

NOTICE

OR CHANGES IN THIS LEAD BE INITIALED
AND DATED, so that those following on
the routing know whom to contact for
further clarification.

DATE: October 31, 1980

IN TURN:

DATE RECEIVED INITIALS APPROVED DATE

*J. G. Dickinson, C&P, Chestnut Run		JGD	11/6/80
J. A. Lamiet, C&P, Chestnut Run		JAL	11/17/80
H. W. Ling, C&P, Chestnut Run		HWL	11/18/80
W. W. Greer, C&P, B-17274		WWG	11/24/80
J. D. Travis, C&P, B-17272		JDT	11/24/80
T. A. Bartolec, C&P, B-17276		TAB	11/25/80
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APPROVAL REQUEST
TECHNICAL LITERATURE

Please approve the attached publication. Any comments and/or changes to this publication must be signed and dated. See note below.

TITLE: Railcar Unloading Procedures for Ti-Pure® TiO₂ Slurry

PURPOSE: Revision and replacemnt of stock.

Those whose name follow the asterisk () above certify that the product and performance claims contained in subject material are accurate and that the files of the Chemicals and Pigments Department contain data to support the claims. They further certify that any claims attributed to non-Du Pont sources are consistent with our knowledge and experience.

NOTES: Extra copy for J. G. Dickinson attached.

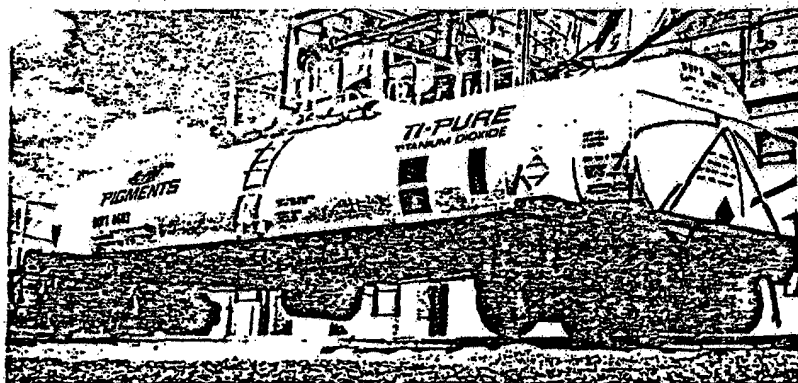
Railcar Unloading Procedures for TI-PURE® TiO_2 Slurry

TITANIUM DIOXIDE

Du Pont owns and operates the largest slurry rail fleet in the world. The fleet is specifically designed for handling TiO_2 slurry, and is constantly being expanded to meet our customers' needs.

This booklet describes the unloading procedure for our railcars that will minimize the time and effort required, taking full advantage of the unique design features of our slurry cars. In addition, our team of product specialists are available to advise in the design of slurry unloading and handling equipment, and to answer any questions on slurry handling procedures.

A typical system is shown in Figure I. Detailed procedures follow.



