

Multi-Port[®] Gravity Blenders

The most efficient... and the most cost-efficient... blender on the market today. Patented gravity flow principle results in low cost operation, high performance, and virtually no maintenance. Superior blending of chips, cubes, flakes, granules, pellets, powders... *all dry bulk materials.*

 **YOUNG**

MULTI-PORT® GRAVITY BLENDERS

Young's Multi-Port Gravity Blenders are used widely for process applications in chemical, plastics, food and other industries. They maintain product consistency, combine different ingredients, and assure uniform distribution of additives. Mixes ingredients of different weights, bulks and shapes. Used for the initial blend and to combine grades or batches during process, and to eliminate segregation, weight or volume variations at packaging.

Multi-Port's efficient, fast and economical gravity blending process is applicable to all dry solid materials... powders to large pellets.

Young's Multi-Port Gravity Blenders are uniquely qualified in meeting the three critical blending requirements of today's process industry:

1 Close-Tolerance Blending—Tests indicate that Multi-Port will blend to within 5% statistical homogeneity on a single pass through the unit. Recycling will further reduce deviation to approximately 3% on the first recycle, and less than 2% on the second.

2 Speed of Operation—Multi-Port reduces the time of blending by as much as 60% over common types of equipment, while creating a superior end product. A single adjustment controls the speed of flow through the blending tubes at a rate best suited for the particular product blend.

3 Low Capital & Maintenance Costs—Multi-Port Blenders are economical to install with virtually no maintenance costs. They offer lower initial and operating costs than any other blender of equal capacity because there are no moving parts.

Operating costs are limited to the power requirements to load the blender, either mechanically or pneumatically. The same equipment used to load the blender can recycle the material, if required, and transfer the blend to a remote storage or use point. Equipment requires a minimum amount of floor space.

STYLE A—STORAGE BIN TYPE



STYLE B—HOPPER TYPE



MULTI-PORT BLENDING PROCESS

Equipment consists of a main blending vessel with a conical bottom. Blending tubes, varying in number, extend from selected levels around the circumference of the blending vessel to a blending chamber located below. Material flows by gravity through the blending tubes to the blending chamber. During the blending cycle, material is simultaneously removed from all levels and internal sectors of the bin and combined in the blending chamber.

Because of the strategic location of each blending tube, dead spots and rat-holing are eliminated. The tendency for ingredients to unmix, even with repeated cycling, is also eliminated.

If recycling is required, material is returned to the top of the blender. This process is repeated until the desired uniformity of blend is obtained.

A SIZE FOR EVERY APPLICATION

Units are available in standard size models from 15 to 5,000 cubic feet of working area, and up to virtually any size for custom applications. Unlike mechanical blenders,

size is not a limiting factor for Multi-Port Blenders. From the smallest blender at a packaging station... to giant gravity blenders used in industries where carload lots are processed.

Low - Storage Costs—Multi-Port Blenders are manufactured in carbon steel, epoxy coatings, stainless steel or aluminum. The storage tanks are suitable for outdoor use and can be sized to eliminate the need for separate storage structures.

Easy Conversion of Existing Storage Facilities—Most existing storage facilities can be converted into economical Multi-Port Gravity Blenders. Conversion units can be custom-designed by Young Engineers for your particular requirement.

FEATURES

- High Blending Efficiency
- Low Blending Time
- Blends All Dry Materials
- Low Initial Cost
- Low Maintenance Cost
- Meets FDA Requirements
- Gravity Flow—No Moving Parts
- Batch or Continuous Process
- Full range of sizes—15 to 5000 cu. ft.
- Low Cost Bulk Storage
- Minimum Floor Space Requirement
- Easy to Clean

*Built by The Young Industries, under DuPont license. Protected by U.S. and foreign patents.

