

Know Your Soil Conditioners

They Are Not All the Same





To Build Winning Fields, You Need the Right Soil Conditioner



BUILDINGbetter**INFIELDS**

since**1941**



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



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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

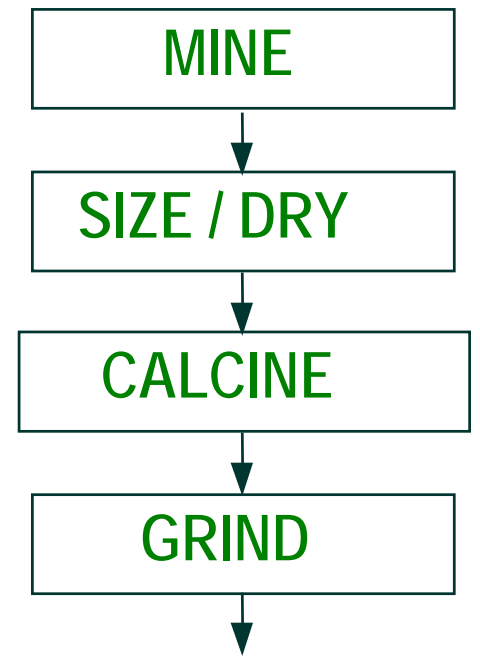


Know the Mineral...
Know the Manufacturing Process!

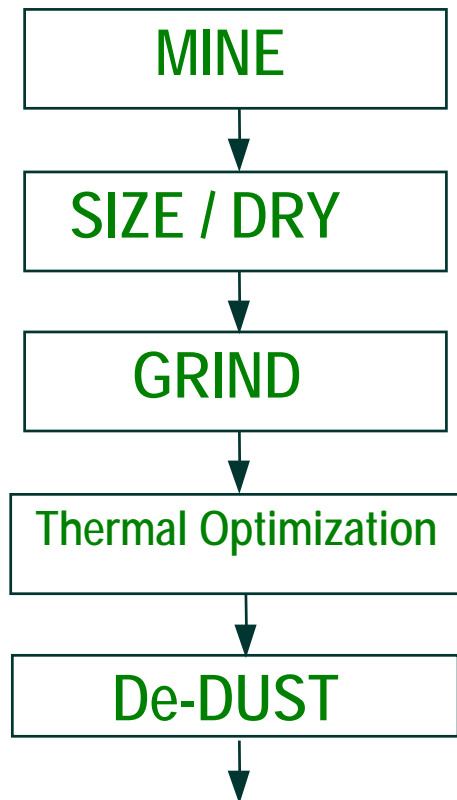
- To Choose a Product That is Optimized for Your Particular Sports Turf Application



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...