Safety

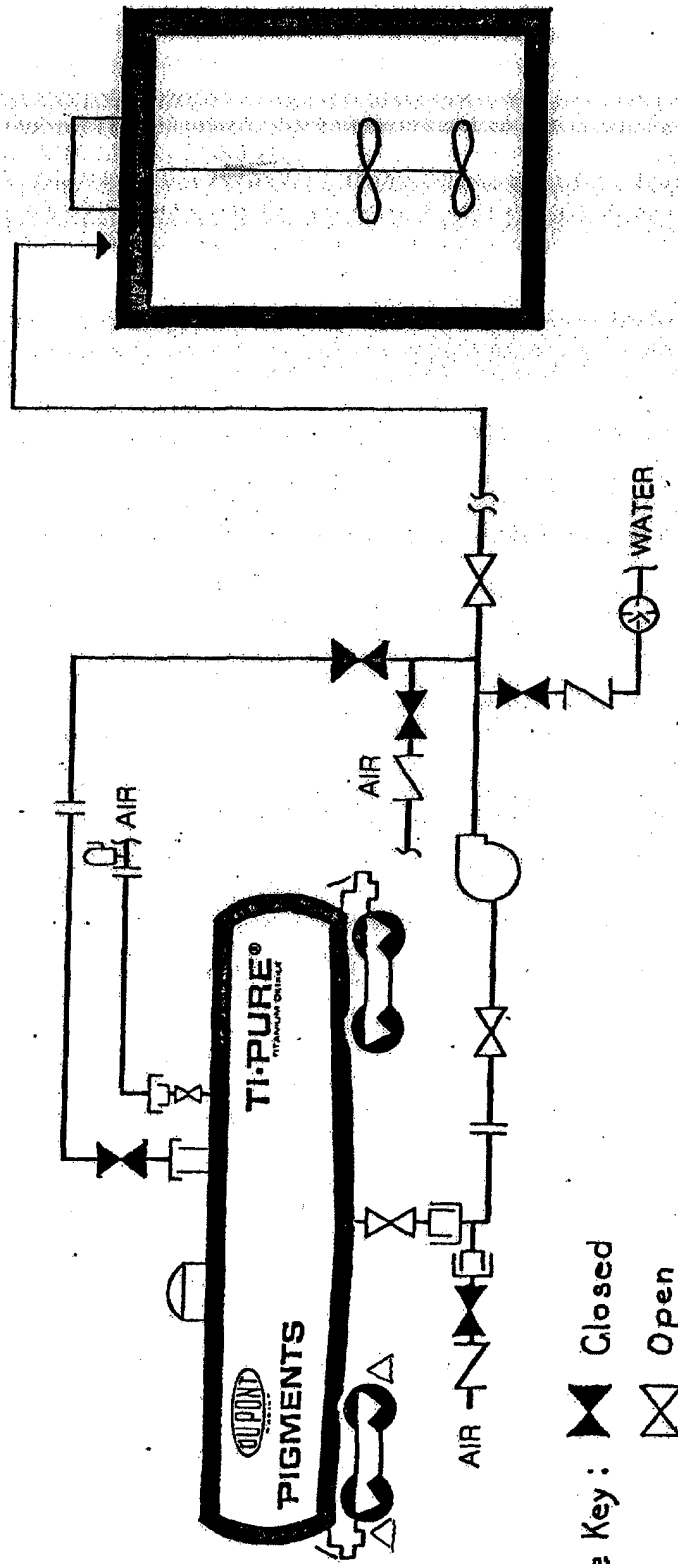
) red

In Du Pont tests, dusts of titanium dioxide produced a response in the lungs of rats comparable to the effects given by inert or nuisance dusts.

Titanium dioxide is regulated as an air contaminant by the U. S. Department of Labor (OSHA) under Title 29 CFR 1910.1000. OSHA has ruled that an employee's exposure to titanium dioxide in any eight-hour work shift of a forty-hour week shall not exceed a Time-Weighted Average of 15 mg/m³ in air.^b

The American Conference of Governmental Industrial Hygienists (ACGIH) classifies titanium dioxide as a nuisance dust and recommends a Threshold Limit Value, TLV[®], of 10 mg/m³ total dust or 5 mg/m³ respirable dust. Du Pont has elected to observe the ACGIH limit.

