TECHNICAL BULLETIN

ROOFING EXCELLENCE

560 Commissioners St., Toronto, Ontario M4M 1A7 Tel: (416) 461-8122 Fax: (416) 461-2926

Can#: 1-800-268-6077 U.S.A.#: 1-800-387-6012

# BLISTERING OF ASPHALT SHINGLES

Virtually all asphalt shingles and roll roofings products have, by the nature of their manufacture a greater or lesser degree of blistering potential under certain conditions or combinations of conditions. For this reason, the matter has been the object of extensive research by manufacturers and industry associations for many years. In studying the causes of various types of blistering with a view to minimizing the blister potential, much has been learned about the behavior of blistered shingles. Typically asphalt shingles only blister where the exposure conditions on the roof include one or more of the following:

- Poor or inefficient ventilation, causing the shingles to reach excessive temperatures - can be >60$^{0}$C
- Wet shingle - shingle not properly protected prior to application, causing moisture to be entrapped within it, leading to blisters
- Wet roof boards - sudden moisture release into shingles
- Resin dripping from trees - softens the asphalt, allowing blisters to form
- Too much solvent-based asphalt adhesive - applies particularly to roofs covered with low slope shingles
  - When manually sealing shingles, ensure that the spot of adhesive is no larger than the size of a quarter
- Use of an incompatible adhesive, or use of an adhesive mixed with gasoline, turpentine, or other solvents
- Shaded area suddenly exposed to hot sun each day
- Roof area receiving reflected heat from the sun

Regardless of cause, blistering can be of two basic types: small rash type blisters, 1/4 inch or less in size, growing out of the coating layer, and the larger tent type in which the entire thickness of the coating layer is raised from the felt. Authorities agree that while these larger tent type blisters may cause premature failure of the material, the small rash type blisters will not.

For example, an October 1974 edition of a paper issued by the Research Committee of the Asphalt Roofing Manufacturers Association describes rash type blisters as follows:
"They may be evenly distributed or they may occur in random patches. They affect the appearance of the roof only upon close inspection. They do not necessarily shorten the life of the roofing and in no case do they cause leaks."

Observations by a member of the ARMA Technical Committee, Mr. C. J. Glasrud of the 3M Company, are also pertinent. "Asphalt shingles which have been applied to a roof sometimes show a condition known as blistering. When the afflicted shingles are examined some time after application, they may be noticed to have quite a large number of projections (blisters) about the size of BB shots. Very frequently they cannot even be seen from the ground and must be observed from a ladder that leaves the viewer within three feet of the roof. These are so-called rash types of blister and their importance as a cause of roof failure is minimal. Badly rashed roofs often still function 15 years later."

With specific reference to shingles applied triple coverage (low slope) on roofs having slopes of less than 4:12 down to 2:12, in the manner prescribed by Section 9.26.8 of the National Building Code, rash type blisters do not detract significantly from the over-all appearance of the roof, and constitute no risk of the roof failure since they are backed by two more complete layers of the shingle material. With this manner of application we cannot ensure that rash type blistering will not occur, and can therefore accept no responsibility beyond a written guarantee against leakage provided that our installation directions have been followed.