But There Are Others

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



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



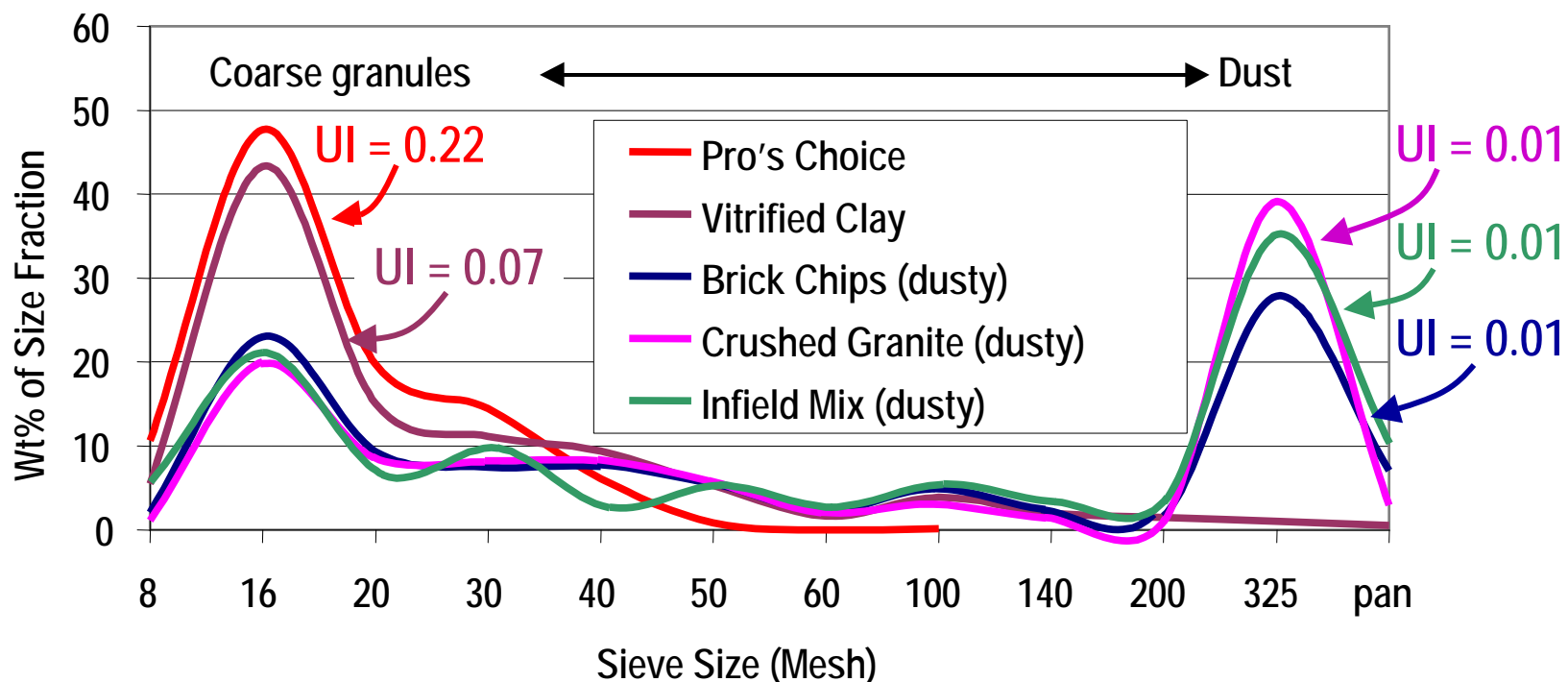
Sizing

- 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

Particle Size Distribution for Baseball Field Amendments





Hardness of Granules

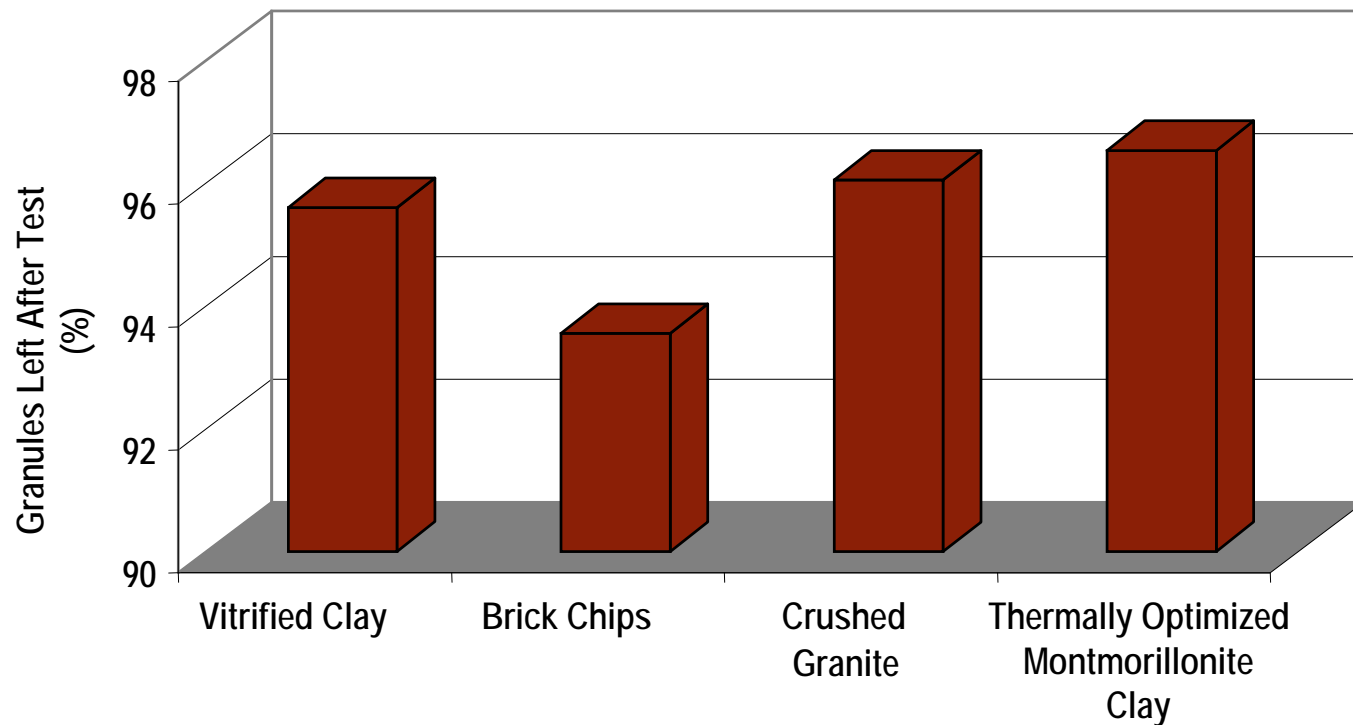
- Resistance to Attrition
- Dry Agitation Of Steel Balls Against Granules
- Related to Physical Abrasion as Would Happen in Top 1 - 2 inches of Playing Surface
- Equivalent to Heavy Traffic of People and Equipment
- This Is One Measure of Stability