**Unloading Procedures
for
DUPX Slurry Cars
with Threaded Product
Outlet Dust Caps**

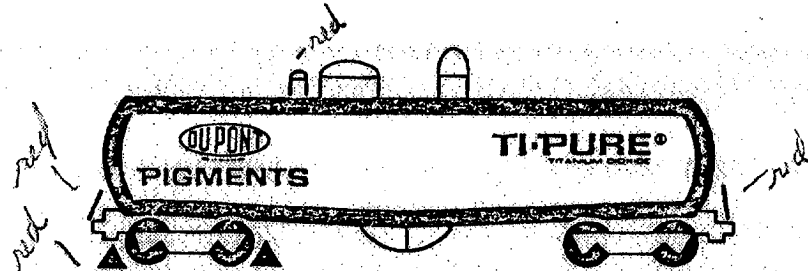


Valve Key :  Closed
 Open

Typical Slurry Unloading System for Railcar Receipt

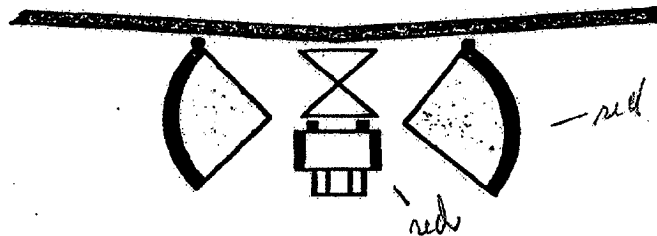
DETAILED UNLOADING PROCEDURES

I Car Hookup



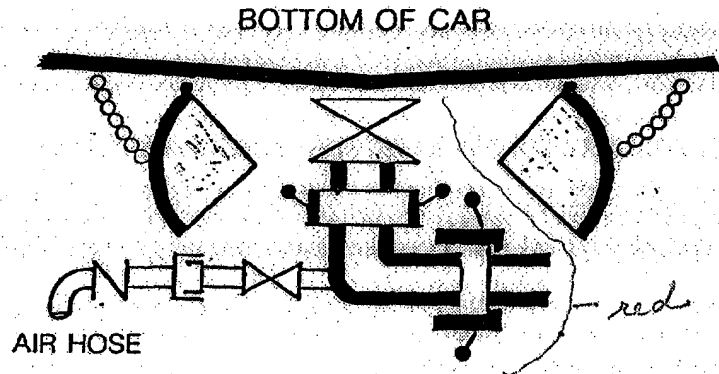
- red* (1) Secure car. Use wheel chocks to prevent movement during unloading. Signs should be posted at each end of car indicating "TANK CAR CONNECTED—DO NOT MOVE."
- red* (2) Inspect car for damage. Anything unusual should be reported to the Du Pont salesman or sales office, (including broken seals on top and bottom of car). Inspect pressure relief device on top of car.

BOTTOM OF CAR



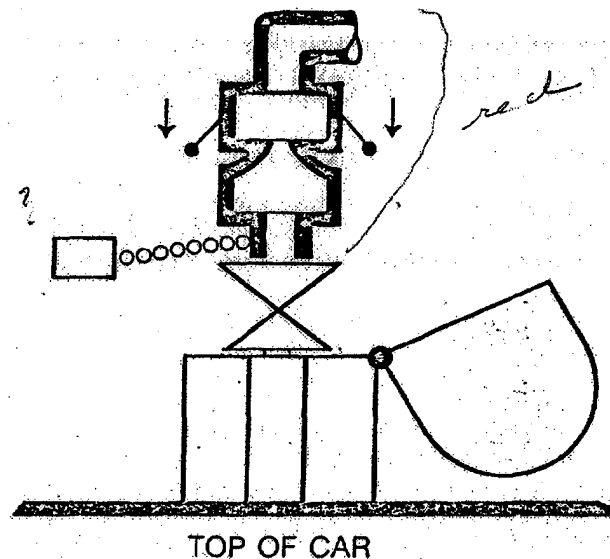
- red* (3) Remove seal and open housing around valve and discharge outlet on bottom of car. Dust cap on discharge outlet should be removed with a 2" open end wrench.

I Car Hookup (Con't.)



- red* (4) ^{unloading} Connect hose. The car is equipped with a 4" male adapter coupling to fit "Evertite" or "Kamlock" connections. The hook-up is much easier if first a 4" 90° elbow is attached to the car and the unloading hose is then coupled to the elbow. Make sure the quick connects are securely fastened. It is a good idea to secure the "arms" on the coupling with wire to prevent parting during unloading.
- red* (5) ^{discharge} Connect air line. The elbow should be equipped with a ^{valved} air hose connection.

I Car Hookup (Con't.)

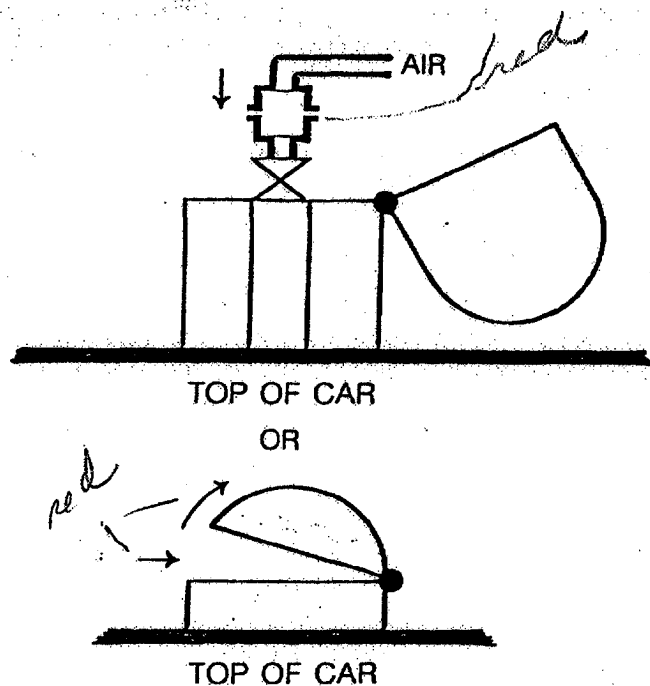


red (**6** Remove seal from recirculation line enclosure (on top of car) and open cover. Remove dust cap from recirculation line. Open ball valve (located below the quick-connect fitting) very slowly and make sure car is not pressurized.

