

University of Wisconsin-Extension

GEOLOGICAL AND NATURAL HISTORY SURVEY  
3817 Mineral Point Road  
Madison, Wisconsin 53705

M.E. Ostrom, State Geologist and Director

INSOLUBLE RESIDUES OF THE LOWER MAGNESIAN DOLOMITE

by

E.W. Fosshage [w/Shrock]

Open-File Report 35-4

4 p.

This report represents work performed by the Geological and Natural History Survey, and is released to the open files in the interest of making the information more readily available. This report has not been edited or reviewed for conformity with Geological and Natural History Survey standards and nomenclature.

1935

WOFR 1935-4

INSOLUBLE RESIDUES OF THE LOWER MAGNESIAN DOLOMITE

BY

ERNEST WILLARD FOSSHAGE

A STUDENT FEDERAL EMERGENCY RELIEF ADMINISTRATION

PROJECT

THE UNIVERSITY OF WISCONSIN

1935

## INTRODUCTION

## Contents:

The following is a summary of the insoluble residues found in the samples of the Lower Magnesian dolomite. The collection of these specimens was made by Dr. R. R. Shrock, Assistant Professor of Geology at the University of Wisconsin. Each sample has its own field location given with it.

## Laboratory procedure:

The first step in the laboratory work was a macroscopic description of each specimen. Then about twenty-five grams of each sample were weighed and placed in a 250 cc. beaker. Hydrochloric acid of a one to one concentration was added until the beaker was half full. This usually stood over night, or until there was no further reaction of the constituents. After all the insoluble substance had settled to the bottom of the beaker, the amount of clay was estimated. The acid was then poured off and hot and cold lake water was alternately added, and flocculation of the clay followed. The clay held in suspension in the water was easily decanted off without loss of sand, which had settled to the bottom. Each residue was washed several times in this fashion until the sand was clean and the water clear. The sand was then transferred to watch glasses of known weight, dried, and weighed. From these records the percentage of sand was calculated. A microscopic examination and description of the residues was made in reflected light under a binocular microscope. For the purpose of determining whether the sand was quartz or feldspar, a petrographic microscope was used. Both minerals were usually found in each residue examined by the latter method. Some feldspar grains possess the type of twinning characteristic of microcline, while others have albite twinning. No attempt was made to classify the feldspars.

## Insoluble Residues of the Lower Magnesian Dolomite

Collection Made by Dr. R.R. Shrock

## 1. Sample # 1

Locality: Center of Sec. 19, T. 16 N., R. 4 W.  
Horizon: "Punky beds".

Macroscopic description of sample: Fine-grained, faintly banded, fairly soft, faint yellow color.

Description of residue: 1.15% insoluble. Clay: small amount, Dominantly fine-grained feldspar-quartz sand. There are several dozen rounded, frosted, detrital quartz grains, and quite a few green grains which are probably glauconite.

## 2. Sample # 2

Locality: N.E.  $\frac{1}{4}$  of Sec. 14, T. 16 N., R. 5 W.

Macroscopic description of sample: Coarse-grained, massive, granular, even and fairly close texture, gray-buff color.

Description of residue: 0.83% insoluble. Clay: small amount, Dominantly coarse, rounded to subangular, frosted, detrital quartz grains. There is one chert fragment, and one green grain which is probably glauconite. There is a small amount of fine quartz sand, some grains of which are yellow or red throughout.

## 3. Sample # 3

Locality: Center of Sec. 19, T. 16 N., R. 4 W.  
Horizon: Below "Punky beds".

Macroscopic description of residue: Uneven texture, firmly cemented, dendritic, buff-gray color.

Description of residue: 14.2% insoluble. Clay: very large amount. The sand contains many large chert fragments, many frosted, rounded detrital quartz grains, some fine-grained quartz and feldspars, a few green grains--probably glauconite--, and a few muscovite flakes. The feldspars possess sharp edges, and the type of twinning varies from microcline to albite. There is also a little limonite.

## 4. Sample # 4

Locality: S.W.  $\frac{1}{4}$  of Sec. 14, T. 16 N., R. 5 W.

Macroscopic description of sample: Coarse-grained, granular,

loose texture, salmon colored.

Description of residue: 0.42% insoluble. Clay: small amount. The sand consists dominantly of rounded, frosted, detrital, quartz grains. There is a small amount of organic matter, limonite, and fine-grained quartz sand.

5. Sample # 5

Locality: X S. of Baugor

Macroscopic description of sample: Coarse to medium-grained, firmly cemented, oolitic, slightly banded, pinkish-gray color.

Description of residue: 15% insoluble. Clay: small amount. The sand is composed dominantly of rounded, frosted, detrital, quartz grains which vary in size and are colorless. There is a small amount of limonite.

6. Sample # 6

Macroscopic description of sample: Medium to coarse-grained. The sample has small cryptozoan structures and cavities lined with calcite crystals. It has a buff color.

