

Steel Mill Products Division
Research & Development Dept.

October 1973

Non-Asbestos Profax

(a) Plant Run

EP-5465 (asbestos and paper free) recipe is used under regular basis for Armco-Ashland and Middletown, U.S.S.-Fairless and Great Lakes Steel.

No major technical problems were experienced during the month.

The excessive foam forming was attributed to the misformulation of the recipe on the pulper platform. Meantime, Armco-Ashland complained about excessive dust experienced with EP-5465.

Both problems were corroborated and the recipe was changed by lowering X3580 content from 0.2% to 0.15%. The dust problem is not solved completely but there is a noticeable improvement. No excessive foam formation has been experienced since.

Again, the accuracy of the recipe is dubious. The key row materials are not weighed and sometime the paper bags of RM-131D, X1790, X3562 and 74C are thrown in.

(b) Plant Experiments

During September 1973, we tried to use EP-5465 on Mark IV machine for Profax rings.

The experiment was a failure, because:

- Too much X3580 caused an excessive foam formation, or
- The holding tank's blade speed being too high (~40 rpm) caused an excessive foam formation.
- The introduction procedure of X3580 into the slurry was changed.

The usage of EP-5465 recipe on Mark IV machine was abandoned for the time being, due to higher priority of Seal-On ring recipe.

--- Due to RM-447 shortage, we tried the usage of X3211 for three consecutive days on the first shift.

No technical problems were experienced.

The best replacement ratio was found to be 1:1.4 (447: X3211).

Non-Asbestos Proflex

During the month a Proflex (boards and tops) recipe marked XS-1563 was developed. The lab tests are similar to G-3 recipe except Amitec values. The net heat loss after 60 minutes is as high as 8050 Btu/ft² vs. 7000 Btu/ft² for G-3. XS-1563 is less compressible than G-3 and is at least as flexible. We cannot evaluate the surface roughness. We intend to schedule an experimental run during November.

Non-Asbestos Non-Silica Profax

Two steps for a complete elimination (substitution) of silica were considered.

- Crystallized silica
- Amorphous silica

During October 1973, the recipe XS-1561 was developed and contains no crystallized silica.

Various raw materials were tried as replacement for silica flour as: Olivine, Mullite, Kyanite, Zircon sand, Aluminum oxide. The basic recipe employed was EP-5465. The best results were obtained by using RM21. The other mixes melted at 1400°C. The experimental data:

--- transverse strength	250 p.s.i. (17.6 K _c /cm ²)
--- density	0.69 g/cc.
--- Net heat trans.....	7700 Btu/ft ²
--- Rate heat trans.....	122 Btu/ft ² /min.

A version of XS-1561 was written without any silica.

The experimental data:

--- transverse strength	226 p.s.i. (15.9 K _c /cm ²)
--- density	0.68 g/cc.

Both recipes are ready to be used in production under experimental basis. However, the raw material cost (calculated) is 60% higher than EP-5465.