Know Your Soil Conditioners

They Are Not All the Same

pro's choice
SPORTS FIELD PRODUCTS

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To Build Winning Fields, You Need the Right Soil Conditioner

BUILDINGbetterINFIELDS

since1941

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For Both Infield and Turf Applications, Pro's Choice® Offers Unparalleled Quality

Presentation Highlights

- Examine “**thermally optimized** clay” from a scientific view point…
- Compare **thermally optimized** clay to other materials

…so that you can…

understand how they are different and what to expect from proper usage

What is Thermally Optimized Clay?

- Any Clay Which Has Been Heated and Dried at temperatures of 1000 - 1500 ° F
- Best for Sports Turf Application
- Examples: Pro’s Choice® Red infield conditioner and Pro’s Choice® Select Topdressing
- Thermally Optimized Montmorillonite Clay is processed to Maximize Hardness and Stability without Degrading Valuable Porosity

Pro’s Choice Red

Pro’s Choice Red™ is a Thermally Optimized Montmorillonite Clay that Improves Soil Structure and Controls Excess Moisture

Why Thermally Optimized Clay Works Best:

Attributes of the Clay

- Cost
- Color
- Water Retention
- Stability
- Dust
- Hardness

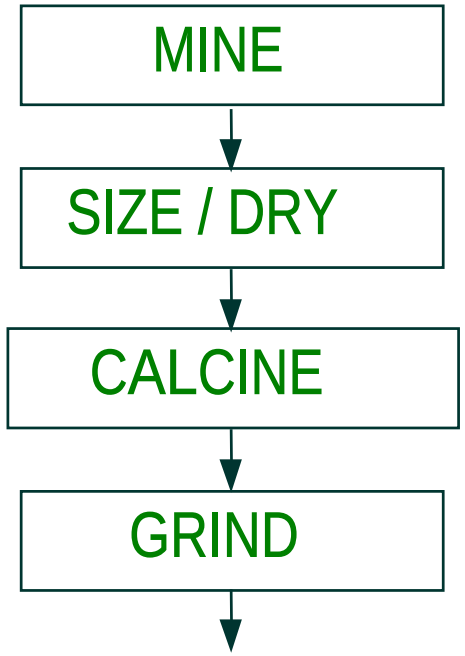
High Heat Produces Hard Red Granules

- Optimum Color and Stability are Best Achieved with Montmorillonite Clay that has Been Thermally Optimized

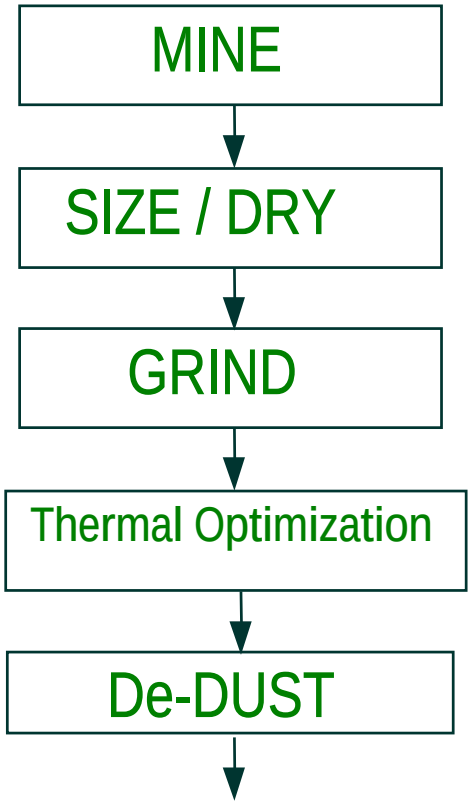
Know the Mineral…
Know the Manufacturing Process!

- To Chose a Product That is Optimized for Your Particular Sports Turf Application

Competitor Process vs. Pro's Choice



Competitive Thermally Optimized Products



Pro's Choice

ADVANTAGES OF PRO'S CHOICE PROCESS

- Grinding *before* heat treatment yields more uniform thermal processing
- Post de-dusting unique Oil-Dri process - less dust!

Keep In Mind That ...