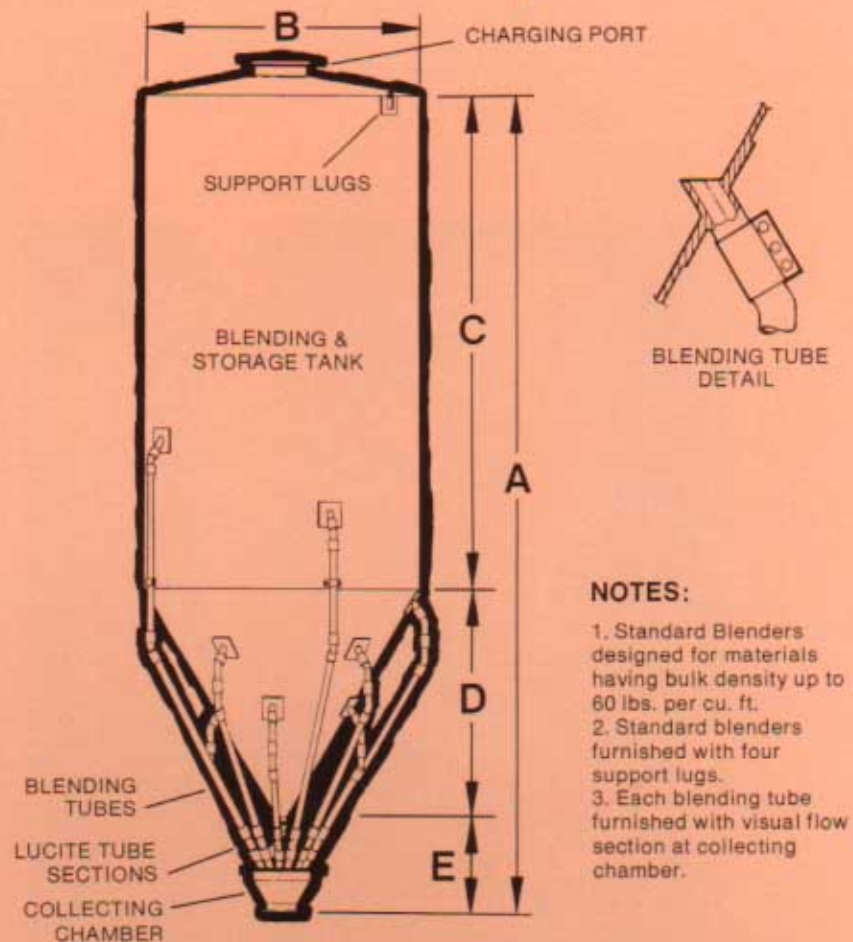
ENDERS

BATCH OR CONTINUOUS PROCESS

Batch Blending—(A) A single ingredient blended to level out variations within the batch; the Multi-Port Blender is filled; product is recycled until an acceptable blend is obtained; the blender is then emptied. (B) More than one ingredient: each is charged separately or simultaneously into the blender; the material is recycled; blended and discharged.

Continuous Blending—(A) No recycle: material is continuously conveyed into the blender, and a like amount is removed from the unit and conveyed to the next process step; blending is accomplished during removal and combining of material from the various sectors of the bin. (B) One Unit Recycling: The product to be blended is conveyed continuously into a Multi-Port Blender with a split-stream discharge; One stream is recycled back for additional blending; the second stream of the blended product is conveyed to the next process step. (C) Two Unit Recycling: The product to be blended is conveyed continuously into one Multi-Port Blender; while a second unit is being discharged.

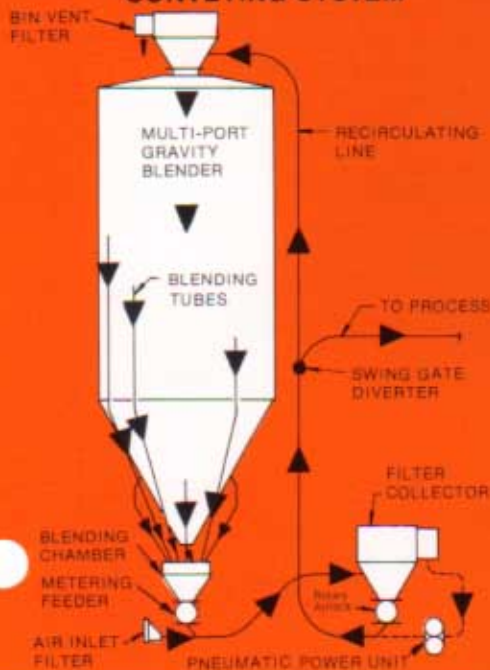
Dimensions and Specifications



NOTES:

1. Standard Blenders designed for materials having bulk density up to 60 lbs. per cu. ft.
2. Standard blenders furnished with four support lugs.
3. Each blending tube furnished with visual flow section at collecting chamber.

