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Glass—Enamel—Pottery

CERAMIC INDUSTRY

World's Leading Ceramic Journal

AUGUST, 1936 Vol. 27. No. 2

For index to advertisements, including addresses of advertisers' main and branch offices, see pages 139-141

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Contents of previous issues may be found by consulting the Industrial Art Index in your library.

OUR FRONT COVER

The interesting photo is that of a section in the porcelain storage room at the porcelain insulator plant of General Electric Co., Schenectady, N. Y. Photo was supplied through the courtesy of GE.

The Robinson-Patman Bill

WHEREVER three business men gather these days a discussion of the Robinson-Patman anti-price discrimination bill is almost sure to take place. Originally conceived as an anti-chain store bill, the act is now so far-reaching in its implications that it threatens to affect virtually every manufacturer of goods sold at retail.

Unfortunately, while business men may discuss the bill among themselves, there seems to be no way in which they can find out definitely just what it will mean to them and how it will affect their marketing policies. Even lawyers trained in interpretation of legislation have given the act up as a bad job for the time being.

Provision on Price Discrimination

Undoubtedly the act is potentially serious and carries implications of revolutionary character. What its ultimate effect will be depends, in our opinion, upon two things—the interpretation which the Federal Trade Commission, policing body, will place on its provisions and the extent to which the government is determined to enforce them.

Perhaps most important of its many provisions is that dealing directly with price discrimination. In its strictest interpretation this provision prohibits the sale of goods to one customer at higher or lower prices than to another customer. However the bill does not prohibit reductions in price to large buyers provided such discounts are justified by actual costs and are demonstrable by cost accounting practice. Under the wording of the law the burden of proof in matters of dispute lies with the accused. If a manufacturer is accused of price discrimination it will be up to him to prove that he has not violated the law.

The inference is that the Federal Trade Commission, the agency charged with the policing of the act, will demand to see the books of the accused company and those books must prove to the satisfaction of the Commission that the disputed differential actually has a basis in manufacturing cost.

Affect Selling Practices

There are many other provisions which will affect accepted selling practices of many manufacturers. Again, no one can say definitely how these provisions will affect them until they have been tested in law.

Basing point and delivered price systems which result in uniform prices may be challenged where such prices, because of freight differentials, result in higher f.o.b. prices to one customer than to another.

Advertising allowances will certainly be challenged, unless such allowances are granted to all customers on proportionately equal terms.

As nearly as can be determined, practically all the provisions of the bill aim at practices which can be used by manufacturers as a means of discrimination against one customer and in favor of another. Apparently selling practices which extend to all customers equally and fairly, will not be interfered with.

These few remarks are not an attempt on our part to interpret the bill but are set forth merely to stress the importance of all manufacturers familiarizing themselves with its provisions. Legal advice and counsel should be sought.

Summing it up we might say that the bill is a mess but it would be

When and How Silicosis Can Be Contracted

Only Dust Containing Free Silica in Very Finely Divided State Can Cause Silicosis—Control of Dust Conditions and Periodic Examinations Essential

A. J. Lanza, M.D.
Assistant Medical Director, Metropolitan Life Insurance Co.
New York City

THAT certain kinds of dust cause damage to the lungs when inhaled has been known for centuries. Even the ancients knew that there was a definite relationship between mining in certain kinds of rock and a disease which was evidenced by short-windedness, which they called asthma. A number of other terms have been used to describe this condition, such as miner's consumption, miner's phthisis, grinder's rot, and potter's asthma—all meaning the same disease which is now generally known throughout the world as silicosis.

In modern times, the introduction of tools operated by compressed air, used for drilling, cutting, and shipping rock, has caused dust diseases of the lungs to become fairly wide-spread and to be an important source of disability among industrial workers. There is only one kind of dust that produces a typical disease, with characteristic symptoms, which we call silicosis, and that is dust containing free silica (SiO_2) in a very finely divided state. Dusts containing silica in combination, with the exception of asbestos, are not, as far as we know, responsible for any appreciable amount of disability.