Hardness

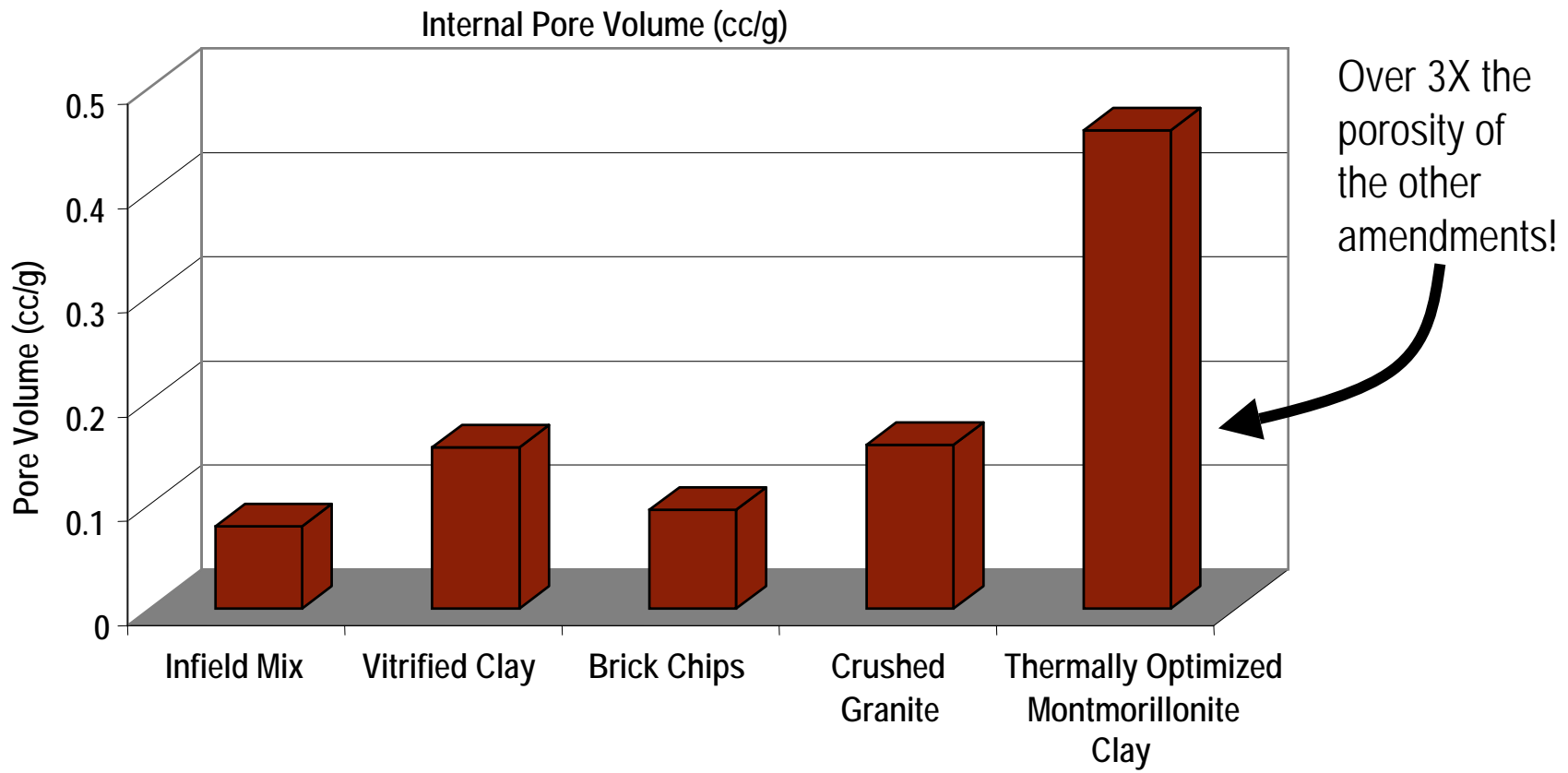
- All products exhibited excellent hardness

