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~~D. Allison (IE)~~

PB21 86151
OR AS Publicly Available

Bill Jones

Copies to:

56157

D. Allison (IE)

J. Stone (IE) (to track on "Part 21")

R. Bosnak (NRR) (for wife)

B.D. Lian

R. Ballance

D. Courtfield

*GmtH
5/8/86*

Laboratory tests have raised serious doubts about the safety of millions of high-strength industrial bolts used in power plants, chemical and food processing plants, military and aerospace equipment, agricultural equipment, and literally thousands of other critical applications in the U.S.

These bolts -- falsely marked to indicate they are made of one kind of steel, when they are actually made of another material -- seem to be flooding the U.S. market. The Industrial Fasteners Institute feels there is reason to fear catastrophic failure in certain situations.

The enclosed press release gives you details on a technical report just issued. It contains some sobering data. I'll be pleased to get you additional information or arrange for you to talk with key people involved. Just give me a call or contact IFI direct.

Scott H. Collins
Scott H. Collins
Public Relations Director

*VPB
info NRR*

*Still,
can you give me a copy
and let me know
what is following?
VPB
Thanks
Dennis*

IE20

News Release

IFI-1286-P



For Release: May 2, 1986

Industrial Fasteners Institute
1505 East Ohio Building
1717 East Ninth Street
Cleveland, Ohio 44114
216/241-1482

Contact: Charles J. Wilson,
Director of Engineering

HAZARD POSED BY MILLIONS OF MISMARKED BOLTS: ELEVATED TEMPERATURES COULD
TRIGGER FAILURE

CLEVELAND, OHIO -- Industrial fasteners, possibly by the millions; used in exhaust systems, vehicles, chemical processing plants, buildings and a host of other applications around the United States, may not be the bolts their identifying marks indicate they are.

Rather, according to the fastener-industry trade association, some are falsely marked, thought to be imported substitutes that could undergo stress relaxation when subjected to elevated temperatures (500°F+). Depending on where the fastener is used, such relaxation may result in equipment failure and even injury or loss of life.

The situation, according to the Industrial Fasteners Institute (IFI) located here, is complex and multi-faceted:

- Mismarked to indicate they are made of one material when they are actually made of another, these bolts have been sold in the U.S.
- There is no way, short of chemical analysis, to identify a correctly marked bolt from one falsely marked.
- Normally, Grade 8 bolts are specified and used in many highly stressed applications.
- Significant numbers of mismarked bolts likely are in place in the U.S. More are in distribution channels.
- Most of the mismarked bolts are thought to have been imported from the Far East.
- An IFI sampling program found that more than 75 percent of imported bolts of the type in question are mismarked to indicate they are manufactured from one material when they are actually made of another steel.
- So far, no serious accidents or deaths are known to have been directly attributed to mismarked bolts but they possibly

could be related to other "unexplained" bolting failures. The potential for failure is increasing as these bolts continue to be used in various systems that may experience elevated temperature exposure. (Note: a list of such applications is attached.)

According to IFI, it is possible that millions of bolts, have apparently been sold with the industry recognized strength-indicating "headmark" of a Grade 8 bolt, when their chemical composition actually is that of a Grade 8.2 bolt, intended generally for lower temperature applications.

IFI has issued this cautionary note: Even if an engineer properly specifies a Grade 8 bolt, and it is installed correctly, it could fail because manufacturers disguised low carbon martensite material bolts with markings that suggest they are made from medium carbon alloy material.

MISMATCHED BOLTS ARE USED IN MANY HIGHLY STRESSED CRITICAL APPLICATIONS
The bolts in question are used in literally thousands of industrial applications where very high tensile strength (resistance to being pulled apart) is required. Designated SAE Grade 8 by the industry, they are produced in sizes as large as 1-1/2 inches in diameter. (The Grade 8.2 is limited to 1 inch in diameter)

The danger exists when the bolts are subjected to high temperatures and high stress. Grade 8 bolts, made of a medium carbon alloy, are oil quenched and tempered at 800°F and are used in power plants, large

engines, military hardware, industrial/chemical processing plants and similar critical applications. Grade 8.2 bolts are made of low-carbon martensite steel and are quenched in oil or water at 650°F and, therefore, may fail in elevated temperature applications before the Grade 8 medium carbon alloy material.

