

# Felt Tips

Published on an Occasional Basis

March 1995

## Mod Bit Tidbits

A-P-P, S-B-S, S-E-B-S, C-T-P-M-B, poly, glass, foil clad, cap sheet, base ply, mop-grade, torch-down, cold process, granule surfaced . . .

You may have heard people using some unfamiliar abbreviations and curious terms in regard to bituminous roofing materials. As it is with many niches in the construction industry, roofing has its own dialect. This Felt Tip is intended to help you stay on top of these recent roofing terminology tongue-twisters.

In the early 1980's, the United States roofing market was a launching pad for numerous products in the category we know as modified bitumen (MOD BIT) roofing. These products combine the traditional redundant layer theory of built-up roofing and the engineered membrane system technology developed by the single ply roofing industry. The concept of mixing rubber with asphalt isn't new though. Reportedly, British patents dating from as early as 1843 include these compositions.

The basic concept behind the modified bitumen evolution is to improve the physical properties of bituminous materials by addition of agents that modify the bitumens chemical structure.

The most prevalent modifier compounds used with asphalt to produce modified bitumens include atactic polypropylene (APP) and styrene-butadiene-styrene (SBS). Sequenced-ethylene-butylene-styrene (SEBS), another version of SBS, is more resistant to overheating than SBS.

Recently, a modified coal tar pitch-based product (CTPMB) was brought into the market. The reportedly new modifier component is proprietary and not identified in the manufacturer's current published literature. A call to the manufacturer's technical service office did provide some information regarding the material's physical properties, which indicates that its characteristics are similar to the other available modified bitumen products.

Reinforcing materials include glass fiber and polyester fiber. Also available is a fabric mesh that combines both materials to obtain the strength of glass and the flexibility of polyester.

Modified bitumen roof membranes are frequently applied by torching sheets directly to certain substrates. Other installation methods include setting sheets in moppings of hot bitumen or

bonding with cold process contact adhesives. Base ply courses can also be mechanically fastened to combustible decks followed by the other cap sheet application methods.

Key properties to look for when evaluating Modified Bitumen products include:

- Elevated softening point temperature.
- Fatigue resistance (low temperature flexibility).
- Tensile strength (tear and puncture resistance).
- Volumetric stability (resistance to shrinkage).

Modified bitumens are available with a variety of surfaces. Mineral granule-surfaced sheets, smooth-surfaced sheets, and foil-clad sheets are available. Granule-surfaced and foil-clad sheets are generally intended for cap ply and flashing applications. Smooth sheets are primarily used as base or intermediate ply coursing. Several manufacturers offer smooth surface cap plies and flashing sheets.

Surveys by NRCA/MRCA and the U.S. Army Civil Engineering Research Lab (CERL) indicate that surface coatings are important considerations when specifying modified bitumen roofs. Membranes without a protective surface generally performed worse than modified bitumen roofs with granule-surfaced membranes or smooth-surfaced membranes with post-installation coating applications.

Ponded water remains a concern for long-term performance of bituminous (or modified bitumen) roofs. In that regard, many knowledgeable roofing experts believe that a roof slope of 1:48 (1/4" per foot) or steeper is a prudent design guideline when evaluating whether a modified bitumen roof is suitable for use on a particular project.

Just this past summer, an explosion and fire at a chemical plant in Belpre, Ohio, reportedly damaged production equipment used to make the SBS polymer. Some U.S. modified bitumen manufacturers were quick to point out that prices would surely rise due to shortages. However, the international availability of this polymer is strong and price fluctuations appear to have been moderate.

For further reading on this subject, consult the following:

- American Society for Testing and Materials (ASTM) D 5147, Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- National Roofing Contractors Association / Midwest Roofing Contractors Association (NRCA/MRCA) Modified Bitumen Research Task Force survey, "APP and SBS Modified Bitumen Membrane Roofs: A Survey of Field Performance," first presented at NRCA's 1994 national convention.
- Roofing, Siding, & Insulation Contractor magazine, "SBS Modified Bitumens - Roofing's Rising Star," September 1987, 22-page supplement.
- Roofing, Siding, & Insulation Contractor magazine, "Modified Bitumen: On a Roll," September 1994, 19-page supplement.

Contributed by Phil Brubaker, Technical Committee Chair.

Edited by Scott Sider, CCS.