- Thermally Optimized Montmorillonite Clays Are Only One Type of Construction Material…

  <u>But There Are Others</u>

- Each Has Its Own Particular Attribute For Construction and Maintenance of Athletic Fields

Comparing Competitive Products to Pro's Choice® infield conditioner

- Infield Mix unprocessed — 80% clay, 20% sand -
- Vitrified Clay mixed blend super-heating — Quartz and feldspar - subjected to
- Brick Chips — Crushed by-product of brick manufacturing
- Crushed Granite — Mined and crushed granite

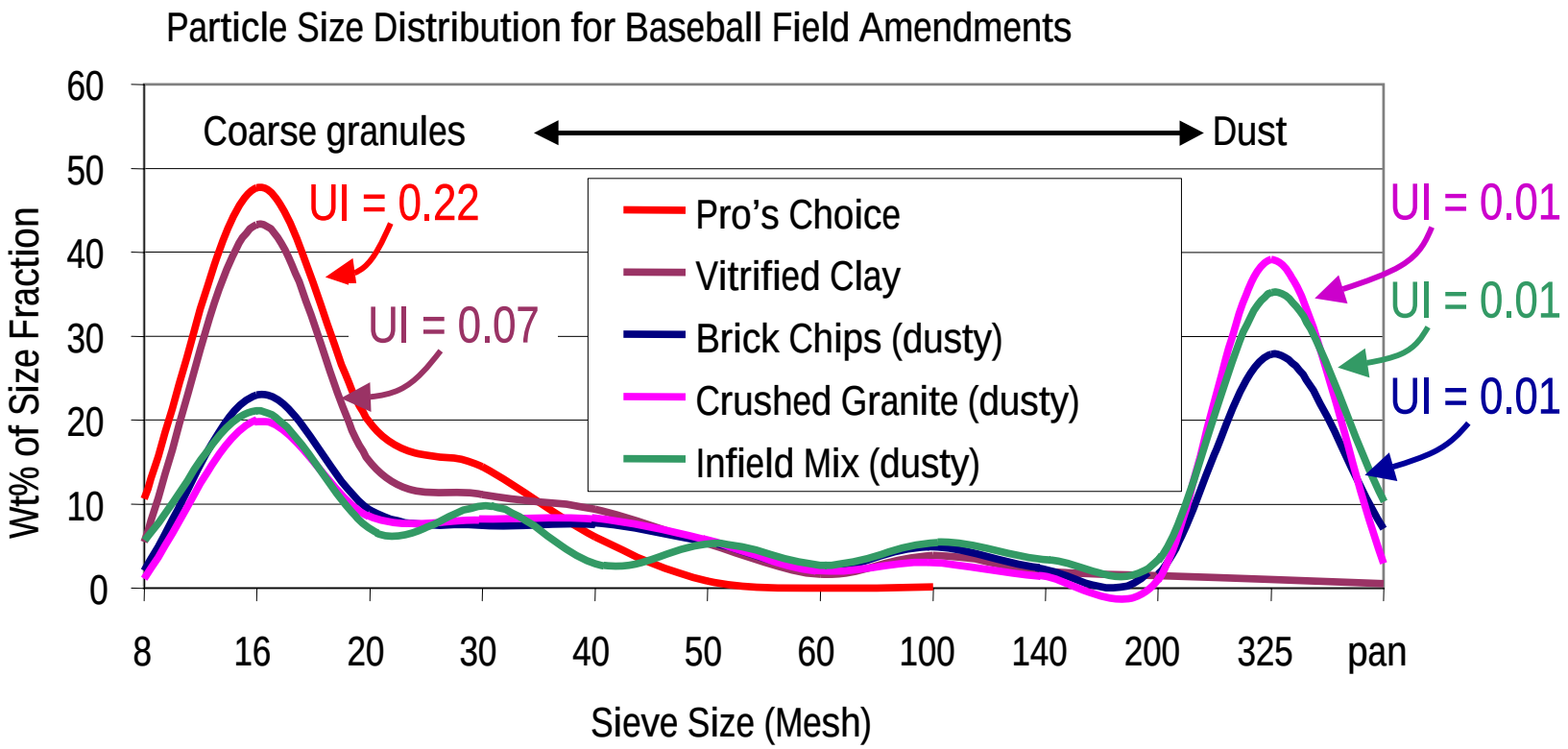
Test Methods

- We Subjected These Products to a Battery of Tests Which Are Related to Their Performance On A Baseball Field
- We Need To Understand the Test Methods
- We Can Use the Test Methods to Differentiate Between Various Baseball Field Amendments

