

PHYSICAL & CHEMICAL PROPERTIES OF RAW AND DUGARLITE EXFOLIATED VERMICULITE

1. Density:	Raw Vermiculite	: 22 to 40 kg/Cft
	Expanded	: 1.6 to 4.5 kg/Cft
2. Incombustibility		: Can be used upto 1100° C
3. Sintering temperature		: 1260° C
4. Melting point		: 1300° C
5. Specific gravity		: 2.2 to 2.7
6. Hardness		: 1.5 to 3 on M.O.H's scale
7. pH value		: 7.0 {alkaline}
8. Expansion		: 10 to 20 times its original volume
9. Thermal Conductivity		: 0.053 to 0.056 at 70° C mean K Cal/m/hr/°C
10. Solubility		: Insoluble in water or organic solvent
11. Cation exchange		: 90 to 100 milli equivalents as per 100 gms
12. Water absorption retained by Expanded Vermiculite per Cu Ft.		: 10 to 12 litres of water
13. Water vapour absorption in relation to humidity:	Raw	: 2.6% By Weight
	Expanded	: 1% by Weight

stability and electrical properties is required. Muscovite and phlogopite are used in sheet and ground forms.

SILICA SAND is quartz that over time, through the work of water and wind, has been broken down into tiny granules. Commercial Silica Sand is widely used as a proppant by companies involved in oil and natural gas recovery in conventional and unconventional resource plays. The resource is also used in industrial processing to make everyday items such as glass, construction materials, personal care products, electronics, and even renewable materials.

OUR BUSINESS MODEL

We require Stockists/ Distributors in India and for exports. We can also assist to set up Start up Industry in your locality and offer Technical, Marketing and Financial support for the same. Young Entrepreneurs in the age group 25-35 years are welcome to join.

DUGAR INSULATIONS INDIA PRIVATE LIMITED, Dugar Towers, 7th Floor, 34(123), Marshalls Road, Egmore, Chennai – 600 008 AN ISO 9001:2008 CERTIFIED COMPANY

Mine owners and Manufacturers of Vermiculite Based Insulation Products, Feldspar, Quartz, Mica and also Silica Sand.

The Company have their Vermiculite Mines & Factories in the Gudur Mandal of SPSR Nellore District, Andhra Pradesh and in the Mysore District of Karnataka State. Their Factories supply to Agriculture, Horticulture and nursery units and other Industries like Brake-lining and refractories. The Company also supplies other Industrial Minerals and their products like Feldspar, Quartz, Mica and Silica Sand to other needy Industries.

VERMICULITE a group of hydrated, laminar brown to yellow Mica like minerals as altered biotite or phlogopite. After Exfoliation - heating to 900° Celsius or higher, crude vermiculite ore expands eight to 20 times larger into a lightweight material, chemically inert and fire resistant.

FELDSPAR: an abundant mineral occurring as colourless or pale-coloured crystals. Feldspar is a common raw material used in glassmaking, CERAMICS and CERAMIC TILES, as a filler and extender in paint, plastics, and rubber. In glassmaking, alumina from feldspar improves product hardness, durability, and resistance to chemical corrosion.

QUARTZ: Quartz is one of the most well-known minerals and is the important constituent of many rocks occurring in all different forms, habits, and colors. There are more variety names given to Quartz than any other mineral. It is used in Glass making and Ceramics

MICA: The mica group of sheet silicate (phyllosilicate) minerals .The commercially important micas are muscovite and phlogopite, which are used in a variety of applications. The crystalline structure of mica forms layers that can be split or delaminated into thin sheets. It has superior electrical properties as an insulator. Muscovite, the principal mica used by the electrical industry, is used in capacitors that are ideal for high frequency and radio frequency. Phlogopite mica is used in applications in which a combination of high-heat

National Terminal Complex, Madras Roof insulated with DUGAR INSULSET ROOF INSULATION



DUGAR masonry fill

Dugarlite goes overseas



DUGAR

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Mine Owner
and Manufacturers of
Mineral Products



VERMICULITE
THE WONDER MINERAL

FELDSPAR
THE CERAMIC CRUX

QUARTZ
THE ROCK CRYSTAL

MICA
THE GLITTERS

SILICA SAND
THE GLASS SAND



DUGAR

INSULATIONS INDIA PRIVATE LIMITED

DUGARLITE

EXFOLIATED VERMICULITE

The expanded or exfoliated Vermiculite is Dugarlite, the wonder mineral ore expands up to 20 times its original size into a lightweight, chemically inert and fire resistant material. It is used in many industries. Dugarlite is exfoliated in our modern expanding unit at a temperature ranging from 400°C - 1000°C. The



Raw Vermiculite



Exfoliated Vermiculite

expanded vermiculite which takes on a golden or bronze hue has a smooth lustrous surface that reflects heat. One tonne of Dugarlite covers an area of 4000 sq.ft. appx and a depth of one inch.

ADVANTAGES:

- Dugarlite is
- Light in weight
- Non-corrosive
- Free flowing
- Non conductor of electricity
- Odourless
- Acid-resistant
- Chemically Inert
- Non abrasive
- Reflective
- Non-toxic
- Highly Hygroscopic
- Low thermal conductivity
- Vermin, termite, moth and rodent proof
- Insoluble in water & organic solvents

- Resistance to heat penetration
- High thermal insulation.
- Asbestos Free

USES:

- As a filler in paints, plastics and printing ink
- Manufacture of insulation bricks and castables
- In chemical packing
- As oil spill absorbents
- As lubricants in oil drilling
- Core wash in foundry
- Sealants in underground mines
- In steel melting ladles and zinc baths.
- At the base of railway coaches for anti-corrosion and anti-vibration.

