

Sustainability in the Powder Coating Industry – Cradle to Cradle Approach

By,

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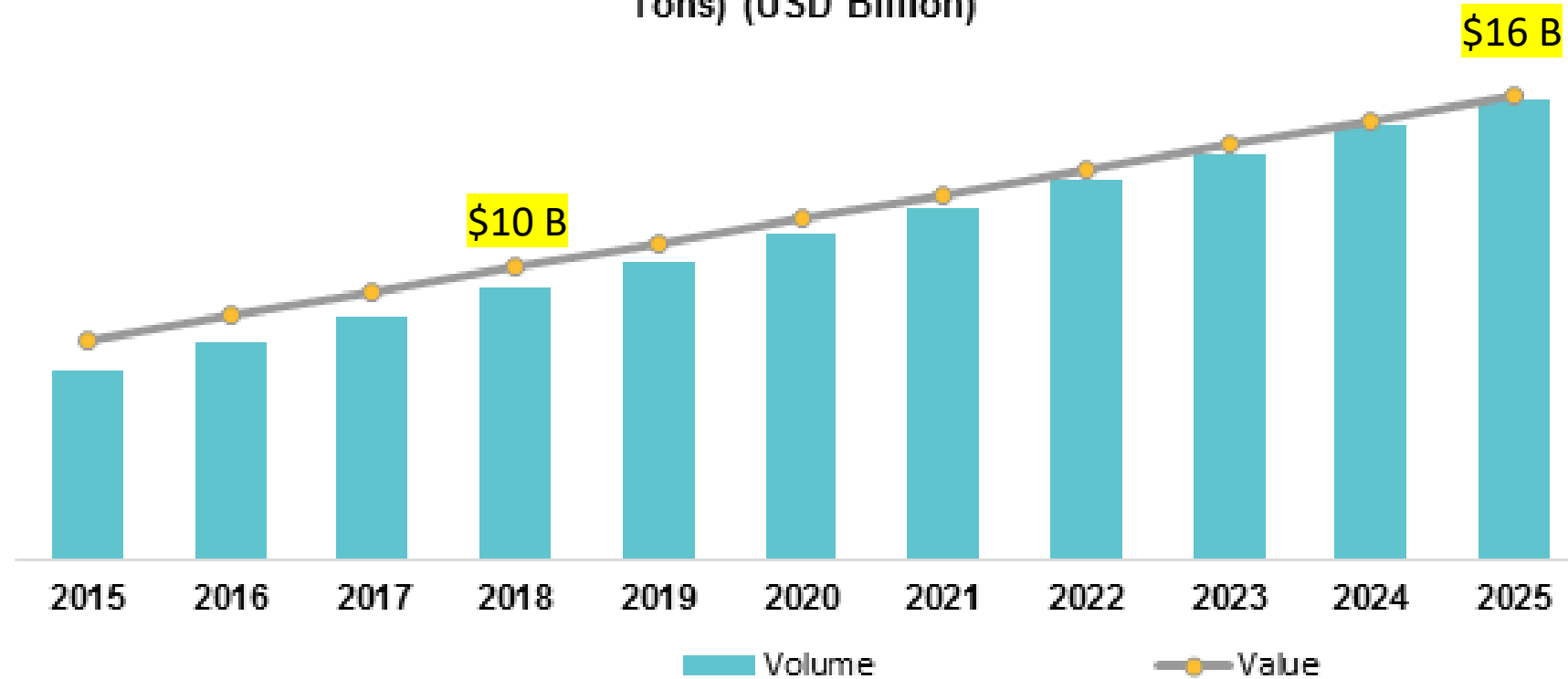
Providing environment-friendly solutions for the paint industry globally.

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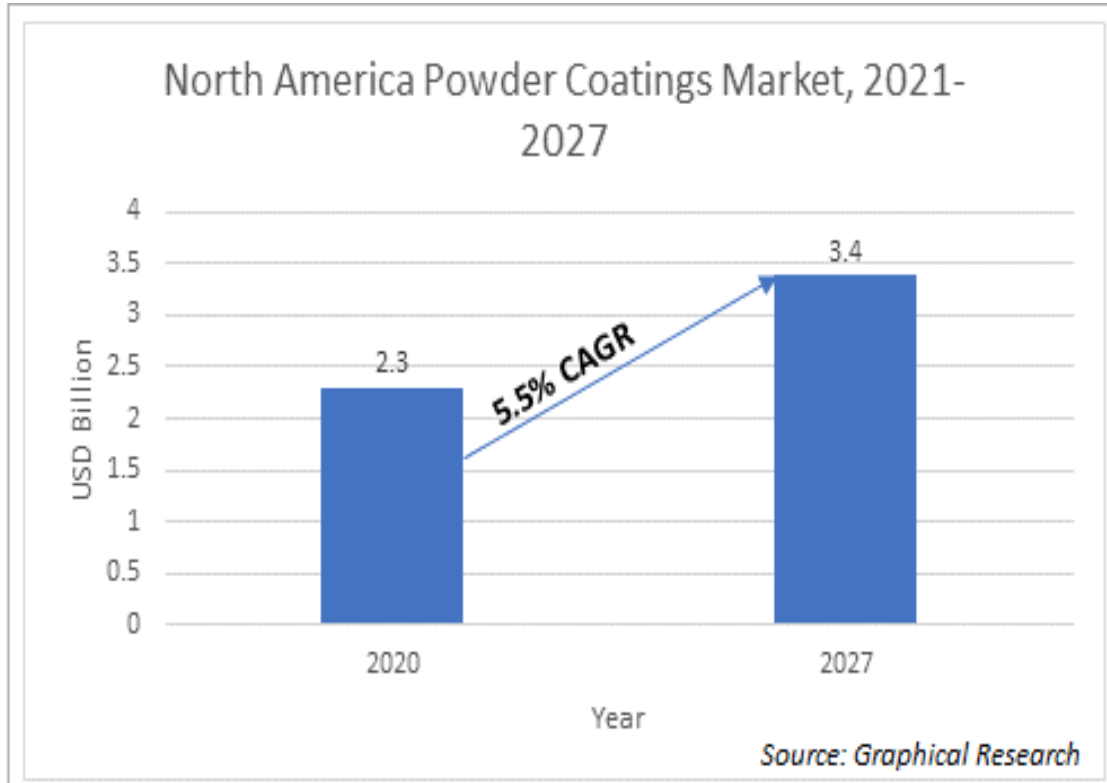
Global Powder Coating Market Value and Volume, 2015-2025 (Kilo Tons) (USD Billion)