Sizing

- Determined by Sieve Analysis
- Used to Characterize the Particle Size Distribution
- A Bell-shaped Distribution Is the Best!
- Uniformity Index: 1.0 = All Granules Same Size (the closer to 1.0 - the better…)

Particle Size Distribution

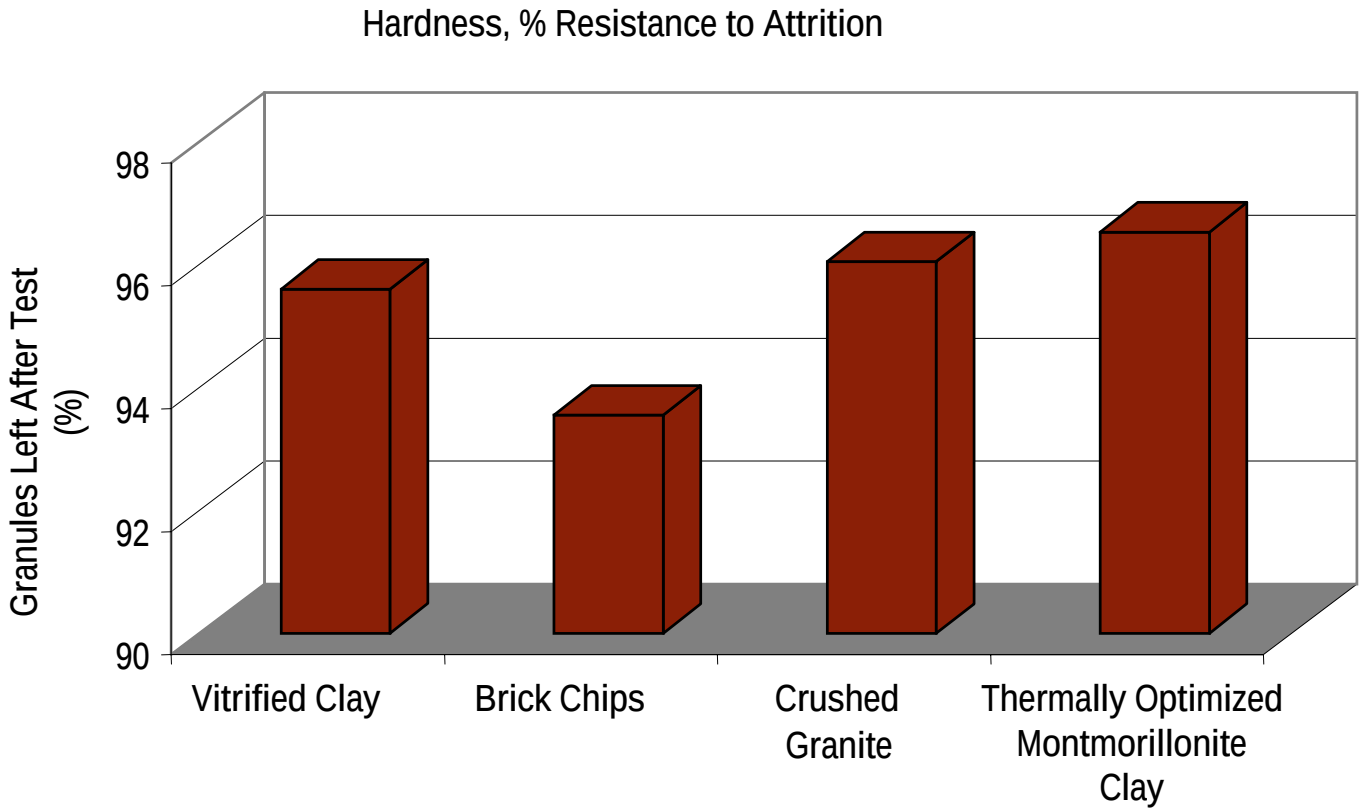


Hardness of Granules

- Resistance to Attrition
- Dry Agitation Of Steel Balls Against Granules
- Related to Physical Abrasion as Would Happen in Top 1 - 2 inches of Playing Surface
- Equivalent to Heavy Traffic of People and Equipment
- This Is One Measure of Stability