TYPICAL BLENDING & CONVEYING SYSTEM



Size (Working Capacity cubic ft.)	Dimensions				
	A	B	C	D	E
STYLE A—STORAGE BIN TYPE					
100	15'- 2"	4'-0"	8'-0"	3'- 6"	2'-10 $\frac{5}{8}$ "
200	16'- 7"	6'-0"	8'-0"	5'- 0"	2'-10 $\frac{5}{8}$ "
300	18'- 7"	6'-0"	10'-0"	5'- 0"	2'-10 $\frac{5}{8}$ "
400	22'- 7"	6'-0"	14'-0"	5'- 0"	2'-10 $\frac{5}{8}$ "
500	20'- 8"	8'-0"	10'-0"	6'-10"	2'-10 $\frac{5}{8}$ "
750	25'- 8"	8'-0"	15'-0"	6'-10"	2'-10 $\frac{5}{8}$ "
1000	25'- 9"	11'-0"	12'-0"	9'- 6"	3'- 3 $\frac{9}{16}$ "
1500	29'- 9"	11'-0"	16'-0"	9'- 6"	3'- 3 $\frac{9}{16}$ "
2000	34'- 3"	11'-0"	20'-0"	9'- 6"	3'- 9 $\frac{1}{2}$ "
2500	40'- 3"	11'-0"	20'-0"	9'- 6"	3'- 9 $\frac{1}{2}$ "
3000	46'- 3"	11'-0"	32'-0"	9'- 6"	3'- 9 $\frac{1}{2}$ "
3500	52'- 6"	11'-0"	38'-0"	9'- 6"	3'-11 $\frac{7}{8}$ "
4000	56'- 6"	11'-0"	42'-0"	9'- 6"	3'-11 $\frac{7}{8}$ "
5000	66'- 6"	11'-0"	52'-0"	9'- 6"	3'-11 $\frac{7}{8}$ "
STYLE B—HOPPER TYPE					
15	6'- 9 $\frac{1}{4}$ "	4'-0"	0'-6"	3'- 4"	2'-11 $\frac{1}{4}$ "
35	8'- 3 $\frac{1}{4}$ "	4'-0"	2'-0"	3'- 4"	2'-11 $\frac{1}{4}$ "
55	9'-10"	4'-6"	3'-2"	3'- 8 $\frac{3}{4}$ "	2'-11 $\frac{1}{4}$ "
75	11'- 0"	4'-6"	4'-4"	3'- 8 $\frac{3}{4}$ "	2'-11 $\frac{1}{4}$ "
100	11'- 2 $\frac{1}{4}$ "	6'-0"	3'-3"	5'- 0"	2'-11 $\frac{1}{4}$ "
150	13'- 8 $\frac{3}{4}$ "	6'-0"	4'-9"	5'- 0"	3'-11 $\frac{3}{4}$ "
200	15'- 8 $\frac{3}{4}$ "	6'-0"	6'-9"	5'- 0"	3'-11 $\frac{3}{4}$ "
300	19'- 2 $\frac{3}{4}$ "	6'-0"	10'-3"	5'- 0"	3'-11 $\frac{3}{4}$ "



YOUNG INDUSTRIES— TRUSTED FOR QUALITY

At Young Industries we take pride in our products and services to industry. We will be pleased to discuss your particular blending requirement and to show you how we have answered similar needs of other companies.

TYPICAL APPLICATIONS

Chemical & Process Industries—blending dry products and compounds for plastics, chemicals, cement, metal oxides and carbonates, petroleum coke, and others.

Food Industry—blending dry products and compounds for beverages, food, soups, desserts, sugar, cornstarch, salt and others.

Grain & Milling Industry—blending dry products and compounds for feed, seed stock, grains, flour, and others.

Young is an in-depth manufacturer of air pollution and process equipment—dust filters and product collectors, rotary feeder valves, pneumatic conveying systems, sifters, ribbon mixers, knife cutters, pressure tanks, valves and blowers.

May we hear from you... your inquiry will be answered promptly.

TEST BLENDERS AVAILABLE

Young Industries maintains 15 and 100 cubic feet test gravity blenders at our company headquarters in Muncy, Pennsylvania. Blending tests on your product can be made for a nominal fee.

THE
YOUNG
INDUSTRIES, INC.
MUNCY, PENNSYLVANIA 17758
TELEPHONE: 570-548-3185

YOUNG PRODUCTS IN ACTION!

