

CUTABILITY COMMITTEE
CONFERENCE CALL MINUTES

Wednesday

August 2, 1989

MINUTES

On August 2, 1989, a Cutability Committee conference call was held at 10:20 AM. Members on the line were:

MEMBERS PRESENT

Bill Zuercher
Bob Shannon
John Dottore
Argyle Jackson
Bud Barndt
Joe McGlamery
Kathleen Kauffman
Tom Johns
Earl Williams

Cooper Mfg. Co., Inc.
Armstrong World Ind.
E.I. DuPont Textile Fibers Dept.
Hoosier Gasket Corporation
Reinz Wisconsin Gasket Co.
Union Carbide Corporation
Atlas Die, Inc.
Garlock Inc.
Lydall, Inc.

MEMBERS ABSENT

Paul Yager

Mueller Belting

ALSO PRESENT

Robert H. Ecker, Sec./Treasurer

Multiservice Management Company

An agenda was outlined by the Chairman, Bill Zuercher. Mr. Zuercher asked if everyone had received the written report concerning the progress on the Cutability issue. All acknowledged getting the information. John Dottore of E.I. DuPont, then reviewed the information they had gathered to date and the efforts Frank Penozza, a former DuPont employee and now consultant for John, had been working on. A copy of that report is attached.

It was pointed out that although a lot of useful information had been obtained, much of the work remained to be done. John Dottore wanted to know which material or materials created the most tool wear. It was the Committee's opinion that Armstrong's 1/16 TN-9004 should be the material to look at first.

Bob Shannon of Armstrong, then outlined their efforts. Armstrong was looking at the "package." Samples of materials containing different concentrations of the Kevlar, fillers and fiber glass were being produced in the lab to determine causes and effects when cut. Bob and John agreed to work closely on that endeavor. Mr. Zuercher pointed out that although formulation certainly played an important factor in cutability, the downside was that with any major change in formulation, certain customers could require a long test period before accepting the change, sometimes as much as two years.

Following additional discussion from Bob Shannon and John Dottore it was decided that at some point two or three fabricators would have to run sample materials and/or dies in a controlled cutting process. Kathleen Kauffman pointed out the need for using good press equipment in any test run.

A roll call was conducted of each member on the line to allow the sharing of data and information about the problem. Bud Barndt indicated that they were at times cutting against a paper carrier which helped to extend rule die life and allowed for cleaner cut gaskets. Argyle Jackson said that they were concentrating on more accurate set-ups. A lot of hand clean up was still involved however, Mr. Zuercher indicated that a study was being done at their facility to determine the additional costs involved in dealing with the hard-to-cut non-asbestos materials.

Other comments from Earl Williams, Tom Johns and Joe McGlamery showed all members were willing to commit their time and effort to help solve the problem.

It was decided to pursue the present course of action. It was estimated that it would be 6-10 weeks before any positive direction of test cutting could be done. It was expressed by John Dottore that it appeared that the Kevlar fibers were being pushed aside or into the material rather than being cut. That was due to the short fiber length.

There being no further business, the conference call was concluded at 11:20 AM, E.D.T.

(These minutes have been reviewed by Legal Counsel)

Distribution: Cutability Committee
August 1989 Standards & Technical Committee
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E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

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August 1, 1989

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JOE MC GLAMERY, UNION CARBIDE (FAX: 216/529-3922)
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FROM: JOHN DOTTORE, E. I. DU PONT (FAX: 302/999-5080)

GASKET FABRICATORS ASSOCIATION
SPECIAL SUBCOMMITTEE ON THE CUTABILITY OF
NONASBESTOS MATERIALS

PROBLEM:

Increased costs, associated with cutting of nonasbestos materials,
from:

- Reduced die life
- Additional processing of some gaskets, to make acceptable product.

SCOPE:

Concentrate efforts on rule die cutting. Extend applicable analysis
and information to all steel die cutting.

PURPOSE/BENEFIT:

Identify procedures for cutting nonasbestos materials so as to extend tool life and provide clean cut parts, in a way that provides this information to G.F.A. members and associate members.

FACTS:

- Asbestos materials are easier to cut than nonasbestos materials
- Some nonasbestos materials are more difficult to cut than other nonasbestos materials
- Nonasbestos materials contain fibers (Kevlar®, fiberglass, cellulose, etc.) and fillers (clays, silicas, etc.) not found with asbestos materials
- Hardened steel tooling and anti-stick coating on gasket materials seem to improve cutting performance

WORK PERFORMED BY DU PONT:

- Frank Penozza (Consultant) has studied dozens of rule die (new and used) and gasket samples (asbestos and nonasbestos) provided by G.F.A. members.

OBSERVATIONS:

- New rule die is generally in good condition, prior to installation.
- Used rule die exhibits "flat spots", which cause poor cutting, and "worn edges" which limits rule life.
- Relief angle and surface area of relief appear to be important in providing clean cut parts.

THEORY:

- Asbestos material is more friable, requires less energy to cut, and therefore, does not require as sharp a cutting edge for clean cuts.
- In general, fillers and fiberglass are abrasive in nature, and will cause increased wear on blade edge.
- Kevlar® fibers are too short to cut; knife blade is "pushing" fibers aside, back into the material.

THEORY (Cont.):

- "Flat spots" on used rule die caused by:
 1. Inconsistent hardness along the cutting edge
 2. Rule due striking die board (uneven die board and/or uneven rule dies)
- "Worn edges" on rule die are likely caused by abrasive materials in the gasket (fillers and fiberglass).
- Hardness, relief angle, and type of bevel are all critical in selecting a rule die that cuts well.

PROPOSAL:

1. Define optimum rule die specifications and optimum coating on rule dies in laboratory cutting tests. Goal is to extend die life by reducing friction and wear on cutting edge.
2. Run laboratory cutting tests with carbide die board to determine the effect of a hardened die board on the cutting edge.
3. Run commercial scale cutting tests (in 6-10 weeks) with optimum rule die, coatings, die board, etc., to confirm laboratory analysis.

QUESTIONS:

1. Rule Dies:
 - What reliefs are used on what side of rule die?
 - Are knives altered prior to installation?
 - Is it recognized that the cutting edge has been upset (mushroomed)?
 - What coatings have been tried, with what level of success?
2. Die Board:
 - Any other die boards used/tested, besides blue tempered spring steel? (i.e., hardened)
 - Any other technique (i.e., steel shims) used besides a make-ready?
3. Materials:
 - Need to identify the most difficult material to cut (to be used in above tests) and thickness to be used.