Hardness, % Resistance to Attrition



Internal Pore Volume

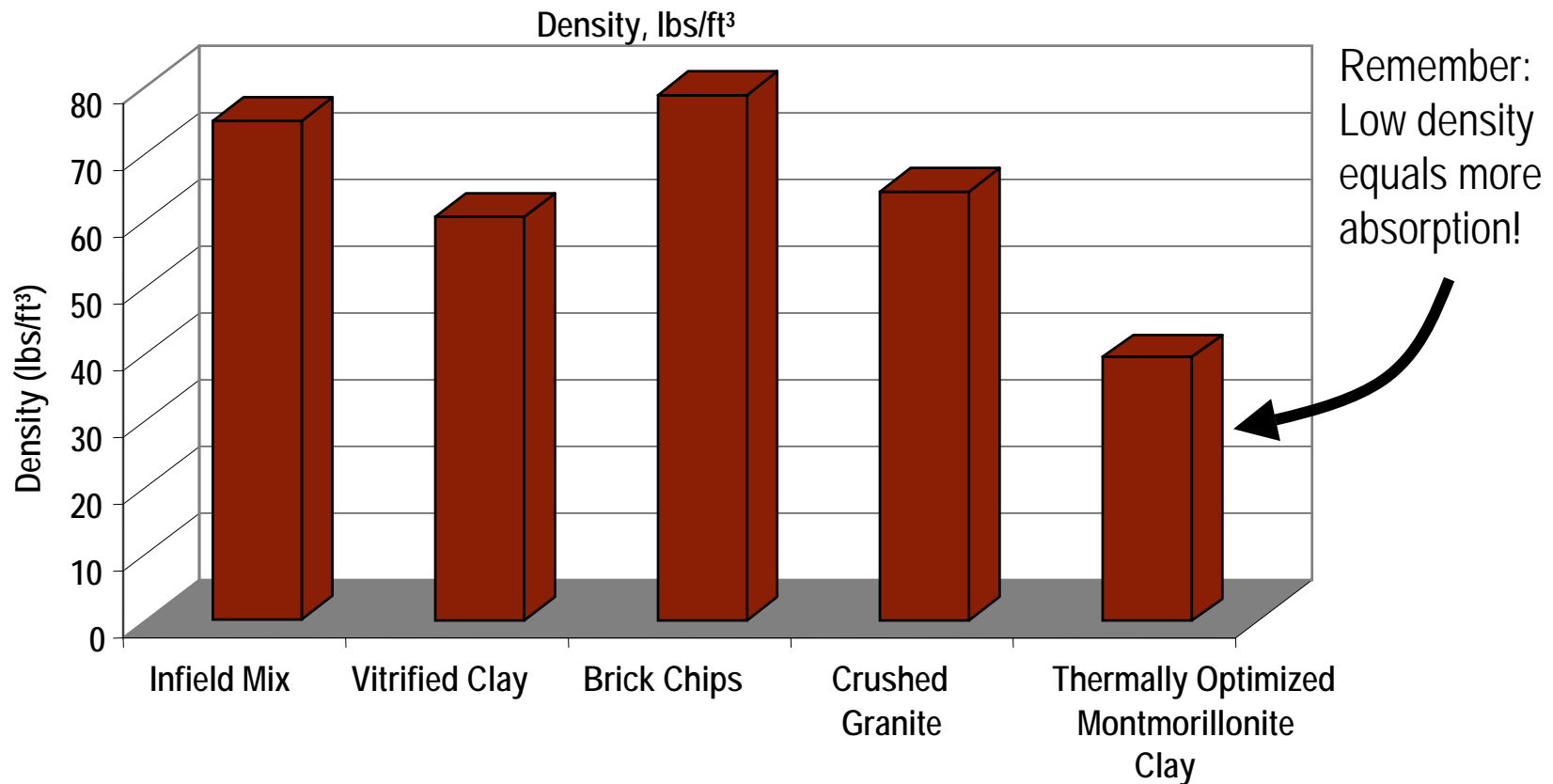
- More Porosity = More Absorption
- High Porosity Correlates With Low Density