THE YOUNG INDUSTRIES, INC., MUNCY, PENNSYLVANIA 17756 □ 717-546-3165

ROHM AND HAAS APPLIES YOUNG MULTI-PORT® BLENDER FOR UNIFORM BLEND OF ACRYLIC PELLETS

The Bristol plant of Rohm and Haas Delaware Valley Inc. in Bristol, Pennsylvania, is a leading producer of acrylic plastic molding resin. Plexiglas, which is Rohm and Haas trademark for its acrylic plastic molding resin, is produced for bulk shipment to their customers in pellet form. A number of grades are offered to satisfy the physical property requirements of the many uses of Plexiglas acrylic molding resins.

PROBLEM

In the production of the pellets, process variations caused some differences in principal properties of the product. Rohm and Haas required a cost-efficient blending system to elimin-



Rohm and Haas Plexiglas acrylic plastic molding pellets.

ate this variation to assure their customers uniform product quality.

SOLUTION

Rohm and Haas specified a Multi-Port Gravity Blender with a 1500 cu. ft. working capacity. Ideally suited to free flowing materials such as the Plexiglas acrylic pellets, the Multi-Port Gravity Blender provides close-tolerance, high-speed blending. The stainless steel unit is of dust-tight, weather proof all-welded construction. Its smooth interior reduces product hang-up and eases cleaning. A rotary impact water spray washing system automates the cleaning of the unit.



The blending chamber consists of a receiving chamber with a solid flow equalizing valve.

The 1500 cubic foot Multi-Port Gravity Blender achieves uniform mixing of the product by simultaneously removing the material from the blending bin.



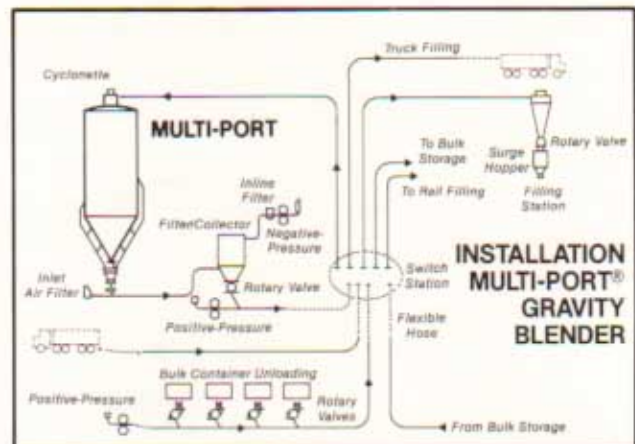
The 4" O.D. blending tubes are connected to the circumference of the blending bin at various levels. The blending tubes are complete with formed elbows, Morris type compression couplings and sight glasses.

Young Industries' Pneumatic Conveying Systems are used to fill, recirculate and transfer the material from the Multi-Port Gravity Blender. The unit is filled by a positive-pressure pneumatic conveying system from customer's bulk containers. A negative-pressure pneumatic conveying system conveys the product from the Multi-Port Gravity Blender to a "Uni-Cage" Filter Collector located over and discharging into a positive-pressure pneumatic conveying line. The product is then conveyed by positive pressure to a 5 position manual switch station which can recycle the product to the top of the blender or transfer the pellets to a truck unloading station, bulk storage or railcar filling station.

RESULTS

The Young Multi-Port Gravity Blender has helped assure uniform product quality, and has provided Rohm and Haas with fast, close-tolerance blending and efficient bulk materials handling. The complete installation has low operating cost, requires minimum maintenance and is easy to clean.