red (**7** Connect recirculation hose. The car is fitted with a male 3" adapter coupling to fit "Evertite" or "Kamlock" connections. Again, it is advisable to wire the "arms" down to prevent parting during unloading.

Remove the cap from the air line fitting and open the valve slowly to relieve any car pressure or vacuum.

I Car Hookup (Con't.)



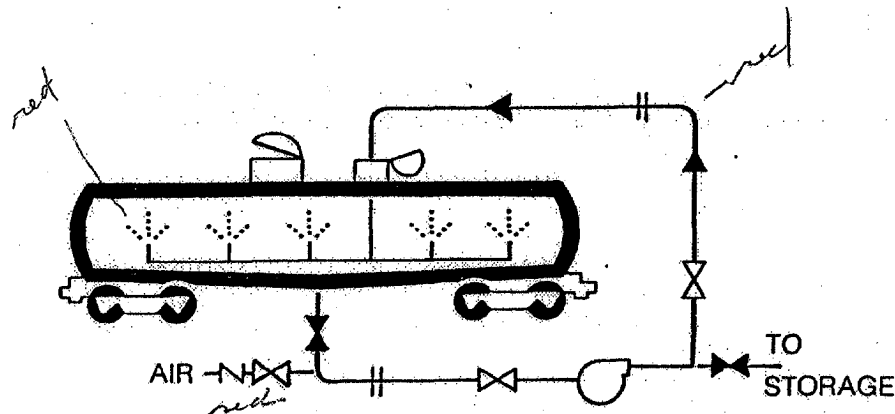
red **8** The car may be unloaded using ^{either} a pump ^{or air} alone, or with a combination of air pressure and a pump*. The car can be pressurized to a maximum of 70 psig. (75 psig Rupture Disc Vent)

If air is to be used, connect the hose from a regulated supply to the car's air line (on top of the car). A pressure relief device must be installed in the air line, set to relieve if the air pressure exceeds 70 psig. The car is equipped with a Chicago coupling, and has a ball valve immediately below the connection.

Remove seal and unbolt the dome hatch, prop open slightly to allow air to enter the hatch during unloading. The hatch should be open only during unloading or mixing. Leaving the cover open for extended periods of time may result in moisture loss from the car, causing dry pigment flakes and grit.

*It is very difficult to empty a car completely using air pressure alone, as recirculation is impossible with that arrangement. For this reason, unloading using only air pressure is not recommended. Using air pressure to "force-feed" the unloading pump will generally result in faster unloading than using a pump alone.

II Car Mixing: Air Sparge*



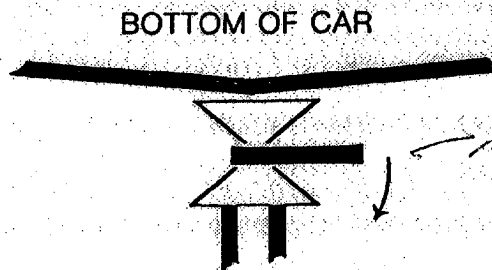
9 Open the pump suction valve, and recirculation valve and close the storage valve to direct air flow to the recirculation header.

10 Sparge for 5-10 minutes only. (Longer sparging runs the risk of drying out pigment in the pipes and producing hard grit particles.)

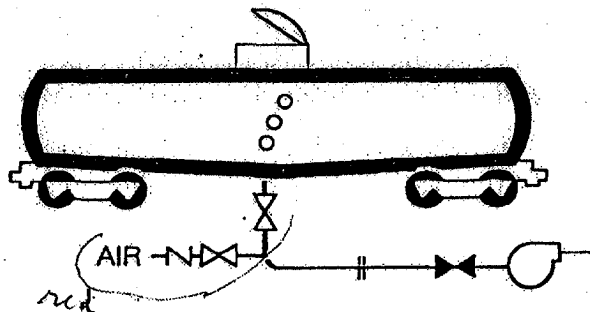
*If the car cannot be unloaded when received, it should be sparged per step 10 about once a week to avoid excess settled pigment. For convenience an air hose adapter connection for the 3" recirculation fitting on top of the car can be used. Settling is not usually a problem with cars unloaded within a month of filling, but over longer periods excess settled pigment may hinder initial flow and make complete unloading difficult.