"Good data is not available, however, I would estimate that there are literally millions of these improperly marked bolts installed in the United States, and millions more in stock. They carry industry recognized markings that say they are something they're not," warns Charles J. Wilson, IFI Director of Engineering. "But there is no easy or simple method to tell which are the genuine Grade 8 bolts and which are falsely marked bolts."

THE PROBLEM IS WIDESPREAD

Only a chemical analysis can determine whether a bolt is a Grade 8 fastener or Grade 8.2, Wilson explains. Engineers and installers generally rely on strength grade headmarkings to tell one bolt from another. "When bolts are mismatched," the industry expert says, "they may very easily be used incorrectly."

A Research Report just issued by IFI states that more than 75 percent of bolt specimens in a test sample (imported bolts collected from various U.S. cities) were found to be mismatched when analyzed by an independent lab. Wilson estimates that 20 percent of the over 7 billion bolts and large screws used annually in the United States fall into the category where the mismatching has been found.

"That means," Wilson explains, "that there are probably more than a billion Grade 8 bolts used every year. If only a small fraction go into high-temperature applications where failure could be catastrophic, we are still talking about dangerous levels of failure potential. Used in overhaul and maintenance it is quite possible that a valid Grade 8 bolt could be replaced with a falsely marked bolt causing subsequent failure."

BROAD BASED CORRECTIVE ACTION RECOMMENDED

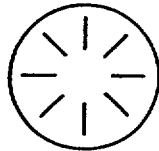
IFI is making several recommendations to help alleviate the current dangerous situation and prevent further sale of those bolts that do not conform to national standards. Specifically:

- The U.S. Customs Service is urged to investigate all bolts in bonded warehouses, in transit, and at ports of entry.
- Distributors are urged to examine their stock and purge all bolts labeled as Grade 8 that don't conform to national standards.
- Standards writing organizations are urged to make it clear that there are strong behavioral differences between Grade 8 and Grade 8.2 bolts at elevated temperatures.
- All users of fasteners marked as Grade 8 are urged to review past purchases and consider removing suspect bolts that may be exposed to temperatures over 500°F.

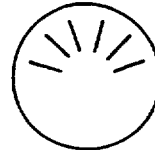
- All bolt purchasers and users are urged to familiarize themselves with strength-grade and manufacturers' markings to avoid confusion.

The Industrial Fasteners Institute is an association of the leading North American manufacturers of bolts, nuts, screws, rivets and all types of special formed parts. IFI member companies combine their technical knowledge to advance the technology and application engineering of fasteners and formed parts through programs of research and education. The Institute and its member companies work closely with leading national and international technical organizations in developing standards and other technical practices.

SAE STANDARD GRADE HEADMARKS



Grade 8



Grade 8.2

Areas and/or applications where falsely marked grade 8 bolts made of low carbon martensitic steel may fail:

1. EXHAUST SYSTEMS

Includes those in automobiles, tractors, off-the-road earth movers, gas turbines, trucks, tanks and other military vehicles, and emergency power generators.

2. ENGINE ASSEMBLY

Gasoline and diesel 4 cycle and 2 cycle engines and gas turbines.

3. STACKS/VENTILATORS

Industrial furnace vents and steam power plant stacks.

4. ENVIRONMENTAL

Low level economizers, stack precipitators and scrubbers found in a broad spectrum of factories, buildings and power plants.

5. HEAT EXCHANGERS

Steam power plants, chemical processing and furnaces used for heating and processing.

6. CHEMICAL PLANT PROCESSING

Plants, piping, holding tanks in oil and a variety of chemical processes.

7. PLATING

Vats and related supporting equipment where high temperatures are involved.

8. CANNERIES

High temperature/pressures may be present in the supporting structures for sterilization of containers, etc.

9. LAUNCH STRUCTURES

Rocket installations/support structures which may be subjected to elevated temperatures during test firing.

10. FERTILIZER

Processing plants which involve high temperatures for drying.

11. FURNACES/HOT WATER TANKS

Electric and gas which may be used in factories for various processing and homes for heating. Burner and heat exchanger supports.

12. FEED WATER

High temp/high pressures in feed water pumps and condensers in fossil and nuclear power plants.