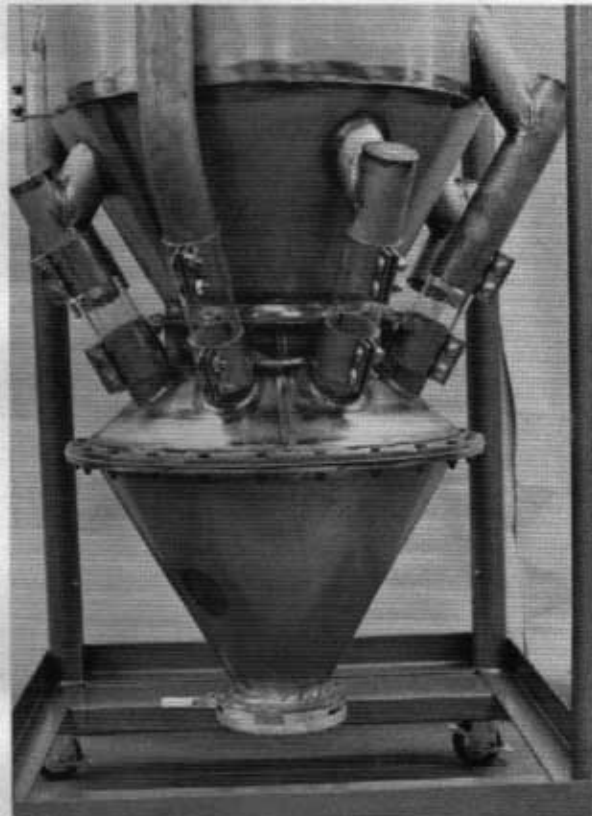
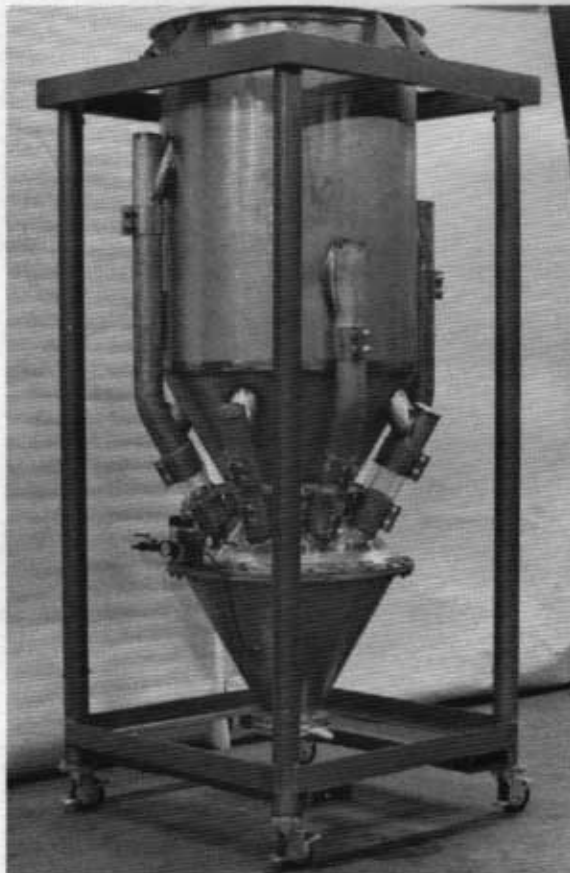
For additional information on the Young Industries' Multi-Port Gravity Blender please request Bulletin Number 842-202.



Schematic arrangement of Multi-Port Gravity Blending System.

MULTI-PORT GRAVITY BLENDER
MODEL MP II*

The second generation multi-port gravity blender is now available. The Model MP II Gravity Blender incorporates a blending chamber which is close coupled to the gravity blending bin cone. This arrangement provides increased working capacity in less space. The blending tubes are connected to the cylinder section with transition sections. This allows the material to expand and provides better flow in the blending tubes. The blending chamber is furnished complete with an interior cone which can be vibrated for handling materials with sluggish flow characteristics. The cone is designed as a flow control valve and shut off valve allowing the unit to provide true single pass blending.



The blending chamber is also complete with static blending elements which produce materials with a very high degree of homogeneity.

The unit can be furnished in carbon steel, epoxy coated carbon steel, stainless steel or aluminum. **The Model MP II Multi-Port Gravity Blender can be furnished as a conversion unit to convert your existing storage silos.**

* Patents applied for — Protected by U.S. and foreign patents.

MULTI-PORT® GRAVITY BLENDER ELIMINATES VARIATIONS IN PRODUCT COLOR

A leading user of polyethylene resin is using a "Multi-Port" Gravity Blender to blend and store pellets. The pellets as received vary in color intensity which causes shading in the final product.

The material is unloaded from railroad cars by a Young Industries "TransVair" Pneumatic Conveying System. The mat'l is stored in the gravity blender until required for processing.



The "Multi-Port" Gravity Blender was installed in place of an existing holding bin. The new unit now blends material continuously to a high degree of product homogeneity. The material discharges into a "TransVair" Pneumatic Conveying System which includes a Swing Gate Diverter Valve so that the mat'l can be recirculated for additional blending, or transferred to the process use point.