Source: Adroit Market Research © 2019

Market Growing at 7.9%

North America Powder Coatings Market



Powder Coatings Market size USD 2.3 Billion in 2020 and is anticipated to expand at a CAGR of 5.5% from 2021 to 2027.

Global Market is growing faster than North America

Powder coating Industry: Challenges Faced

Globally 5% of total powder coating are classified under

1. Fines
2. Off-spec batches

Needs to be recycled, but How?

Powder Coating Recycling – “RE-PRO” Powder

- a) Reprocessing the powder coating fines and overspray is similar to making prime powder.
- b) Reprocessing powder requires to be sieved for impurities, blended for consistency, extruded, pulverized, cyclo-sized, QC tested, and packaged.⁴
- c) Challenges –
 - a) The re-processed powder turns textured finish/ gritty finish
 - b) Textured powder have minimal demand in the market

Must develop new application

Examples of RE-PRO TEXTURED POWDER

Grey color



Black color

GDB R&D TEAM DEVELOPED NEW APPLICATIONS



GDB'S Mission for Powder Coatings Recycling

Our circular economy model,

- Develops new application of fines
- Cost effective product without compromising performance.
- Collaborates with researchers and institute

GDB focus on cradle-to-cradle approach.

1. Powder Coating in Patching Compound

- Generic Patching compound contains 60-70% Extender pigment
- Our Patching compound replaces extender by fines
- No compromise on performance properties with fines
- Commercially feasible and competitive pricing

GDB's formula contains >50% sustainable resources used in this product

Powder Coating in Patching Compound (Cont.)

PERFORMANCE AGAINST THE INDUSTRY STANDARD

Properties	Market Standard	New Product
Curing Time	***	***
Tack Free	***	**
Flexibility	**	**
Finish	***	***
Crack Filling Ability	***	***

*** Patent Pending



NEW APPLICATIONS FOR POWDER COATINGS SUSTAINABLY

2. Powder Coating in Pavers

- Decorative pavers have Crushed Stone Dust, Stone Aggregate. Size:- 6m to 20mm, OPC Cement, Water, Concrete Admixture Accelerators and Colors (optional).
- Along with ingredients above, if powder coating fines are used as fillers, depending on % addition and color, colored pavers can be made.



Powder Coating in Pavers (Cont.)

- As of now, such concrete pavers cannot be used in structural construction work, but can be used for aesthetic purposes in, for example, garden pavers.
- Extensive work is being carried out on this at GDB.
- Such products can be made but must be economically sustainable for both manufacturers and end users.



3. Powder Coating in Ceiling Tile

- In past Scientists have worked on composites using powder coatings
- Composites have good mechanical properties.³
- GDB has developed ceiling tiles which can be made with
 - ❖ Powder coating fines as binder
 - ❖ saw dust as reinforcing material along with secondary binders and calcium sulfate

4. Use of Powder Slurry Coatings

- Coating made by dispersing the powder in water in HSD with additives
- Final product can be applied with brush, spray coat or dip coat.
- Coating dries and get cured by following three stage process
 - ❖ Water Evaporates (60°C - 70°C for 10minutes),
 - ❖ Fines melts 120°C
 - ❖ Curing at 150°C - 180°C for 10 minutes [5](#).

5. Fines used in Latex Paint

- Powder coating fines as colored extender pigment for latex texture paint.
- In initial experiments, the powder particles tend to settle, but can be easily redispersed or with use of anti-settling agent like organoclays settling issue was slowed down, but not eliminated completely.
- Final product has Texture finish with low gloss and excellent hiding
- These product has market as masonry coating in overseas.

GDB R&D Center

- GDB's paint recycling R&D center at Mt. Vernon for eco-friendly solutions
- Summer Internship and scholarships for research in recycling field
- GDB has tie-ups with distinguished professors in coatings field from the Eastern Michigan University, Missouri University of Science and Technology to find scientific solutions in the world of paint recycling.
- Team GDB is developing a training module to teach and promote of paint recycling for people in industry.

References

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QUESTIONS?

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