TECHNICAL NOTE 02-01A
WATER RESTRAINT SYSTEM (WRS)
Chemical Strengths in Solution of Pulsed Delivery

Dated April 29, 2001 Revised August 25, 2001

Introduction

The following information is provided to explain the typical chemical strength of the Water Restraint System. This information can be used as a training aid and as a guide to calculating the amount of chemical required for normal operations.

Description

The Water Restraint System injects Oleoresin Capsicum directly into the water steam. The chemical injected is a 2% Oleoresin Capsicum mixture specially formulated to be used for direct injection into the WRS water stream. To be sure that the chemical strength is as accurate as possible, each delivery of 2% OC for WRS use is provided with a certified assay. When each WRS is installed, and periodically thereafter, the water stream with chemicals injected is assayed by a certified independent laboratory to ensure that the OC chemical strength is within the specified limits. This assay is included with each system's documentation. The calculations provided below utilize assumed assay values. For accurate values for each installed system, it is recommended that you use the formulas below and the assay values from the unique system.

Information

The following values are the same for each system:

WRS set for operation at high impact, (WT=10)
Quantity of water in short pulse: 2.5 gallons (9.5 liters)
Quantity of water in long pulse: 5.5 gallons (21 liters)

The approximate value of the OC assay for a typical system is: .06%
The correction factor (CF) for specific gravity of concentrated OC: 1.08

Therefore,

The quantity of OC chemical contained in a typical short pulse is:

$$\frac{\text{OC Assay (\%)}}{\text{OC Chemical Assay (\%)(CF)}} \times 2.5 \text{ gallons} = \frac{.06}{(2.0)(1.08)} \times 2.5 = .07 \text{ gallons, or}$$

8.9 fluid ounces, or
.28 quart, or
.26 liter

The quantity of OC chemical contained in a typical long pulse is:

$$\frac{\text{OC Assay (\%)}}{\text{OC Chemical Assay (\%)(CF)}} \times 5.5 \text{ gallons} = \frac{.06}{(2.0)(1.08)} \times 5.5 = .15 \text{ gallons, or}$$

19.6 fluid ounces, or
.61 quarts, or
.58 liters

If you need more information, please contact our office.
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