A TOTALLY NEW MULTI-PORT® GRAVITY BLENDER

The new Multi-Port® Gravity Blender provides superior blending of dry bulk materials, blending different weights, densities, and shapes of product. Young Industries' patented gravity flow principle results in low cost operation, high performance, and virtually no maintenance costs.

The Multi-Port Gravity Blender consists of a main blending vessel with a conical bottom. Blending tubes of various numbers, depending upon the material to be blended, extend from selected levels around the circumference of the unit to a blending chamber located below.

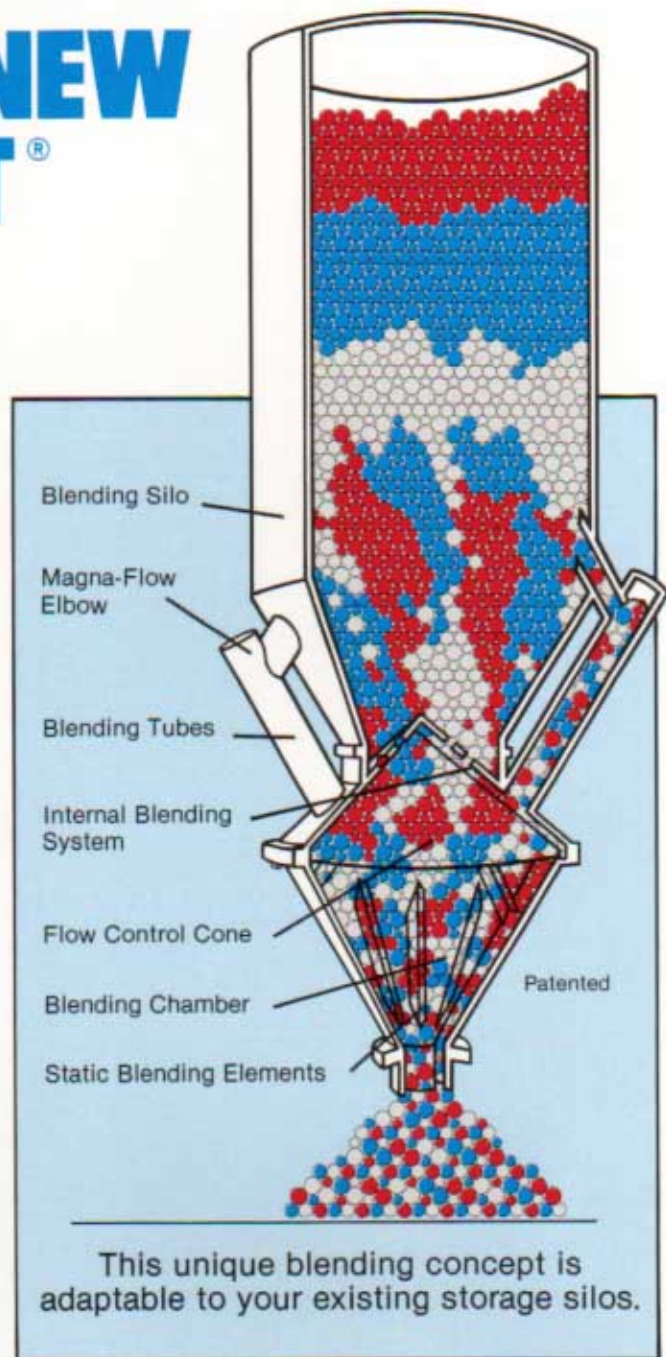
The shape of the blending tubes introduces aeration of the product. Aeration prevents compression of the product at bends and elbows, resulting in a better blended product.

An interior cone, designed to act as a flow control valve and as a shut-off valve, can be vibrated to handle those materials that do not flow readily.

Within the blending chamber, static blending elements further increase the efficiency of the blend on a single pass through the unit. Homogeneity is provided from the very start of the run.

The time of operation is reduced through elimination of the "start-up heel." Innovations within the blending chamber make this possible.

This new blender design will process materials as diverse as chips, cubes, flakes, granules, pellets, and powders...in short, dry bulk materials.



This unique blending concept is adaptable to your existing storage silos.

Young Industries' new Multi-Port Gravity Blenders meet the critical requirements of today's process industry: homogeneity of product, high flow rate, single-pass blend processing, low capital investment, and virtually no maintenance costs.