CONSTRUCTION:

- Thermal insulation of roofs in buildings.
- Acoustical insulation
- Insulation of air conditioning ducts.
- Masonry filling of hollow bricks.
- Wall plaster aggregates
- Decoration medium.

HORTI AGRI-CULTURAL

- Water retention medium
- Seed coverings
- Anti-cracking agent
- Floral arrangements
- Water Purification
- Soilless potting
- Bulb storage
- Fertilizer

ANIMAL FEED

Grades available: -7+4, -4+2, -2+1 and -1+0.5 and other finer grades are available on request.

Packing : Done in polythene lined gunny bags / **New HDPE bags:** Nett weight 10 kg. each for Exfoliated Vermiculite.

Raw Vermiculite : 30 – 50 kg. each bag.

DUGAR INSULSET REFRACTORY INSULATION

Selected grades of Dugarlite expanded vermiculite mixed with special binders is marketed by Dugar as Dugar insulet Refractory insulation – a ready to use compound which finds application in ovens, roofs, hot pipes, ducts, flues,



chimney base and furnaces.

The superior adhesive property of this refractory insulation makes it stick easily to metallic or any other surface. Also, it could be poured (pourable insulation) in between walls or where accessibility is difficult. It could be also casted at site (castable insulation)

USES:

- An ideal light weight insulating cement to plug and arrest radiation loss for effective fuel conservation.
- An alternative to insulation grog, with better performance.
- A dense variety is used for preparation of floor bed or furnance and chimneys to prevent heat transmission.

Packing: Done in polythene line gunny bags or new bags of 25 kgs each.

DUGAR INSULATE

Special graded Dugarlite (Expanded Vermiculite) mixed with suitable binder could be casted or moulded in any shape. These shaped bricks are 'Dugar Insulate'-manufactured as per BIS 2042.

PROPERTIES OF DUGAR INSULATE:

- Light in weight
- No shrinkage
- Low density



- Low thermal conductivity
- High porosity

USES:

- As back up or cold face insulation bricks in industry to arrest heat radiation and facilitate fuel conservation
- Saves fuel cost by 30%approximately
- Increases furnace life.
- In kilns, chimneys, flues, boilers, cold storage walls etc.

Standard available size:

- 1) 230 x 114 x 75/65/50/40/25 mm
- 2) 250 x 123 x 75/65/50/40/25 mm
- 3) 500 x 170 x 75/65/50/40/25 mm

Other sizes of bricks, blocks, plates shapes, etc are tailor made on request.

DUGARLITE HORTICULTURAL VERMICULITE

Appropriate grade of Dugarlite expanded vermiculite after careful selection and blending finds use as a medium for the faster growth and survival of roots, plants, bulbs, cutting etc.

PROPERTIES OF DUGARLITE HORTICULTURAL VERMICULITE:

- Hygroscopic
- Minimises evaporation loss of water
- Does not decompose, decay or rot
- Permanent
- Odourless
- Non-toxic and sterile
- The pH is essentially neutral but owing to the presence of associated carbonate compounds, the reaction is normally alkaline.
- Light in weight
- Easy to handle
- Easily mixes with any soil, peat, fertilizers, pesticides and herbicides.



USES:

- An excellent germinating medium
- Medium for starting weeds and cuttings
- Soil conditioning
- Transplanting
- As a mulch around shrubs, roses, tomatoes, dalias and garden plants
- For greener, healthier lawns
- Roof gardens
- Fertilizer – carrier
- For home-floral arrangements
- Lightens and aerates any soil, breaks up heavy clay soil and permits sandy soil to hold moisture
- A carrier and bulking agent
- Promotes faster root growth and gives quick anchorage to young roots.
- Doesn't absorb moisture from the inside of stored tubers, but takes up free water from outside, thus preventing storage rot.

DUGAR INSULSET ROOF INSULATION

Dugar insulset Roof Insulation Ready Mix consists of selected grades of Dugarlite mixed with binders and additives to be poured directly on the R.C.C. Roof for thermal insulation of buildings.

It is inexpensive, permanent, simple and quick to lay and an ideal thermal insulation material for buildings that are centrally or partially air-conditioned as well as computer rooms. It is manufactured as per ASTM standards C-196 -83 and confirms to IS 6598 – 72.

Coverage: 100 sq.ft. area requires 350 kgs of dry mix for an average thickness of 3". Alternatively 1 sq. mt. of 3" thickness requires approximately 35 kgs of dry mix.

ADVANTAGES:

- Termite, moth, vermin and rodent proof
- Fire proof
- Non corrosive and non conductor of electricity
- It's 30 times more cooling than bricks and 45 times more effective than concrete in insulating value.

- 1" of Dugar Insulset Roof insulation is equal to 20" of regular concrete in insulating value.
- It's as good as foam concrete/cellular concrete \ thermal insulation.
- Versatile and easy to apply on any base or surface
- Keeps the building cool in summer and warm during winter.



USES:

- Thermal insulation of roofs against heat
- Light weight concrete for filling
- Over corrugated A.C. Roofs for thermal insulation against heat
- Floors of computer rooms, cold storage rooms, battery rooms in steel plants and floors of swimming pools
- Denser mix is used on the bed of furnances/kilns/chimneys for arresting dissipation of heat.

Packing: Second hand/new HDPE Bags
Weight: 25 kg nett in each bag.

CHEMICAL ANALYSIS OF VERMICULITE

Si O ₂	40.50%
Fe ₂ O ₃	10.50%
Ti O ₂	0.80%
Al ₂ O ₃	18.50%
MgO	12.50%
K ₂ O	2.25%
Na ₂ O	3.50%
LOI	5.00%

Note: Chemical analysis of crude and exfoliated vermiculite is the same except L.O.I