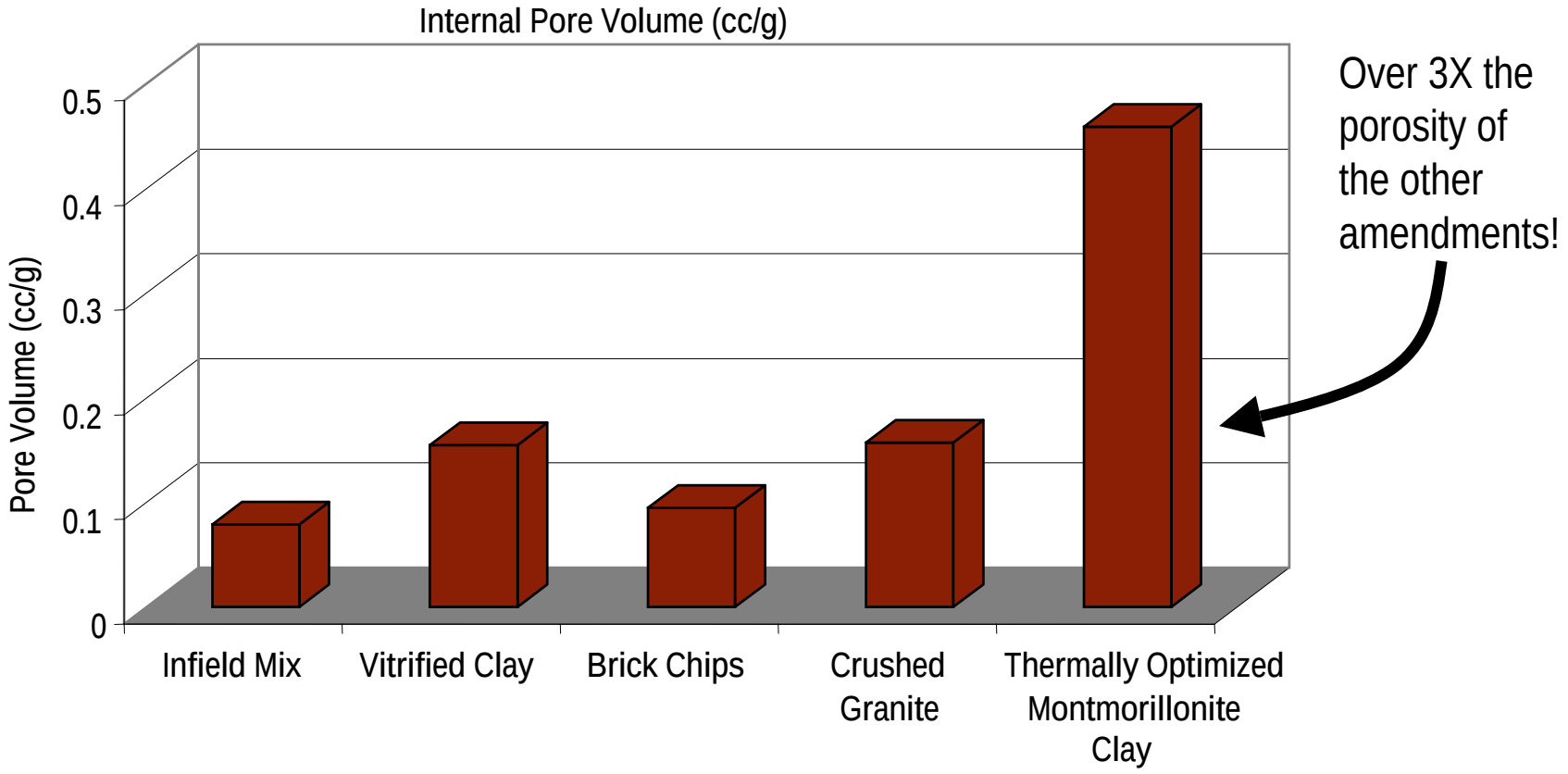
Hardness

- All products exhibited excellent hardness



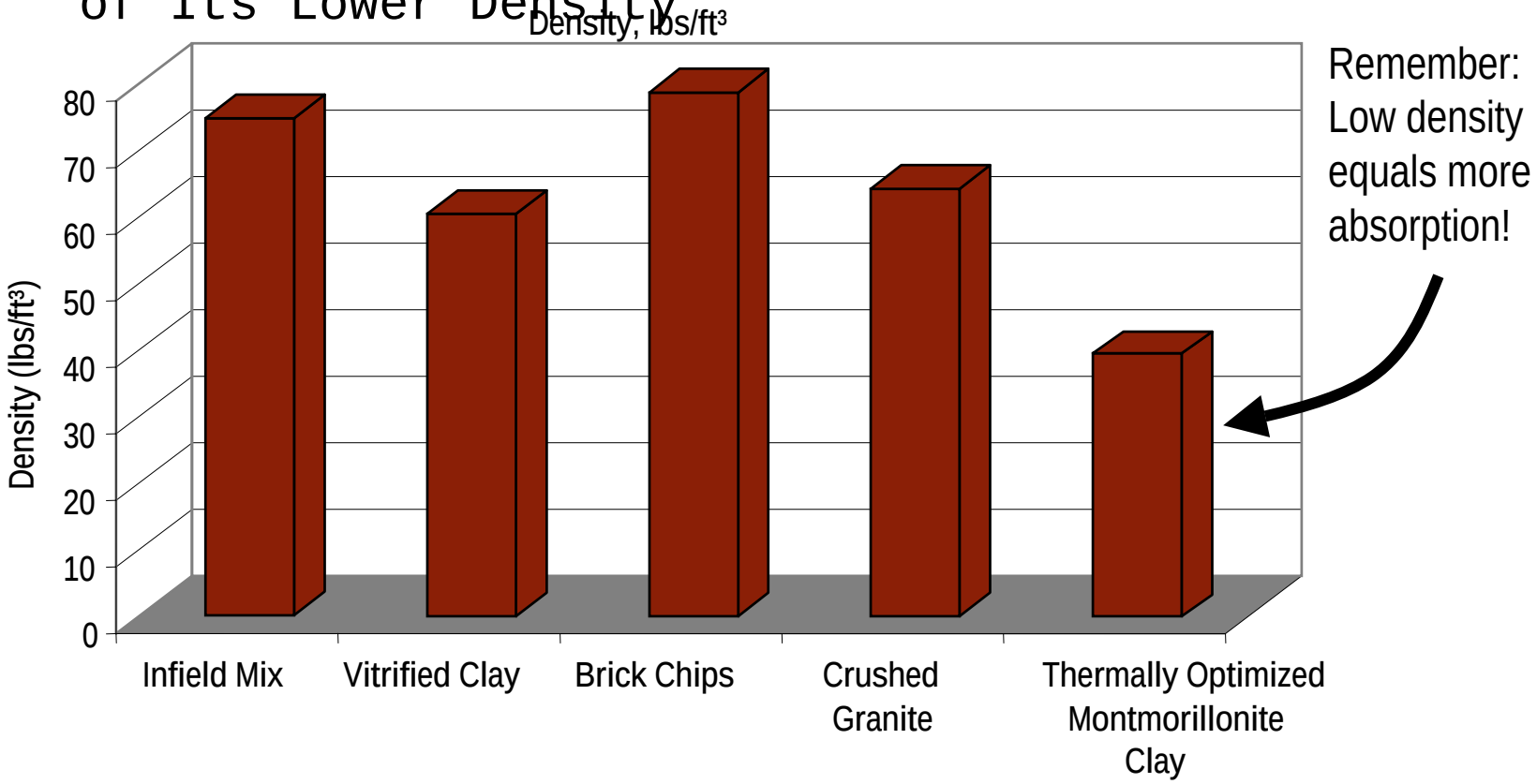
Internal Pore Volume

- More Porosity = More Absorption
- *High* Porosity Correlates With *Low* Density