Nose Is Effective Filter

The human body has a very efficient protective mechanism against inhaling dusts in the atmosphere. The construction of the nose, the naso-pharynx, and the wind-pipe is such that these passages filter out from the air much of the foreign material that may be in it. It is only when this protective mechanism is subjected to continuous severe straining that it breaks down.

Silicosis is a disease which comes on very gradually and, in most forms of industrial exposure, takes from 10 to 15 and even 20 years to develop. This is one of the important facts about silicosis which should be kept in mind.

A great deal of laboratory research has established definitely that dust particles, to get into the lung, have to be exceedingly small, so fine, indeed, that they can traverse the terminal air passages or bronchioles and thus reach the air lobules where the physiological process of breathing takes place. Most of the dust particles which get into the lungs are between one and three microns in size (a micron is 1/25000 of an inch). At the most, ten microns would be the largest size which will reach the lungs. The second important fact, therefore, to remember about silicosis is that silica dust must be exceedingly fine before it can penetrate the lungs.

Furthermore, a silica dust is harmful in proportion to the amount of silica it contains. Obviously the higher the percentage of silica, the more dangerous the dust, so that we see the most aggravated, or what is sometimes called the "classical" form of silicosis, under those circumstances where the dust is almost pure silica (chert, flint quartz). We base our estimation of the severity of the silica dust hazard in any given situation upon the amount of silica contained in the dust and upon the amount of dust in the air.

For determining the amount of dust in the air, the standard method developed by the United States Public Health Service and United States Bureau of Mines is used in this country. The instrument used is known as the impinger and the results obtained are remarkably accurate. Other instruments are in use, but in this country the impinger is standard. When dust samples are taken in industrial establishments, the result is expressed in millions of particles, under ten microns in diameter, per cubic foot of air. One advantage of the impinger is that it can operate continuously, making it possible to obtain very large air samples, which in turn tends to cut down the margin of error. The instrument is simple, can be readily moved and set up, and, as a rule, is placed on a level with and near the faces of the workmen so as to sample the actual air which they inhale.

From the health viewpoint, we have no hard and fast limits of air dustiness, with respect to what is safe or what is dangerous. The various studies which have been made, however, seem to indicate that if the dust contains any appreciable amount of free silica, the dust count should be kept

Ignorance, the tabloids and unethical legal practice have blown up the subject of silicosis to the proportions of a nightmare for all employers who have workers operating in dusty conditions. Millions of dollars of legal expenses have been borne by the ceramic industry alone. In most cases the suits were ruled in favor of the employer and in some instances revealed the actions of unscrupulous lawyers. State legislators have taken up the subject and in some districts are threatening manufacturers with unfair compensation rates.

Feeling that many producers of ceramic products are seeking the truth about the silicosis menace, we have been fortunate to have Dr. Lanza present the facts from the medical viewpoint. Last winter, Dr. Lanza gave an excellent and exhaustive talk on this subject before the U. S. Potters Association. This brief article contains all the facts.

From the standpoint of preventatives and equipment controlling dust conditions, the problem is urgent. CERAMIC INDUSTRY would like to hear from manufacturers what they have done in their plants to handle the dangers of silicosis.

below ten million particles. Even ten million particles of a highly siliceous dust is not a safe limit. Dust sampling requires a careful and accurate technique and considerable experience is necessary before consistently reliable results are obtained. Industries are beginning to train laboratory technicians to do this work, as in order to keep a dust hazard under control, periodic checking is essential.

It was supposed formerly that the bad effect of inhaling silica dust was due to the hardness and sharpness of the dust particles themselves. We now know that this is not so. We do not know exactly how the dust acts in the lungs but the indications are that silica is a tissue poison. Whether it causes its effects by going into solution or partial solution in the lung tissue is still a matter for further study.

Silicosis Leads to Tuberculosis

Besides its direct action upon the lung tissue, one of the effects of continued exposure to silica dust, which has been noted in the various parts of the world where this disease has been studied, is that it causes the individual who has contracted silicosis to become peculiarly susceptible to tuberculosis. The more severe the silica dust exposure, the more apt is tuberculosis to result. While silicosis may cause disability and death in the absence of tuberculous infection, it has not been frequently observed to do so in industrial experience.

