

# MinIdent-Win - bustamite

Get a copy of MinIdent-Win at <http://www.micronex.ca/index.php?idx=10>

**Formula:** (Mn,Ca)<sub>3</sub>Si<sub>3</sub>O<sub>9</sub>

**Status:** Mineral name is IMA approved or traditional

**Level:** Species

**Parents:** inosilicates

**Symmetry:** Triclinic

**Mean Atomic Number:** 15.1

**Diffraction Values:** 2.920, 1.790, 3.450, 3.240, 3.040

**Kretz abbreviation:** Bst  
**First Described** in 1826

**Space Group:** P-1




**Z number:** 2

**ICDD (TM) Number:** 27-86

|        | Minimum | Maximum | Average | Std. Dev. |
|--------|---------|---------|---------|-----------|
| a (A)  | 7.730   | 7.736   | 7.733   |           |
| b (A)  | 7.157   | 7.180   | 7.169   |           |
| c (A)  | 13.824  | 13.840  | 13.832  |           |
| Alpha  | 89.567  | 90.517  | 90.042  |           |
| Beta   | 94.583  | 94.883  | 94.733  |           |
| Gamma  | 102.783 | 103.867 | 103.325 |           |
| Volume | 743.413 | 743.278 | 743.425 |           |

|               | Minimum | Maximum | Average | Std. Dev. |
|---------------|---------|---------|---------|-----------|
| n(Alpha)      | 1.640   | 1.695   | 1.678   | 0.018     |
| n(Beta)       | 1.651   | 1.708   | 1.689   | 0.018     |
| n(Gamma)      | 1.653   | 1.710   | 1.693   | 0.019     |
| Max. birefrin | 0.014   | 0.017   | 0.015   |           |
| 2V Gamma      | 120     | 150     | 139     |           |

**Optical Sign:** -ve

|            |   |                      |
|------------|---|----------------------|
| C(Alpha)   |   | Orange, Colourless   |
| C(Beta)    |  | Pale Red, Colourless |
| C(Gamma)   |  | Orange, Colourless   |
| Dispersion | V>R   |                      |

|         | Minimum | Maximum | Average | Std. Dev. |
|---------|---------|---------|---------|-----------|
| Mohs    | 5.5     | 6.5     | 6.0     |           |
| Vickers | 618     | 943     | 771     |           |
| Density | 3.09    | 3.46    | 3.31    | 0.14      |

|              | Total Min Wt (%) | Anal. Min Wt (%) | Average Wt (%) | Anal. Max Wt (%) | Total Max Wt (%) | Average Atomic | Coordination |
|--------------|------------------|------------------|----------------|------------------|------------------|----------------|--------------|
| H            | 0.0000           | 0.0000           | 0.0179         | 0.1444           | 0.1444           | 0.0655         |              |
| C            | 0.0000           | 0.0000           | 0.0092         | 0.1201           | 0.1201           | 0.0028         |              |
| O            | 36.6328          | 38.0383          | 38.9402        | 40.0587          | 40.0587          | 9.0000         |              |
| Na           | 0.0000           | 0.0000           | 0.0194         | 0.1261           | 0.1261           | 0.0031         |              |
| Mg           | 0.0000           | 0.0000           | 0.4247         | 1.1700           | 1.1700           | 0.0646         | 6            |
| Al           | 0.0000           | 0.0000           | 0.2911         | 1.0109           | 1.0109           | 0.0399         |              |
| Si           | 21.4181          | 21.4181          | 22.3921        | 23.3720          | 23.3720          | 2.9479         | 4            |
| P            | 0.0000           | 0.0000           | 0.0003         | 0.0044           | 0.0044           | 0.0000         |              |
| K            | 0.0000           | 0.0000           | 0.0351         | 0.4068           | 0.4068           | 0.0033         |              |
| Ca           | 0.0000           | 8.7479           | 15.5381        | 27.7733          | 27.7733          | 1.4336         | 6            |
| Ti           | 0.0000           | 0.0000           | 0.0166         | 0.1799           | 0.1799           | 0.0013         |              |
| Mn           | 0.9448           | 0.9448           | 18.7329        | 29.4991          | 41.9293          | 1.2609         | 6            |
| Fe           | 0.0000           | 0.1943           | 3.5024         | 7.3300           | 7.3300           | 0.2319         | 6            |
| Zn           | 0.0000           | 0.0000           | 0.0371         | 0.4258           | 0.4258           | 0.0021         |              |
| Ba           | 0.0000           | 0.0000           | 0.0200         | 0.1702           | 0.1702           | 0.0005         |              |
| <b>Total</b> |                  |                  | 99.9771        |                  |                  | 15.0576        |              |


Atomic proportions calculated for O = 9.0

# MinIdent-Win - bustamite

Get a copy of MinIdent-Win at <http://www.micronex.ca/index.php?idx=10>

Compilation based on 2 general and 13 sample records

*Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.*

|                       |   |
|-----------------------|---|
| <b>Lustre</b>         | Vitreous  |
| <b>Aggregation</b>    | Massive, Compact, Fibrous   |
| <b>Habit</b>          | Tabular, Acicular, Fibrous  |
| <b>Cleavage</b>       | {100} Perfect, {110} Good, {1-10} Good, {010} Poor  |
| <b>Surface Colour</b> |  Pale Orangeish Pink, Brownish Red |

| Comp. Plan. | Comp. Surf. | Twin Plane | Twin Axis | Notes |
|-------------|-------------|------------|-----------|-------|
|             |             | {110}      |           |       |

**Remarks:** Commonly massive, pale pink to brownish-red. Transparent to translucent with a vitreous lustre. Perfect cleavage.

