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NASA TECH BRIEF



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Determining Gas Leakage from Bubble Formations

Gas leaks from fittings joined to pipelines are commonly detected with various liquid leak-detection agents applied to the joints. Evidence of leaks is provided by the appearance of bubbles at the joints, and estimation of the leak rate from observation of the bubbles has been entirely subjective. Description of leaks from bubble observations has varied from person to person performing the tests to the extent that the results have had little quantitative significance.

A series of measurements was performed with threaded and flanged fittings, using a commercial leak-detection agent, in an effort to establish standards of bubble appearance that would allow quantitative estimation of the leakage rates. As a result of these tests standards have been proposed for three classes of bubble formation on both threaded and flanged joints. Estimated approximate leak rates in standard cubic inches per minute for each bubble class and joint type are given below.

	<i>Threaded Joint</i>	<i>Flanged Joint</i>
Class 1	0.001 to 0.4	0.001 to 1.3
Class 2	0.4 to 2.8	1.3 to 4.0
Class 3	2.8 to 47.0	4.0 to 50.0

Note:

Details concerning the standardization procedure and bubble appearance in each class may be obtained from:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
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Patent status:

No patent action is contemplated by NASA.

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Category 05