While it is possible for the individual with silicosis to contract other types of infection, tuberculosis is the only one of real practical importance. Those individuals who die from silicosis are found, in the great majority of cases, to have tuberculosis also. Just what is the relationship between these two diseases is as yet unknown, but it would seem as if the presence of silica in the lung tissues makes a favorable situation for the growth of the germ of tuberculosis. When an individual with silicosis develops tuberculosis, the latter may be essentially chronic and run on for a number of years, but if the exposure to silica has been very severe, the progress of tuberculosis may be quite rapid and cause death in a few years after the infection has first become manifest.

As would naturally be expected, silicosis comes on gradually and insidiously. The first symptom is a shortness of breath on exertion. This shortness of breath increases slowly but surely, and when the disease is well established, will impair working ability considerably or even cause total disability. In the early and moderately advanced stages, the affected individual looks well, may show a tendency to put on weight, and aside from the distress caused by physical exertion, feels well. This short-wind, or dyspnoea as the doctors call it, is a very clearcut and definite symptom and in well established cases, it is notable because it seems to be so out of proportion to the general healthy appearance of many of the patients. There is apt to be a dry cough and a tendency to "catch cold" frequently. Occasionally, there may be some spitting of blood but it is unusual to have a frank hemorrhage such as we see in consumptives.

Symptoms of Silicosis

As the disease progresses, pains in the chest are common and may give rise to considerable discomfort. When tuberculosis has become planted upon silicosis, we may see the symptoms commonly associated with the former disease, that is, profuse expectoration, loss of appetite, loss of weight, night sweats, and an afternoon rise of temperature. Sometimes these symptoms come on with dramatic suddenness and the patient grows rapidly worse. Even when it is obvious from the symptoms and general condition of the patient that tuberculosis is present, the germs of tuberculosis may not be found in the sputum until a relatively short time before death.

Where the exposure to silica dust has not been very severe, symptoms may not show up for many years; there may be some short-wind, but it does not develop to a point sufficient to impair working ability and with this type of exposure, we frequently see men with silicosis still able to carry on their work in good shape, many of them having reached their sixties and seventies. In other words, where the silicosis hazard is mild, it may not shorten appreciably the individual's working life. However, it should be remembered that if we study the mortality figures of those exposed to what might be termed the less severe types of silica exposure, we will find that the death-rate from tuberculosis among them is greater than that for wage-earners as a whole.

Examination by X-Ray

If we examine a man who is in the early or moderately advanced stage of silicosis, we may find little on physical examination to confirm the diagnosis. He may exhibit no physical signs other than somewhat impaired breath sounds. If the man is heavily built, with large muscles, it is difficult to get any definite impression from an ordinary physical examination. For this reason, we have to turn to the X-ray film in order to establish a diagnosis. The appearance of silicosis on the X-ray film is definite and clear-cut and should not be confused with other diseases of the chest.

When making examinations of men, among whom it is thought that there might be silicosis, it is exceedingly important to get a careful, accurate, occupational history. Not every man who is short-winded has silicosis, even though he may have been exposed to varying quantities of silica dust at one time or another. The diagnosis is based upon a history of exposure to silica dust together with the characteristic X-ray film. The physician should know the severity of the exposure and the length of time during which the individual has been exposed. A careful weighing of these facts enables him to make a diagnosis. If the X-ray film does not show the characteristic appearance of silicosis, a positive diagnosis cannot be made.

As a rule, when the silicotic has also become tuberculous, we can determine that fact from the X-ray film. Occasionally the examining physician will see films from which it is not possible to state with certainty whether tuberculosis is or is not present. It should be remembered that the absence of tuberculosis germs in the sputum does not rule out tuberculous infection.

For accurate and satisfactory X-ray diagnosis of silicosis, it is essential to have a good apparatus and to use it properly. In the same individual we can obtain films quite dissimilar in appearance by varying the time of exposure and the intensity of the current; consequently, a correct technique is all important. Much experimentation and study have indicated that, for uniformly satisfactory results, an X-ray apparatus should be used which is capable of taking a film at a distance of from forty-eight to seventy-two inches with an exposure not slower than one-tenth of a second.