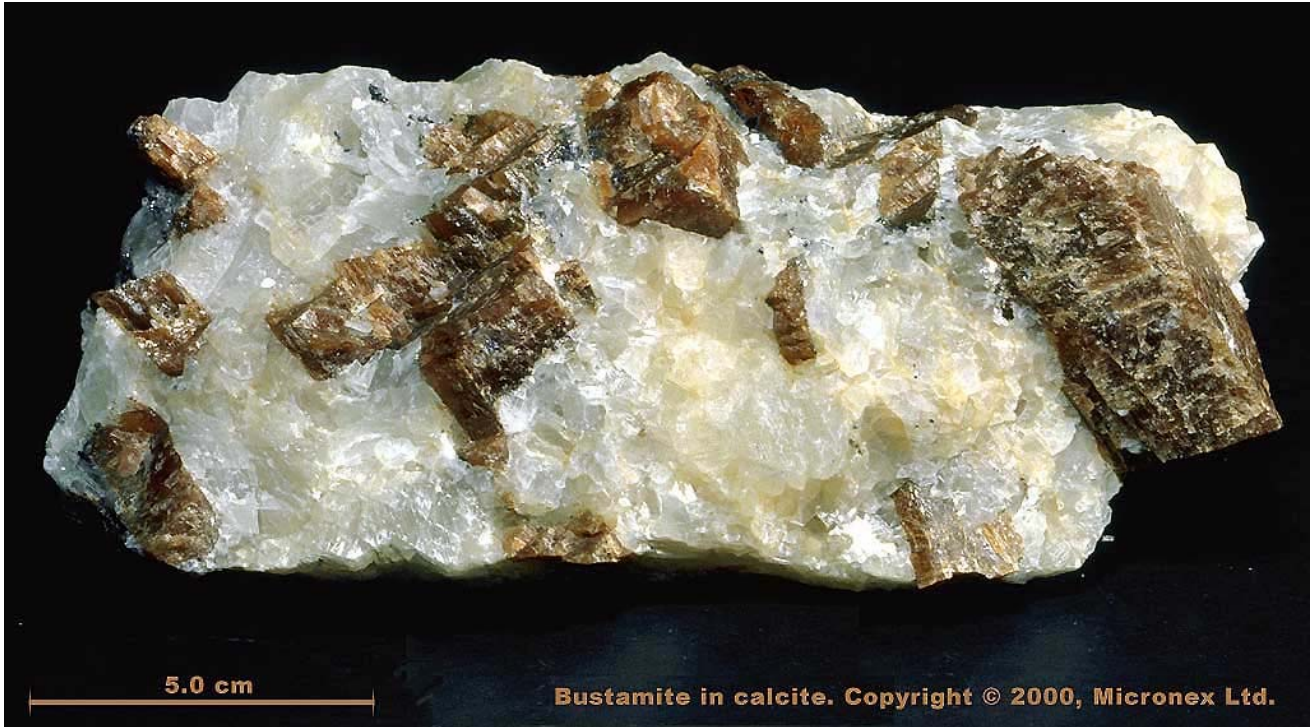
**Occurrences:** Typical of Mn-ore bodies, commonly as a result of metamorphism and metasomatism. Also in Skarn deposits. Often associated with minerals such as rhodonite, tephroite, calcite, etc.

**Localities of samples used in compilation:** Treburland manganese mine, Cornwall; Meldon Railway Quarry, Okehampton, Devonshire; England. Camas Malag, Skye, Scotland. Langban, Sweden. Revinella di Sotto, near Forno, Strona Valley, Novara, Italy. Franklin Furnace, N.J., U.S.A. Iwate Prefecture, Japan. Broken Hill, New South Wales, Australia.

**References:** Deer et al. (1963) v.2, p.191; (1978) v.2A, p.575.

# MinIdent-Win

## Bustamite in massive calcite



Dorian G.W. Smith

Copyright © 2000, Micronex Ltd.

**Caption:** Massive calcite showing its perfect cleavage and vitreous lustre is associated in this image with pinkish brown bustamite,  $(\text{Mn,Ca})\text{SiO}_3$ , and a little silvery grey galena. The calcite in this specimen shows bright pinkish-orange fluorescence in both short and long wavelength ultraviolet radiation, almost certainly reflecting the presence of minor amounts of manganese substituting in the calcite lattice. Locality: Broken Hill, New South Wales, Australia.

**Keywords:** bustamite; calcite; massive; vitreous; Broken Hill; New South Wales; Australia; Mohs' scale; pyroxenoids; chain silicates; inosilicates; hardness 3

**Acknowledgements:** From the personal collections of Dorian Smith. Photography by Frank Dimitrov and Dorian Smith.