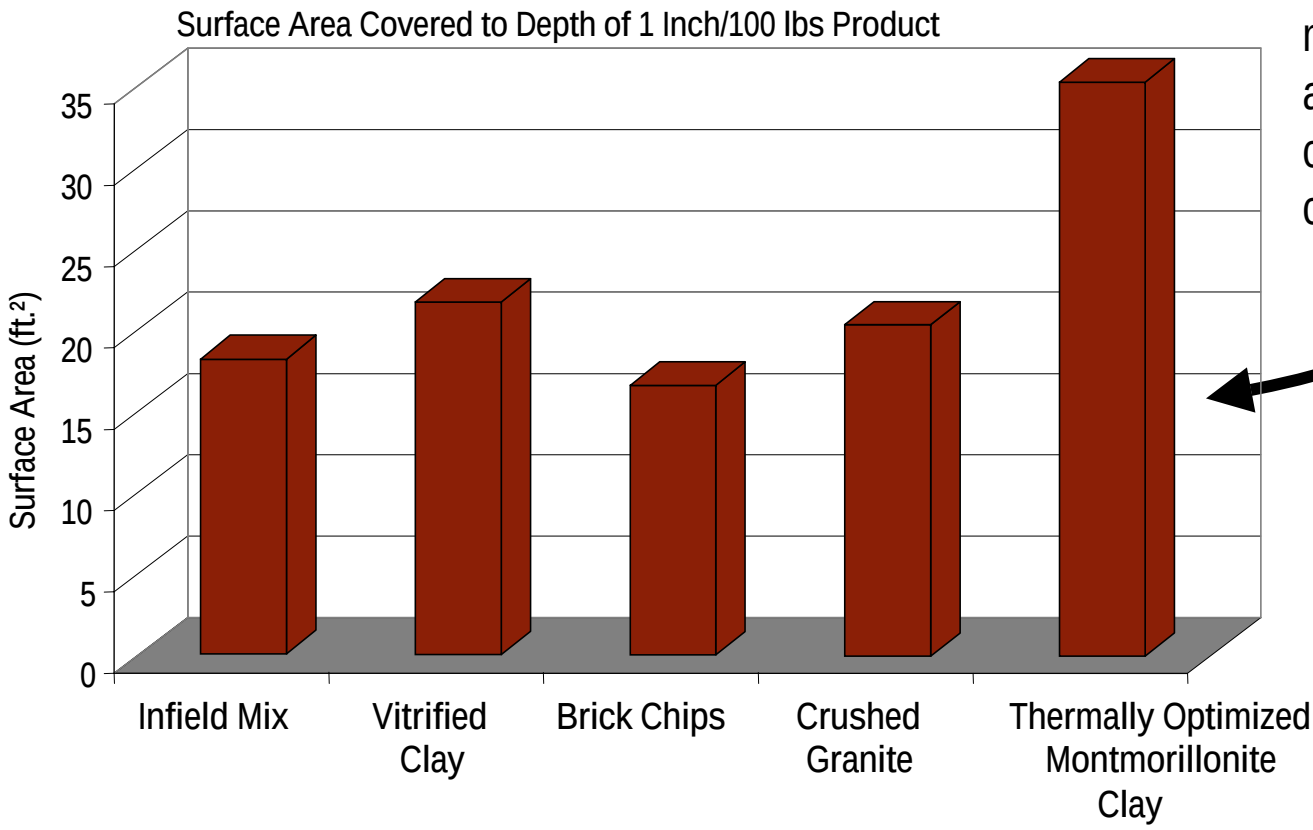
Density

- Pounds per cubic foot
- Pound For Pound, thermally optimized Montmorillonite Clay is More Absorptive *Because* of Its Lower Density