We cannot obtain satisfactory films unless the patient holds his breath and the faster we can "shoot" him, the more apt we are to get a good film. While a well-advanced case of silicosis can generally be determined from a single film, it is better to obtain stereoscopic films. With stereoscopic films, we are able to view two exposures in a suitable viewing box which gives us the third dimension, namely depth, and greatly lessens the chance of error, especially in early cases where precise diagnosis is so important.

It should be remembered that most of us who are past our fortieth year will show various lines and shadows in the X-ray films of our chests which do not indicate disease and are compatible with good health. Consequently, he who takes it upon himself to interpret X-ray films of dust diseases of the lung should be thoroughly familiar with the variations in the appearance of the ordinary, healthy chest.

Early Silicosis May Clear Up

If a man has early silicosis and is removed from further dust exposure, his disease may not progress and may clear up somewhat. If the silicosis, however, is well established—that is, if there is any considerable amount of damage to the lungs—there is a tendency for the silicosis to progress even after removal from further dust exposure. There is some question as to whether in these cases the silicosis actually does progress unless the patient is also infected. Where there is a marked progress, after exposure to dust has ceased, it is probable that tubercle infection is present.

In a paper published in 1934, Lanza and Vane endeavored to estimate the number of persons exposed to the silica dust hazard in industry. It was not possible to make an accurate estimate, but from the statistics available, it would seem that there are at least a half million persons so exposed and that this figure is quite conservative. Among those trades and industries having a silica hazard are found those included under the general heading of ceramic industry in this country. In fact, some of the earliest studies of silicosis were made in English potteries where the disease was known as "potter's rot." A comprehensive report on silicosis in the pottery industry was published in England in 1926. Recent studies have also been made in Danish potteries. In the United States, Dr Paul A. Quaintance published a study of pottery workers in the American Journal of Public Health in December, 1934.

Glass, porcelain enamel, pottery and refractories all present silica dust hazards in some phases of the work. All in all, it may be estimated that the number of persons exposed to silica dust in the ceramic industry is roughly 75,000. Much of this hazard is mild or moderate, some of it is severe. In any instance, the method of dealing with the hazard is the same.

1. Every possible effort must be made to prevent silica dust from getting into the air where it can be inhaled by the workman. This implies controlling the dust at the point of origin either by exhaust systems or enclosing the process. It is very seldom that engineering skill cannot cope with any situation that presents itself. It may be expensive but in the long run is less so than damage suits and claims for total and permanent disability.

2. Where the dust cannot be entirely eliminated, respirators, of a type approved by the Government, should be supplied and their use insisted upon. For some types of work, a positive pressure face mask is desirable.

3. Applicants for work should be examined to make sure that men with tuberculosis are not exposed to a dust hazard.

4. Employes who are or have been exposed to a silica hazard should be examined from time to time to guard against serious lung damage and to detect possible tuberculosis.

The ceramic industry must attack dust and dusty processes with the same energy, determination and intelligence with which they have attacked safety hazards. There is no reason why they should not be as successful in dealing with dust hazards as with safety hazards.

Potters to Discuss 20% Wage Demand on Oct. 11

The labor committee of the United States Potters Association will begin negotiations with the National Brotherhood of Operative Potters for a new wage agreement without specific instructions from the parent body. This agreement was announced following the July 25 meeting of the general ware pottery manufacturers at Congress Lake Country club near Canton, Ohio.

Charles E. Goodwin of East Liverpool, secretary-treasurer of the association, said that the brotherhood's 71 resolutions, headed by a demand for a general 20 per cent wage increase, were ignored at the sessions.

Thirty-four plants in Ohio, West Virginia, Pennsylvania, New Jersey, Indiana, Illinois and New York were represented. The majority of those in attendance were executives of major pottery plants in the upper Ohio valley.