Density

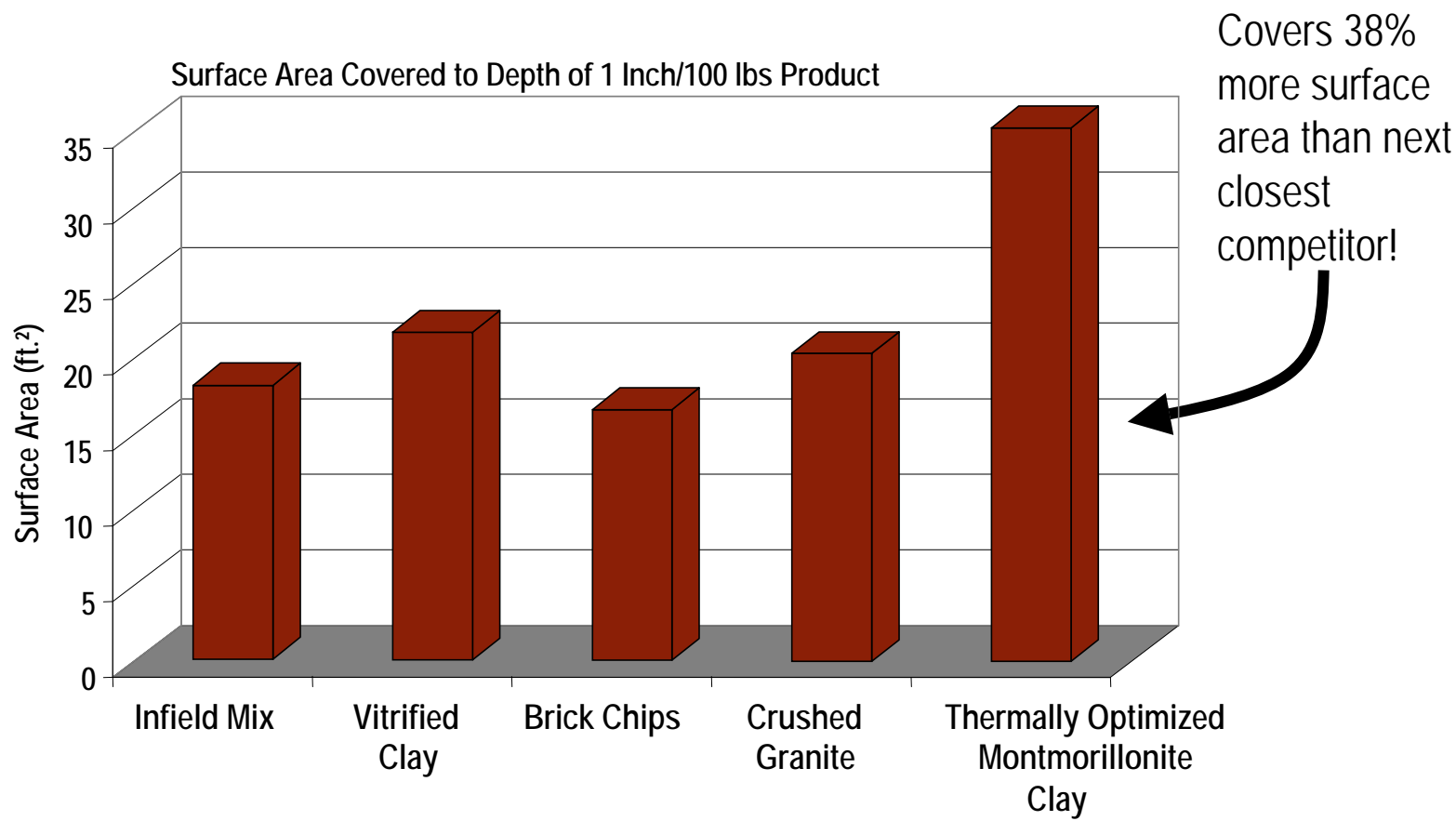
- Pounds per cubic foot
- Pound For Pound, thermally optimized Montmorillonite Clay is More Absorptive Because of Its Lower Density