II Car Mixing (Con't.)

red
11a. Close valve at the pump suction.

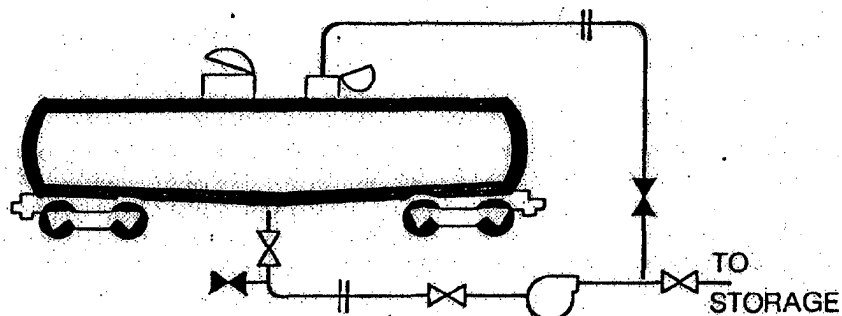


red
11b. Open ball valve underneath car by turning ^{the handle} 90° (This is the only discharge valve on car.)



red
12. Blow air through the valve discharge ^{valve} for 5-10 seconds. This will clear any material that may have settled into the outlet during transit.

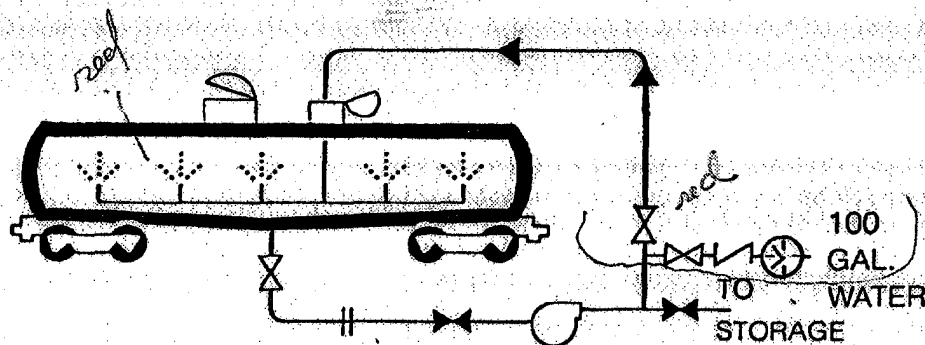
III Car Unloading



red (13 Begin unloading car. Close the recirculation valve, open the pump suction and direct flow to storage tank. If air pressure is to be used to assist flow close the dome hatch and pressurize the car through the top air line connection.

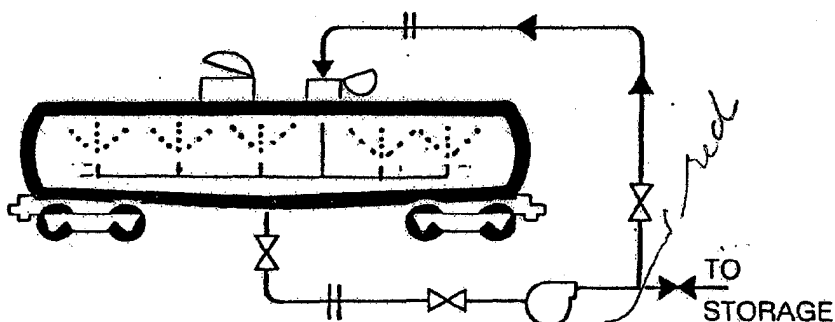
red (14 Pump slurry until car runs empty.

