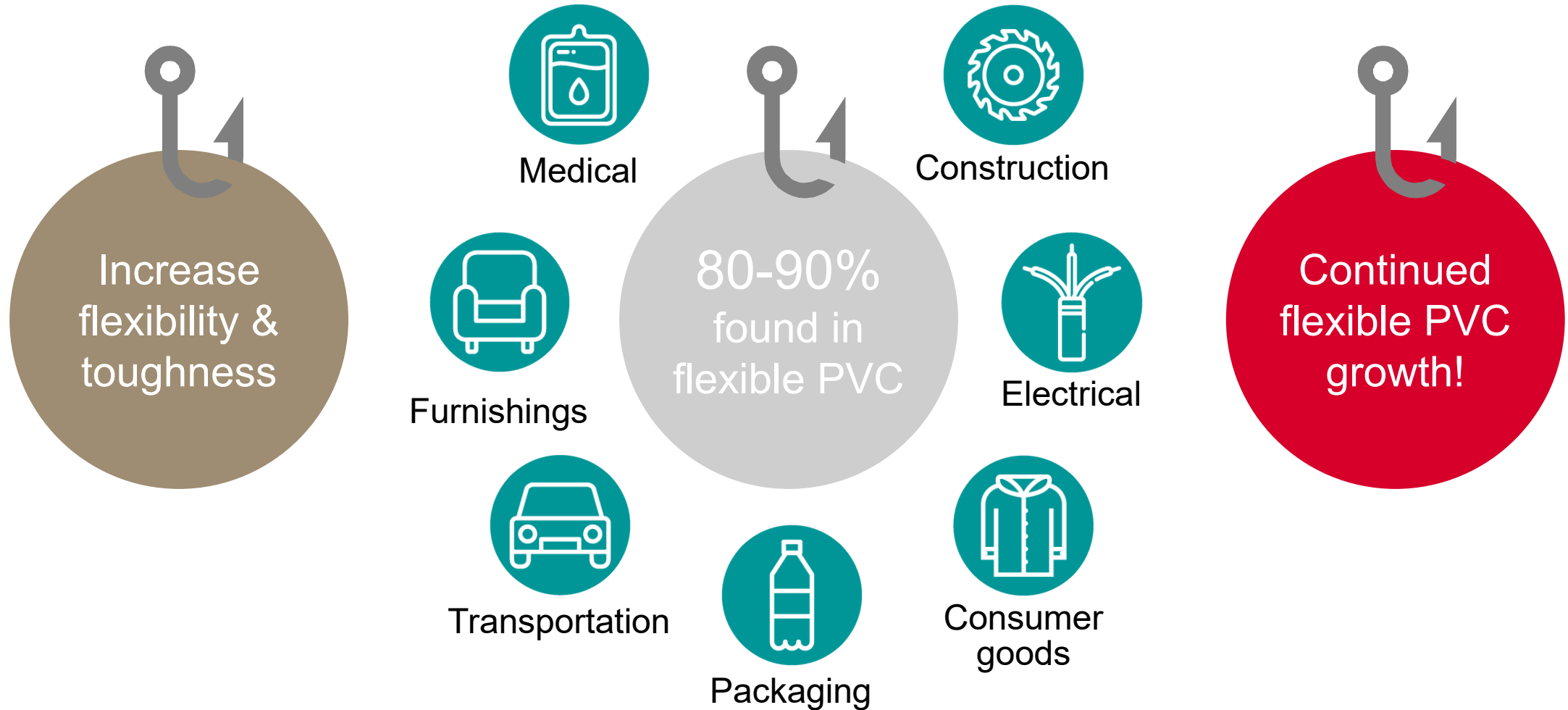
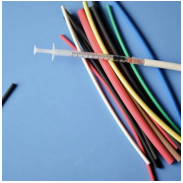


Photo credit : gettyimages® - Raimund Koch #6551-000359, Kinga Krzeminska #1397720394, Douglas Sacha #1264716795, Fancy/Veer/Corbis #97564863, Perry Mastrovito #589008734