THE
Young®
INDUSTRIES, INC.

P.O. BOX 30 ■ MUNCY, PA 17756-0030

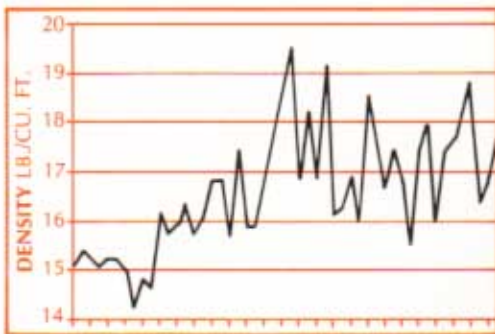
For Fast Information: Call (717)546-3165 • FAX (717)546-1889

PROBLEM: overfill/product giveaway...
due to weight variations in package filling. This occurs because of product segregation in your material handling system.

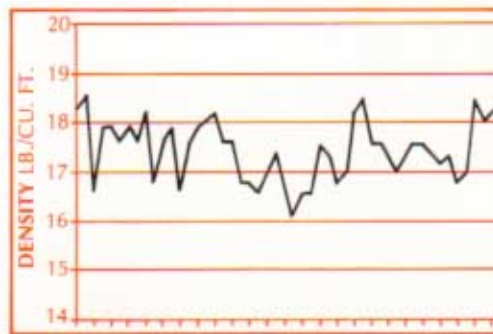
SOLUTION: the Multi-Port® Gravity Blender
The Multi-Port's thorough blending reduces weight variation, for more accurate volumetric filling.

Reduces overfill by as much as 50%

The graphs below show "Before" and "After" trends for one user. Depending upon product cost, user savings can be substantial. On many applications, the Multi-Port's cost can be amortized within two weeks.



Before using Multi-Port Gravity Blender



After using Multi-Port Gravity Blender
Overfill reduced by 50%

Blends any dry, free-flowing product

The Multi-Port is especially good for fragile materials, and for blending ingredients of varying characteristics.

Typical Applications

soluble coffee
freeze-dried coffee
agglomerated coffee
instant tea
powdered milk products
bread crumbs

gelatins
biscuit mixes
cereals
dry salad dressings
dry soup mixes
dry dessert mixes

Blends products in chip, cube, flake, agglomerated, granular, pellet, and powdered forms.

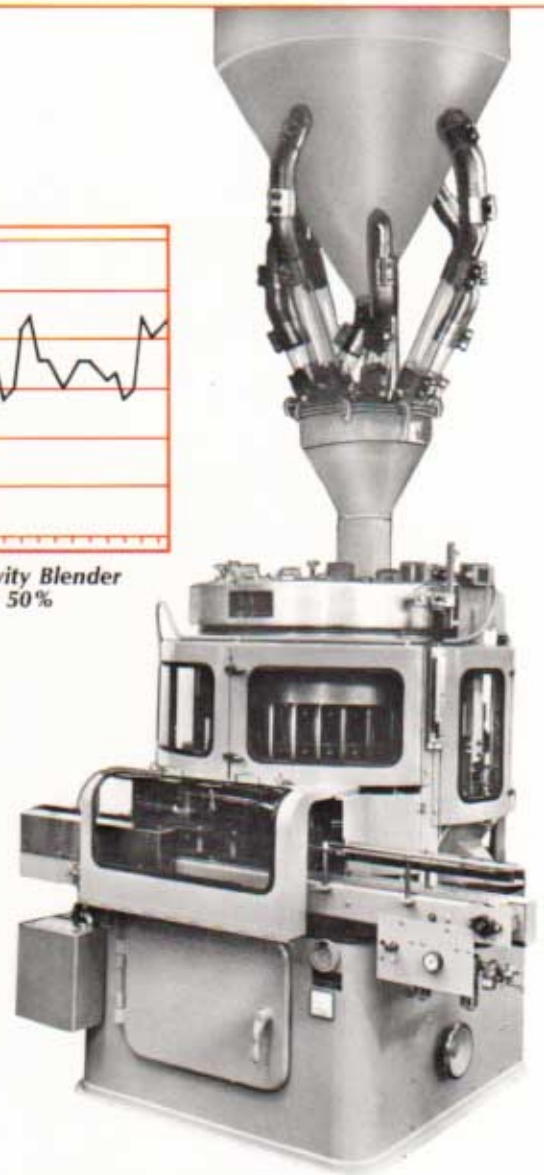
Virtually no maintenance

The Multi-Port has no moving parts or internal obstructions to clean or maintain. External tubes draw product from all levels simultaneously. Blending occurs in a patented blending chamber. Because it blends by gravity, **Multi-Port uses no energy.**

Available to meet both FDA and 3-A Dairy requirements

Choose construction of stainless steel, aluminum, carbon steel, epoxy coatings. Standard working sizes from 15 to 300 cu. ft., with larger models to your needs.