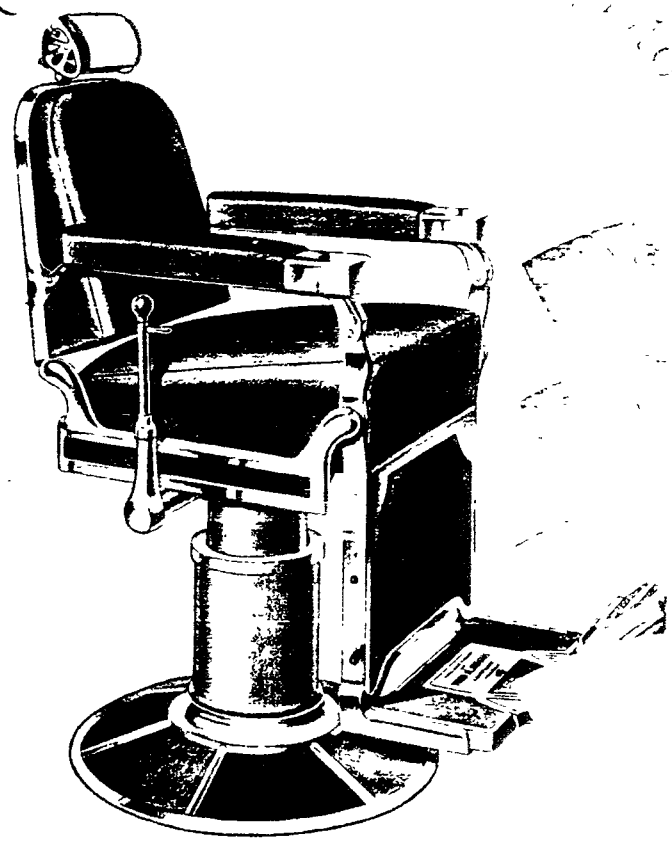
It is said that the 20 per cent blanket

HIGH JINKS AT THE CHICAGO SECTION A.C.S. GOLF TOURNAMENT SPORTSMAN GOLF COURSE



1. Bob Claeysseus, as usual, wins first prize. 2. That broad grin of "Woody" Woodruff's is in appreciation of the zipper bag he won. 3. Right to left, Sherman Goble, Mundy and Zelenka. 4. The host, Charlie Lechner, Inland Glass Works, manager of Sportsman Golf Course. 5. Ken Strong couldn't hold still for the camera. 6. Bart Fenessy teeing off. 7. Fairlie, et al., relaxing after dinner. 8. Barney Radcliffe and George Arras alibiing—9, 10 & 13 First Tee 11. Aydelott, Dana Chase, Bert Sweely and Ken Strong. 12. Fred Buck giving advice.

Let Toncan help you make more money



The back, sides, upright drum and bottom of this barber chair are made of Toncan Iron Enameling Stock.

Republic produces plain carbon steel, copper-bearing steel, copper-bearing iron, Toncan Copper Molybdenum Iron, and Enduro Stainless Steel Sheets—also Toncan Iron Oven Lining Sheets.

• Many of the enamelers in this country are doing an outstanding job of porcelain enameling—and making money—with Toncan Iron Enameling Stock.

This better base metal is processed especially for the economical manufacture of quality enameled pieces. From the time when it first enters the furnace in the form of iron ore, and through every step in its manufacture, it is under the control of experienced metallurgists and ceramists—men who know porcelain enameling practices and what is required of the base metal.

That is why Toncan Iron Enameling Sheets possess such outstanding qualities of ductility and surface. They're made to be that way—to withstand severe draws and to produce smooth, flawless enameled products with greater saleability—products that increase profits through savings in manufacturing costs and greater volume of sales.

If you would like to improve the quality of your enameled products or to reduce cost of manufacture, write for full information on Toncan Iron Enameling Stock.

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REPUBLIC STEEL

VISIT THE REPUBLIC EXHIBIT AT THE GREAT LAKES EXPOSITION, CLEVELAND, OHIO, JUNE 27—OCTOBER 4.

Defects and Rejects *can* be Reduced!

WHAT would it mean to your plant in terms of additional profit . . . if 50% of your present defects could be eliminated? If half your rejects could be turned into profitable pieces? This can be done.