Benefits of Low Density

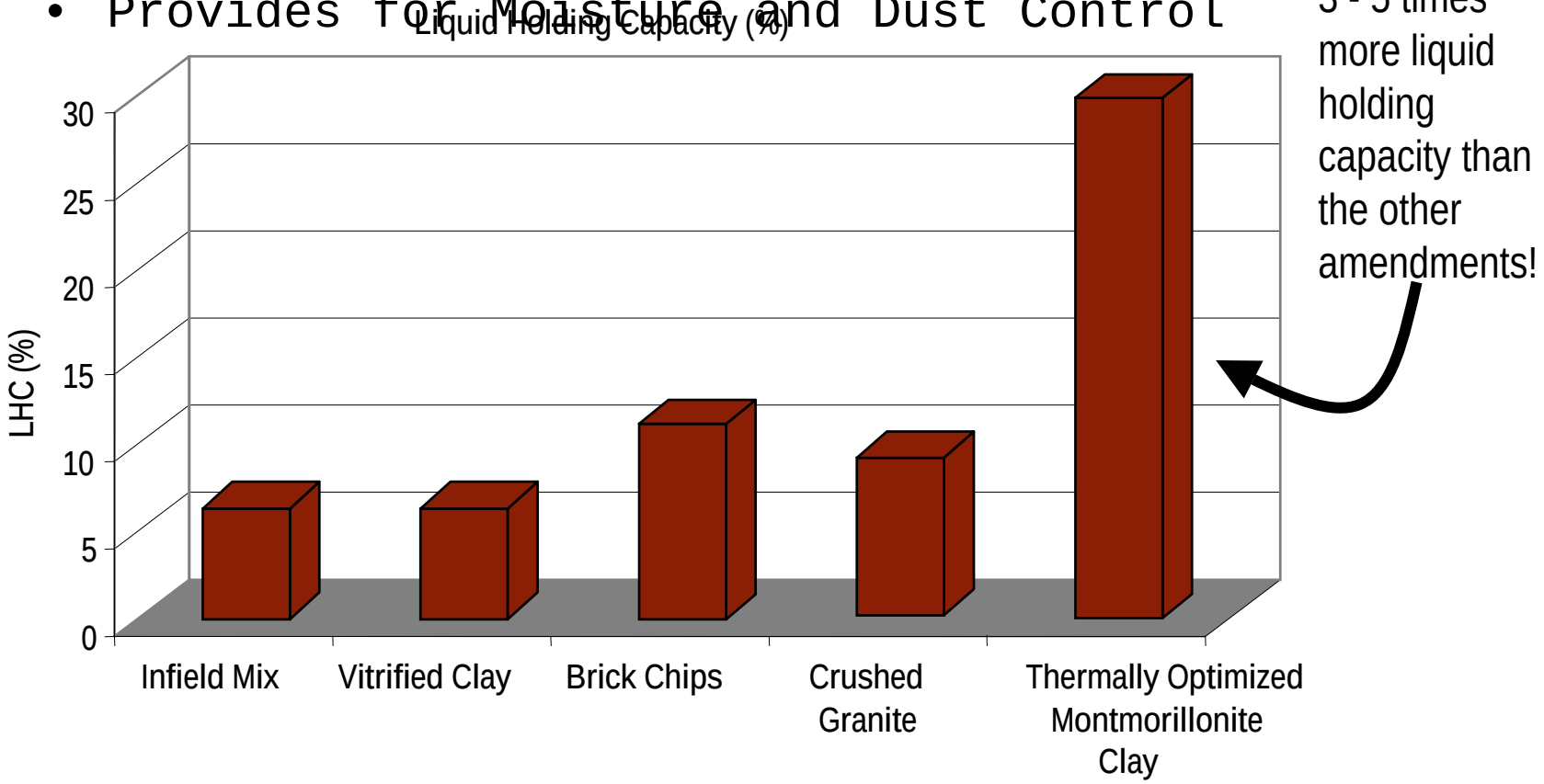
- Pound for Pound - Low Density Products Cover More Surface Area!



Covers 38% more surface area than next closest competitor!