Plasticizers in our everyday lives

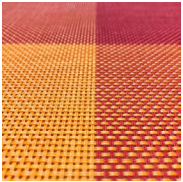


Key functions of Plasticizers



Increase Flexibility

- Bend easily without deformation



Lower Brittleness

- Less prone to cracking or breaking



Improve Processing ability

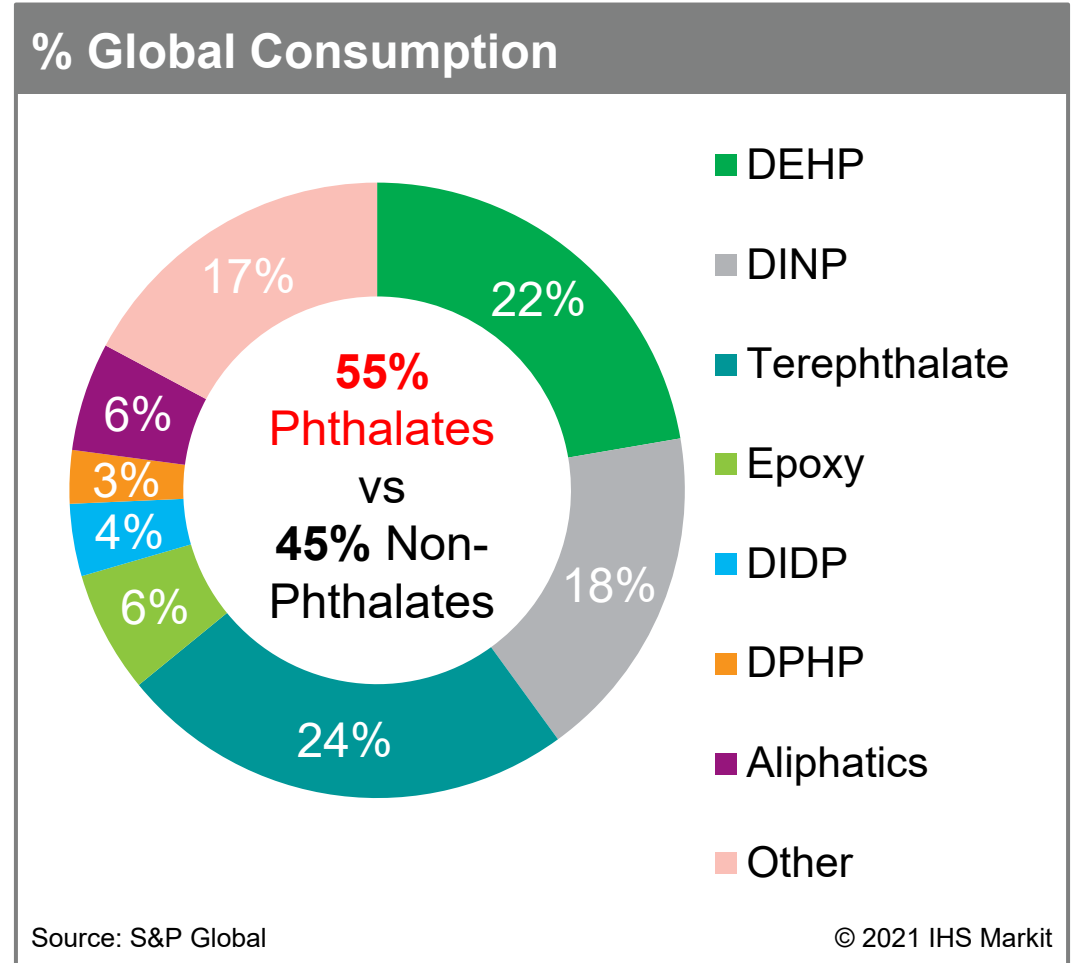
- Lower Tg => workable at lower temperatures, lower energy consumption
- Improved Flow => better filling of moles
- Etc.

Photo credit : gettyimages® Bianchi Costela #1334886106, saulgranda #1275623406, deepblue4you #157618998

Types of Plasticizers

Phthalates vs Non-Phthalates

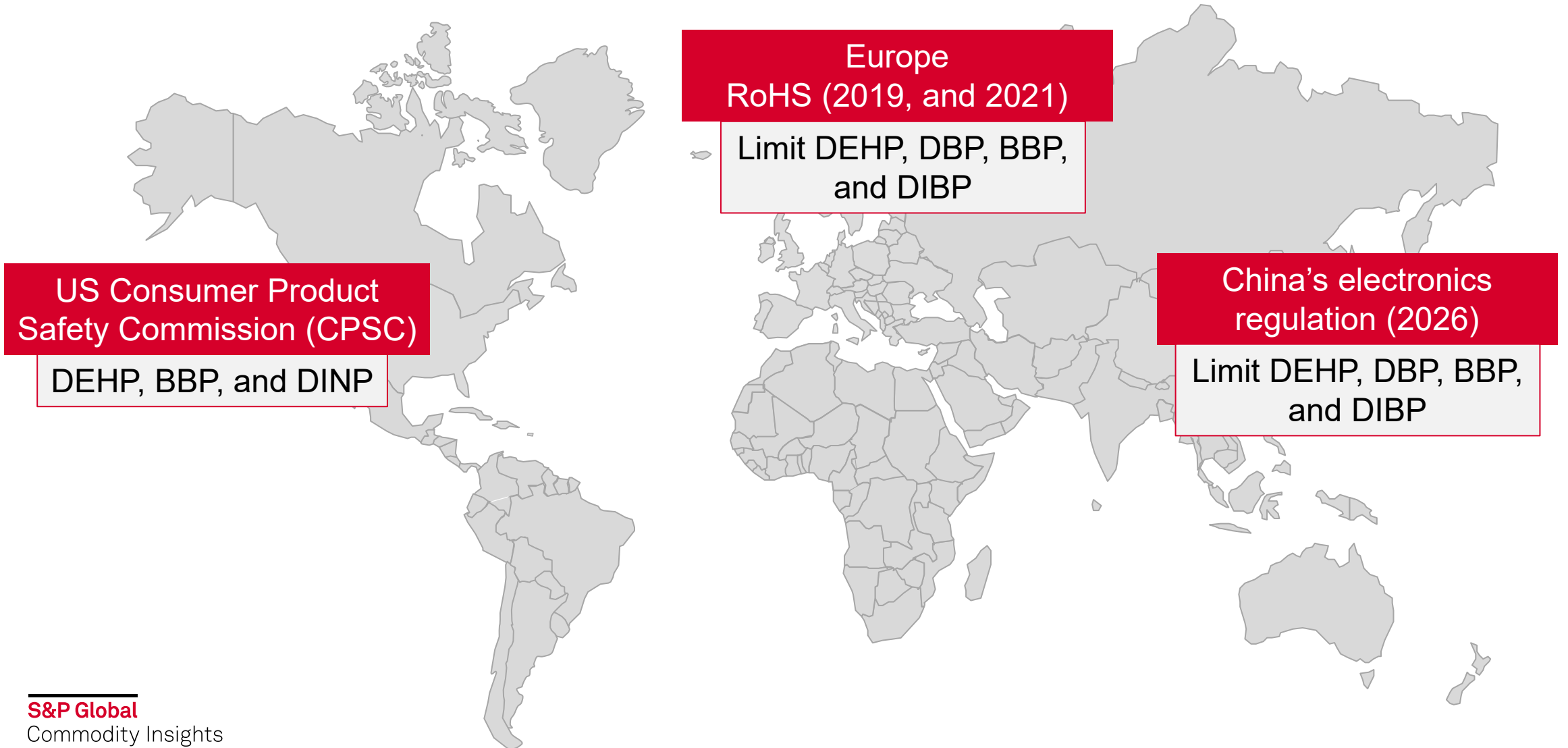
- **Phthalates**
 - DEHP, DINP, DIDP, DPHP
 - Broad range of processing and performance compatibility
- **Non-phthalates**
 - DOTP, Epoxy, Aliphatics, Benzoates
 - Address health concerns



