

# How Contata's Shrinkage Calculations and Diluent Allocation Module Saves Up to 43%

## Introduction

The client is among the world's topmost oil and gas producers, having presence all over the globe, dealing with both pipeline and terminal business.

## Need

Our client is concerned about, estimating the diluent needed for the month, allocating the diluent among shippers, and calculating the shrinkage caused by diluent blending are needed for forecasting, as the blending of condensate to crude oil is necessary at times for operations. Especially during the winter season, the high density and viscosity of a crude product make it hard to pump the product through the pipeline.

By blending with diluents, the density of crude can be altered to make it more easily transportable. When blending diluents with crude, the combined volume will be less than the sum of its components. The loss in volume is referred to as shrinkage and is due to the smaller molecules of the diluent filling the voids of the heavier molecules.

## Solution

Contata deeply analyzed this problem and design a module that uses the approach of API 2509C and MPMS 12.3 which uses shrinkage calculations that are implemented into our order-to-cash solution.

API 2509C - provides background, theory, calculation examples, and tables to correct for volumetric shrinkage resulting when blending volatile hydrocarbons with crude oil. The tables are entered with density differentials at standard conditions. The application calculates the diluent allocation and shrinkage by shipper by well by the stream and possesses the ability to retrieve, at any time, the calculated diluent allocation/shrinkage together with the corresponding values entered/ gathered for the calculations (e.g. Targeted /Cut-Off WAD & Finished Blend WAD, Diluent WAD, Raw Crude WAD)

Weighted Average Density (WAD) is calculated based on the following formula:

$$\text{WAD} = \text{Total Mass} / \text{Total Volume (NSV)}$$

$$\text{Ticket Volume (NSV)} * \text{Ticket Density} = \text{Ticket Density Mass}$$

$$\text{Total Mass} = \text{Sum of all Ticket Density Mass}$$

$$\text{Total Volume} = \text{Sum of Ticket Volume (NSV)}$$

## Advantages

- Client now sees better visibility of diluent to be used for blending
- Make transportation easy and flexible
- Shrinkage losses save up to 43%
- Better accuracy in operations

## Industry

Oil and Gas

## Our Services

Upstream

Midstream

## Technology Stack

C#

WCF

WPF

Proprietary DB

DevExpress