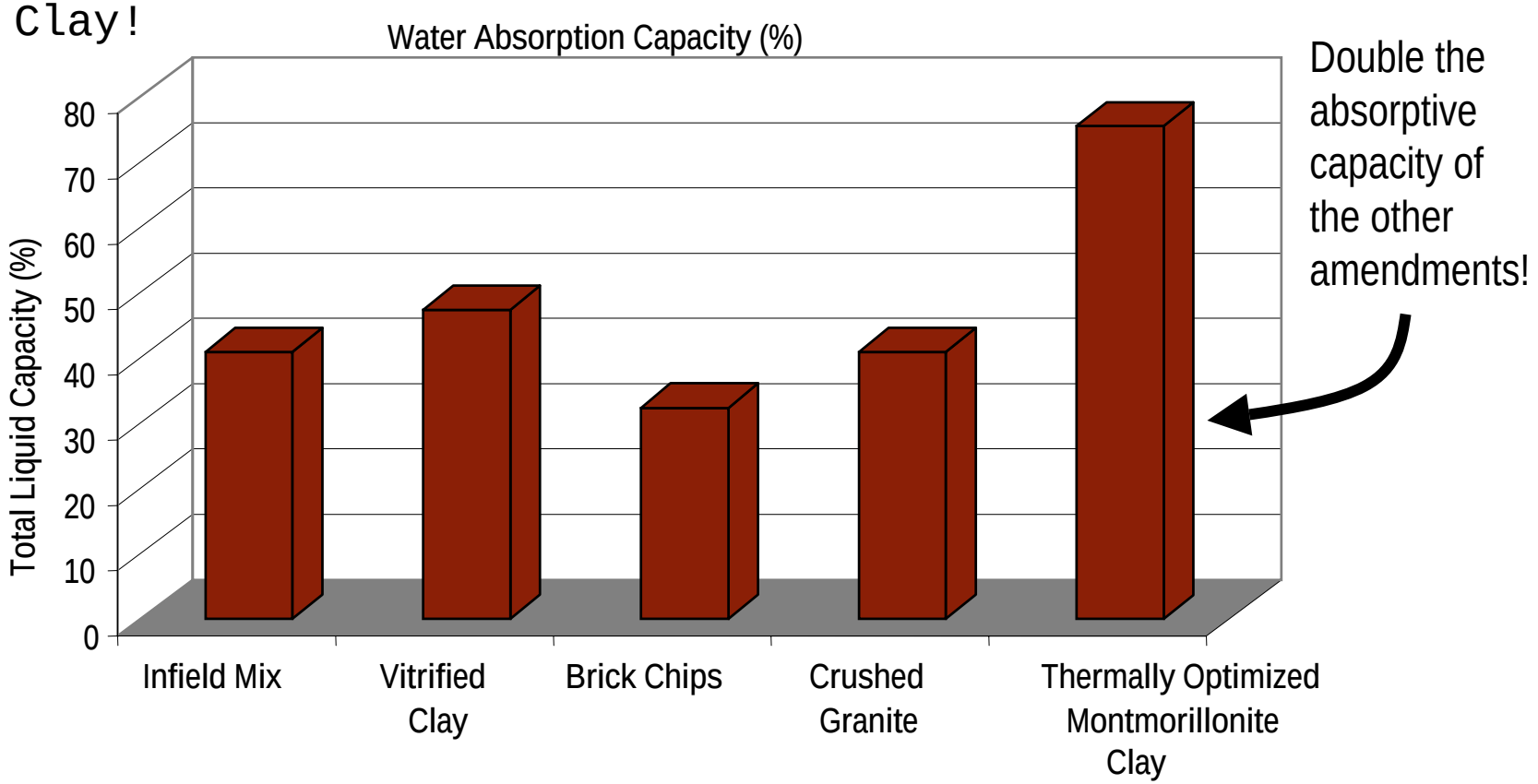
Liquid Holding Capacity

- Amount of Water Held Internally; Granules Still "Free Flowing"
- Provides for Moisture and Dust Control



Water Absorption Capacity

- Measures Total Water Held, Including Outside of Granule
- The #1 Attribute of thermally optimized Montmorillonite Clay!



Physical Properties of Baseball Field Amendments

Test	Pro's Choice Red	Turface MVP	Diamond Pro Calcined	Diamond Pro Vitrified Clay	Flexicla y	Playbal l	Fielder' s Choice
Bulk density – Obaus(lb.ft³)	37.6	38.2	37.3	47.3	87.6	24.4	42.3
Absorption – water(ml/g)	0.86	0.72	0.68	0.28	0.32	1.20	0.60
Liquid Holding Capacity(%)	34	33	31	0	.06	48	15
Free Moisture(wt%)	1.2	2.9	1.8	17.4	0.4	0.5	0.1
pH(5% slurry)	6.0	6.6	6.1	9.2	8.9	6.4	7.3
Dust Index (better lower)	1.54	1.96	3.94	0	0.13	5.69	5.85
Hardness(%) RtoA	98.4	98.1	96.3	98.1	92.9	N/A	99.7
CEC(meq/100g of clay)	19	13	7	N/A	61	0	21
Origin	Thermally optimized Montmorillonite Ripley MS, Mounds IL	Calcined Montmorillonite Blue Mt. MS	Calcined Clay, TN	Vitrified Clay	Iowa	Calcined DE Reno NV	Vitrified Clay Texas
Color, Shape	Red, Irregular Granules	Tan, Irregular Granules	Tan & Gray Irregular Granules	Rust Wet Irregular Granules	Purple Spherical Granules	Lite Beige Irregular Granules	Dark Gray Irregular Granules

Thermally Optimized Montmorillonite Clay

(Pro’s Choice Red infield conditioner)