Every defect has a definite cause. Once the cause is known, the remedy is usually simple. That is why we have set up special laboratories to study enameling problems scientifically and to maintain the consistently high quality of American VITRENAMEL Sheets.

Researches like those pictured here point out clearly the causes of defects, whether in the steel or in the enameled coat, and show us how to make finer enameling sheets in a variety of different grades, — each the best for its particular enameling job.

Safeguarded by this research, you can standardize on American VITRENAMEL Sheets with the assurance that your stock will withstand the most severe drawing and forming operations, anneal properly, weld cleanly, turn out flatware free from warpage, and always present a clean uniform surface with the right texture for maximum enamel adherence.

Let us help you reduce defects and turn our better porcelain enameled products. We invite you to consult our laboratories about any enameling problem — and suggest you standardize on American VITRENAMEL Sheets of the correct grade for wharever type of enameling you are doing.

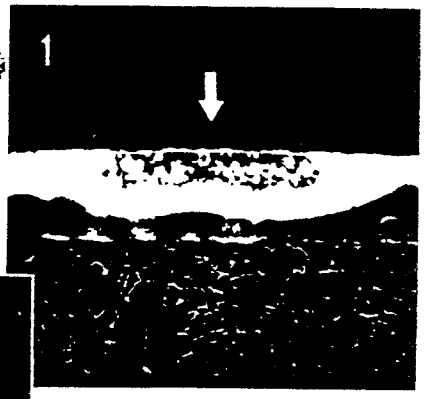


ILLUSTRATION No. 1

A white finished article was rejected because of black spots. In this cross-section photo-micrograph the white coat is seen to continue intact beneath the defect. With this knowledge the remedy is plain — simply to exclude the dark particles which are becoming embedded during the firing operation. Darkfield illumination. 50x.

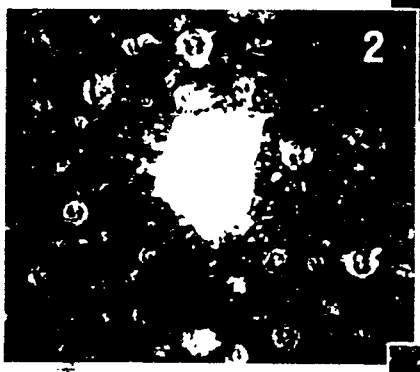
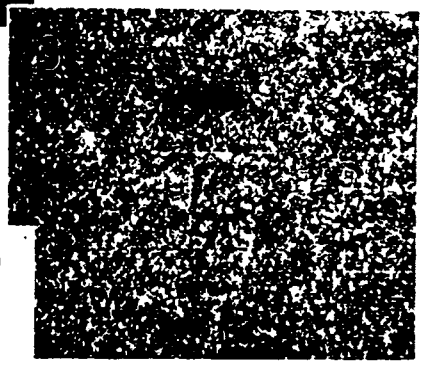


ILLUSTRATION No. 2

A rough enamel condition viewed "head-on." This defect is the result of white refractory particles in the fired ground coat enamel. Isolation and exclusion of this material will prevent further defects of this kind. Oblique light. 50x.

ILLUSTRATION No. 3

These tiny cracks in a formed article opened during drawing because of a seamy condition in the steel. In making American Vitrenamel Sheets, we clip all dirt and segregated areas from the ingot before the steel is rolled. The resulting sheets are soft, ductile and uniform throughout, ready to take the most drastic drawing and forming *with no cracking.* Oblique light. 10x.



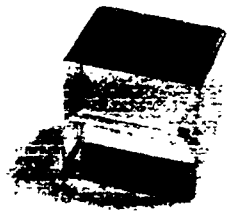


ILLUSTRATION No. 4

A recent development in the microscopic examination of enameling defects. A small section containing the defect is mounted in a block of transparent plastic, so that many cross-sections through the defect may be polished and examined microscopically. Two-thirds size

Illustrations from "The Properties and Manufacture of Porcelain Enameling Sheets" by H. E. Romine, Sc. D. A copy will gladly be sent on request.

AMERICAN VITRENAMEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION

With which has been consolidated American Sheet and Tin Plate Company

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