Description of residue: 2.37% insoluble. Clay: very large amount. The sand contains some muscovite, fine to coarse-grained, quartz sand which is angular to rounded, non-frosted to frosted. There is a small amount of organic matter.

7. Sample # 7

Locality: Center of Sec. 19, T. 16 N., R. 4 W.

Horizon: Just below the massive unit of "punky"-like, mottled and unevenly textured gray-buff dolomite.

Macroscopic description of sample: Fine-grained, even texture, compactly crystalline, fairly hard and tough, light brownish-gray color.

Description of residue: 3.32% insoluble. Clay: medium amount. The sand is composed dominantly of rounded, frosted, detrital, quartz grains varying from medium to fine. The fine grains are usually angular. There are a few green grains which are probably glauconite.

8. Sample # 9

Locality: S.W.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16 N., R. 5 W.

Horizon: Basal part of Lower Magnesian formation.

Macroscopic description of sample: Fine-grained, compact yellow color.

Description of residue: 1.96% insoluble. Clay: very large amount. 80% of the residue consists of fairly coarse to medium, rounded, frosted, colorless, detrital, quartz grains, and about 19% is fine-grained, colorless quartz. About 1% of the residue is composed of green grains which are probably glauconite.

9. Sample # 10

Locality: S.E.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16 N., R. 5 W.  
Horizon: Algal dolomite in basal part of the Lower Magnesian formation.

Macroscopic description of sample: Fine-grained, compact, clayey partings, dendritic, gray color.

Description of residue: 2.03% insoluble. Clay: very large amount. The sand contains dominantly fine, angular grains of feldspar and quartz. The feldspars are about equal to the amount of quartz and possess both albite and microcline twinning. The feldspars show no evidence of wear and are therefore probably authigenic. There are a few flakes of muscovite.

10. Sample # 11

Locality: S.E.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16 N., R. 5 W.  
Horizon: Oolitic dolomite in basal part of Oneota.

Macroscopic description of sample: Oolitic, loose texture, speckled gray color.

Description of residue: 6.98% insoluble. Clay: a trace. About 97% of the residue consists of medium sized, elliptical, frosted, detrital, quartz grains. About 3% is composed of fine quartz and muscovite. All the quartz is colorless.

11. Sample # 12

Locality: Center of Sec. 19, T. 16 N., R. 4 W.

Macroscopic description of sample: Uneven-textured, quite compact, pinkish color.

Description of residue: 2.54% insoluble. Clay: large amount. The sand is composed dominantly of coarse to medium, elliptical, frosted, colorless, detrital, quartz grains. About 10% of the residue is fine-grained quartz. There is a small amount of limonite.

12. Sample # 13

Locality: S.E.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16 N., R. 5 W.  
Horizon: Basal part of Oneota dolomite.

Macroscopic description of sample: Fine to coarse-grained, compact, firmly cemented, speckled green color.

Description of residue: 2.45% insoluble. Clay: large amount. The sand consists dominantly of medium to fine, elliptical, frosted, colorless, detrital, quartz sand, a few grains of which are brown. The residue contains two white chert fragments and a few green grains which are probably glauconite.

13. Sample # 15

Locality: S.E.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16 N., R. 5 W.

Macroscopic description of sample: The sample is composed dominantly of oolites about the size of a pin head. The specimen has a dirty gray color.

Description of residue: 0.76% insoluble. Clay: small amount. The sand is composed dominantly of medium to coarse, colorless, frosted, egg-shaped, detrital, quartz grains. There is some muscovite and a few green grains--probably glauconite.

14. Sample # 17

Locality: S.W.  $\frac{1}{4}$  of Sec. 14, T. 16 N., R. 5 W.

Horizon: Just below algal layer of coarse, salmon-colored rock.

Macroscopic description of sample: Fine-grained, compact, hard, tough, gray color.

Description of residue: 1.32% insoluble. Clay: a trace. The residue is composed dominantly of fine, angular, colorless sand. Feldspars are present, but the residue is mainly quartz. The feldspars possess microcline-type twinning as seen through the petrographic scope. The coarser quartz grains were somewhat rounded and frosted. Muscovite is also present but is not abundant.

15. Sample # 18

Locality: S.E.  $\frac{1}{4}$  of S.W.  $\frac{1}{4}$  of Sec. 25, T. 16, N., R. 5 W.

Macroscopic description of sample: Fine-grained, very firmly cemented, yellowish-gray color.

Description of residue: 29.18% insoluble. Clay: a large amount, dominantly coarse, rounded, frosted sand. There is a small amount of fine-grained sand. Some of the larger grains, as well as the fine, angular sand grains, which were rounded were found to be feldspar. The residue, however, is composed dominantly of quartz. There are a few green grains which are likely stained quartz.