Changing market conditions



Regulations impacting market



Restriction in China

- RoHS standard GB/T 26572-20112
 - Restrict DEHP (along with DBP, BBP, DIBP) as hazardous substances in electronic and electronic products
 - Content of DEHP, DBP, BBP, and DIBP combined cannot exceed 0.1% by weight
- Effective date : **January 1, 2026**
- Current situation : No ban/ restriction yet, but the updated regulation implies the shift towards EU's trend.

General formula for wire and cable

Ingredients used depend on the desired features of end products

	PHR (100)
Plasticizer(s)	40-60
Stabilizer	1-10
Lubricant	0-10
Filler	0-30
Others - Pigment - Antioxidant - Flame retardant - etc.	Small amount

PHR : Parts per hundred resin

Types of plasticizers for wire and cable

Phthalate

e.g. DEHP, DINP, DIDP

Non-Phthalate

- ❖ Trimellitates e.g. TOTM
- ❖ Adipates e.g. DOA
- ❖ Citrate esters e.g. Triethyl citrate (TEC), Acetyl triethyl citrate (ATEC)
- ❖ Polymeric plasticizers e.g. Polyester-based
- ❖ Bio-based e.g. ECOLIBRIUM™
- ❖ Others e.g. DOTP (replacement for DEHP), ECO-DEHCH (replacement for DOTP), DINCH (replacement for DINP).



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Key Features of Major Non-Phthalate (Sustainable) Plasticizers in Wire and Cable

• TOTM

- Low volatility
- Excellent electrical properties
- High thermal Stability
- Durability



• DINCH

- Good electrical properties
- Good processing efficiency
- High thermal Stability
- Low volatility

• DOA

- Low temp. application
- Good electrical properties
- Low viscosity
- Chemical resistance



• Hanwha's ECO-DEHCH

- Good electrical properties
- High UV stability
- Cold tolerance
- Good processing efficiency

• Citrate Esters

- Derived from natural product
- Good flexibility
- Flame retardancy



• DOW's ECOLIBRIUM™

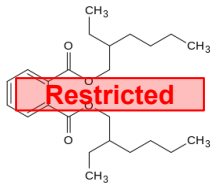
- Derived from natural product
- Good flexibility
- Flame retardancy
- Good processing efficiency

Key Takeaways



Flexible PVC will grow with pressures

- Flexible PVC is still difficult to be replaced by other material
- There are some threat from bio plastic, biodegradable plastic, and recycling plastics



Shifting Landscape for phthalate plasticizers

- EU already banned phthalates in many consumer products.
- China will implement regulations to limit phthalate content starting January 1, 2026.
- Phthalate plasticizers especially DEHP, will eventually phase out.



Sustainable plasticizers is non-phthalate

- Among non-Phthalate plasticizers – TOTM, DOA, Citrates are more common and higher acceptance
- New non-Phthalate plasticizers are also developing to compete e.g. ECO-DEHCH, ECOLIBRIUM™ .

Contact Details

Suchada Passararat

Associate Director, Specialty Chemicals

Telephone : +66 2 118 2117

Email address : Suchada.Passararat@spglobal.com

Thank you