Benefits of Low Density

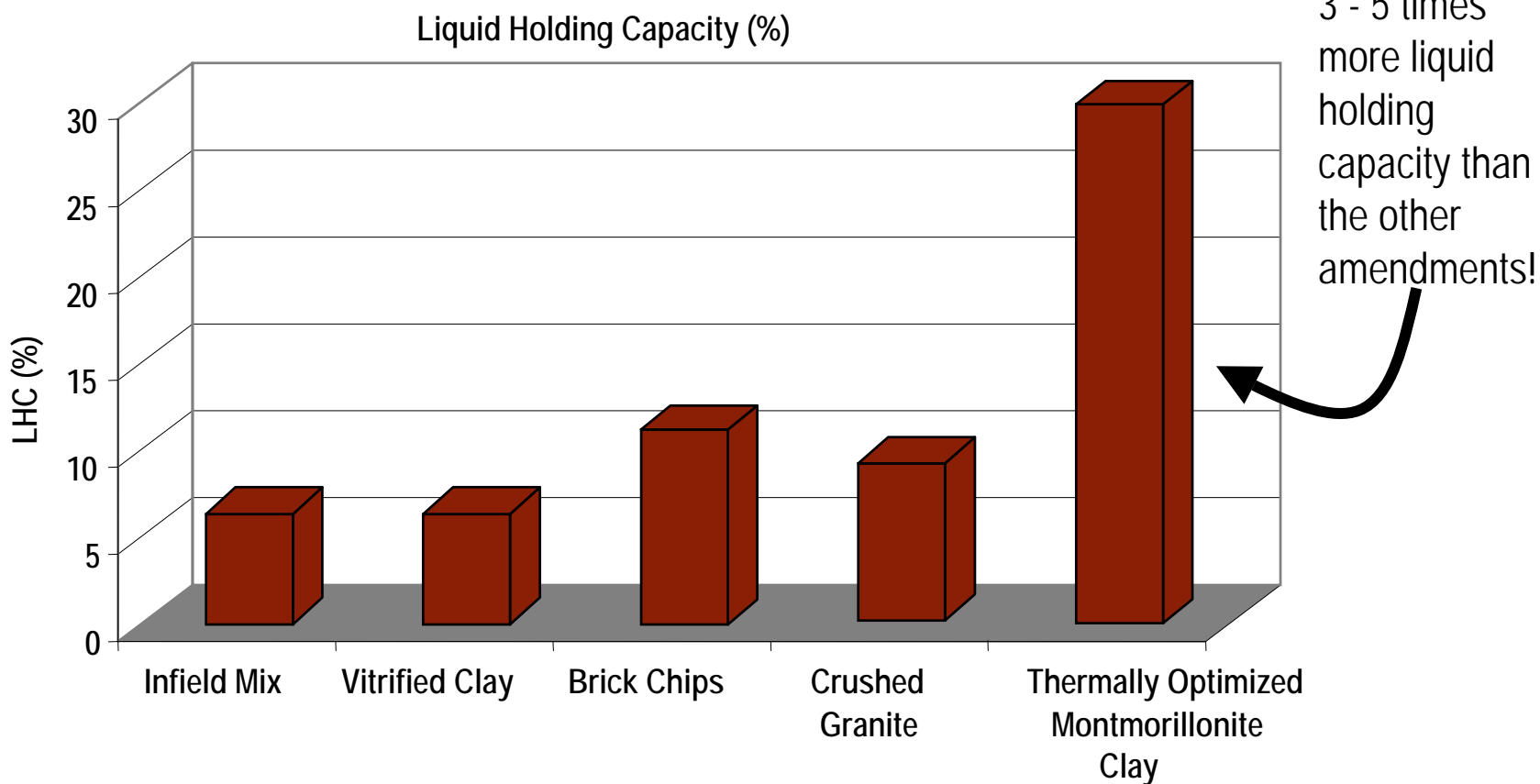
- Pound for Pound - Low Density Products Cover More Surface Area!