IV Car Washing



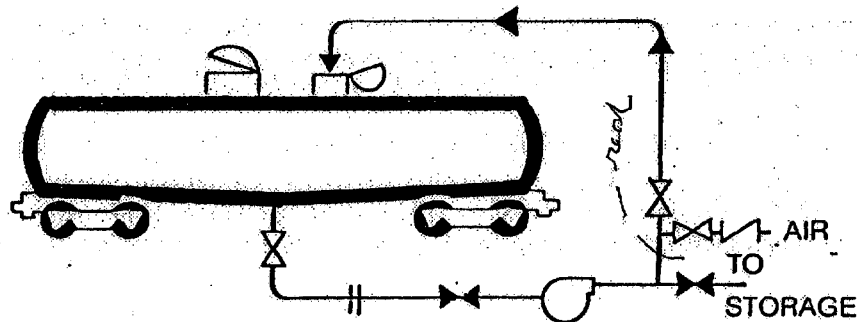
15 Close valve to storage tank, open recirculation valve, close pump suction valve. Add 100 gallons or more of water through the recirculation line. (100 gallons of water will reduce the slurry solids concentration in the storage tank by approximately 0.3%)

Use only clean water. Process water contaminated with vehicles, biocides, etc. should not be used. For systems using air pressure in the car, it may be necessary to depressurize car to allow water addition (if water pressure is lower than car pressure).

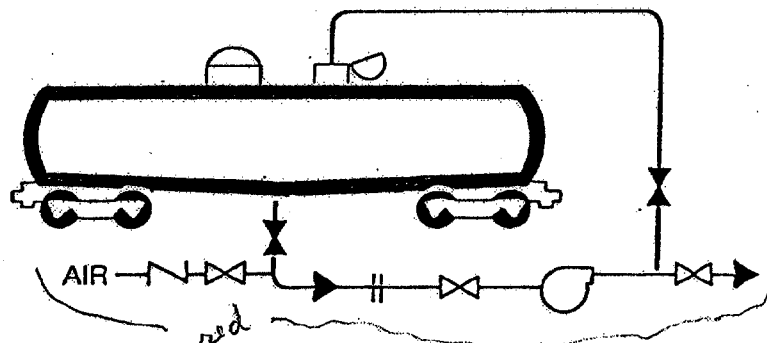


16 Recirculate for 30 minutes to flush down residual slurry.

IV Car Washing (Con't.)

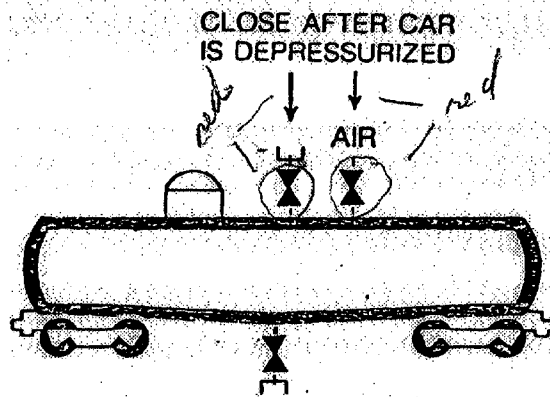


- red* **17** Blow recirculation lines clean with air (into car).
red **18** Pump car empty to storage tank. (Valves set as in steps 13-14.)



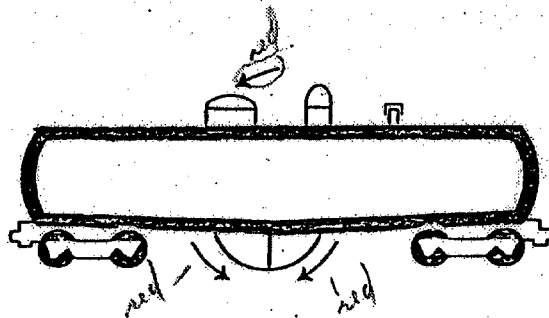
- red* **19** Close ^{car}unloading valve and blow contents of hose and discharge line into storage tank with air. This will clear all hoses and minimize spillage when disconnecting lines.

V. Car Closeup



red / **20** (Make sure car is depressurized) · Close all valves on car.

red / **21** Disconnect all hoses.



red / **22** Replace dust caps and secure dome hatch and outlet housing.



This brochure is for guidance in handling titanium dioxide slurry. Each instruction and all technical information are rendered by the Du Pont Company gratis. The brochure is based on information believed to be reliable by the Du Pont Company and is intended for use by persons having skill and know-how. It is not all-inclusive and suitability of the practices described for any particular situation should be confirmed by the user. The instructions contained in this bulletin are given and accepted at the user's risk, and the Du Pont Company makes no guarantee of results and assumes no responsibility for results obtained or damages incurred from their use in whole or in part. This publication is not to be taken as a license to operate under or recommendation to infringe any patents.