Reduce overfill and save money on valuable product.



Multi-Port Gravity Blender, shown with volumetric filling machine. (Photo courtesy of Nalbach Engineering.)

Call or write for complete information:
Muncy, Pennsylvania 17756 • 570/546-3165.
Ask for Bill Mahoney.

Gravity flow blender refines coffee bean operation

A multi-port gravity flow blending unit has perked up the coffee bean blending operation at the Old Judge Coffee Co. in St. Louis. The blender combines fast, efficient gravity blending with ease of operation to produce a uniformly blended product. The 74-employee Old Judge Coffee Co. is a division of Chock Full O'Nuts Corp.

Prior to blending, coffee beans are roasted to light, intermediate, and dark roast. The three roasts of beans are then blended proportionally to match specific product requirements. The blend ratio determines the final strength of the coffee.

The gravity blending unit consists of the main blending vessel with a conical hopper. Blending tubes, constructed of T-304 stainless steel, extend from selected levels around the circumference of the blending vessel and terminate in the carbon steel, epoxy-coated blending chamber. The blending chamber is complete with a static flow control valve. A single adjustment controls the speed of flow through the blending tubes at a rate suited for the particular application. The product is blended as it is discharged. The 4-1/2-ft.-diameter, 11-ft.-tall unit has 75 cu. ft. of working capacity.

The Old Judge plant blends 25,000 lbs. of coffee beans per shift for the two shifts that the plant operates. A 1,500- to 1,700-lb. batch of coffee is weighed and conveyed to the blender. The unit blends as fast as the material handling elevator can take the blended beans away to the grinders. Typically, a 1,500-lb. batch takes five to ten minutes to blend. The blender has a throughput capacity of 6,000 lbs. per hour.

No moving parts

Although there are no specific figures available regarding cost benefits, plant manager Ed Henke has no doubts that the unit offers savings.

"Maintenance costs have been all but eliminated due to the fact that there has been virtually no maintenance on the blender. It also offers a big advantage in that there are no moving parts. This means that there is

is nothing to wear out," says Henke.

Operating costs for the blender are limited to the power requirements to load the blender, either mechanically or pneumatically. The same equipment used to load the blender can transfer the blend to a remote storage or use point.

"The unit does a thorough job of blending in a very short time. And," adds Henke, "there is less product damage than one would get from a horizontal blender."

This type of blending has traditionally been performed in horizontal mixers, which have several disadvantages: high initial expense; high operating cost because of the motor operation and starting power requirements; and high maintenance costs. Also, the rotating agitator presents a potential safety hazard while increasing the plant noise level. The multi-port gravity blender solves all of these problems.

The multi-port gravity blender can be used as a batch or continuous blending system. The equipment, which also serves as a storage unit for supplying the plant's coffee grinding equipment, requires minimal floor space and has low installation costs—approximately 36% less than a comparable horizontal blender. Unlike horizontal blenders, the multi-port blender is easy to clean and leaves no residue after each blending operation.

Close-tolerance blending of all dry bulk materials—chips, cubes, flakes, granules, powders—can be accomplished quickly and efficiently. Tests indicate that the unit will blend to within 5% statistical homogeneity on a single pass through the unit.

The blender is available in units from 15- through 25,000-cu.-ft. capacity. The multi-port blenders are available as enclosed, storage bin-type units, or as a hopper-type unit. Standard blenders are designed for materials having bulk density up to 60 lbs. per cu. ft. Each blending tube is furnished with a visual flow section at the collecting chamber. A multi-port gravity blender has been used to blend a variety of food products—instant



Dave Blankenship, quality control manager, standing next to 75-cu.-ft. capacity multi-port gravity flow blender.

coffee, croutons and crouton mixes, and nondairy creamer.

The Young Industries.

Circle 203 opposite last page.