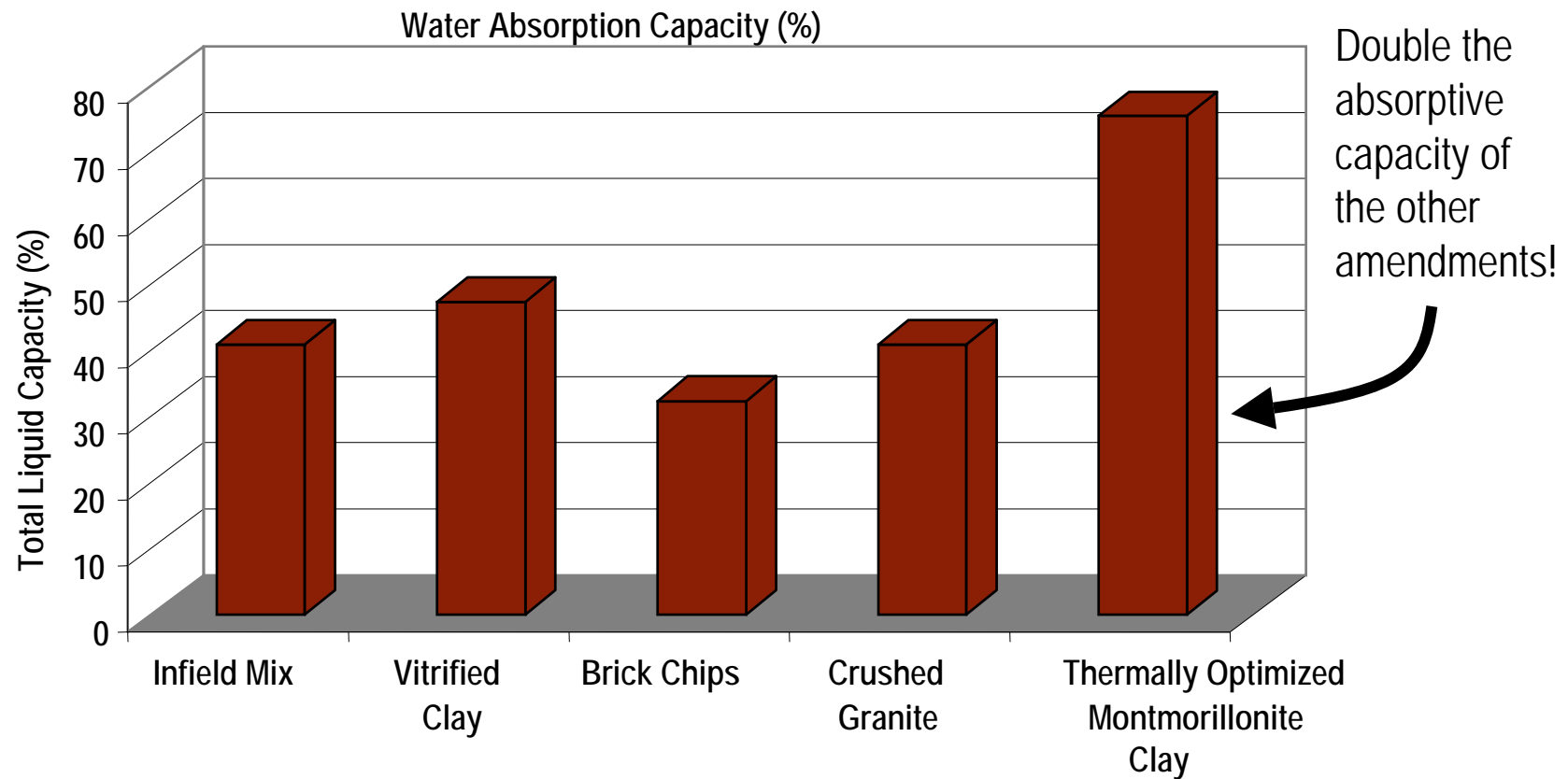
Liquid Holding Capacity

- 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	Turf MVP	Diamond Pro Calcined	Diamond Pro Vitrified Clay	Flexiclay	Playball	Fielder's Choice
Bulk density – Ohaus(lb.ft ³)	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)

