LabIR® Paint
Thermographic paint for high temperature
HERP-HT-MWIR-BK-11

Special thermographic spray paint with high emissivity and high mechanical resistance for long-term applications to high temperature up to 1 000 °C. Precisely defined physical properties and emissivity dependence on the wavelength, viewing angle of an infrared camera and temperature of the measured surface allow accurate results of the non-contact temperature measurement.

- **Colour:** black
- **Volume:** 400 ml
- **Yield of paint:** 0.3 m^2

Properties
We can guarantee all mentioned thermographic paint properties only if you follow the instructions for using the paint that are introduced the website:
https://paints.labir.eu/homepage/thermographic-paint-for-high-temperature-applications
Thermographic spray paint for high-temperature applications is not primarily intended for cyclic thermal loading.

Optical properties – emissivity
- use effective emissivity for non-contact measurement of surface temperature using an infrared camera
- comply with effective emissivity for correct angle of measurement and correct surface temperature
- effective emissivity is valid for infrared cameras operating in the wavelength range 7.5 – 13 μm

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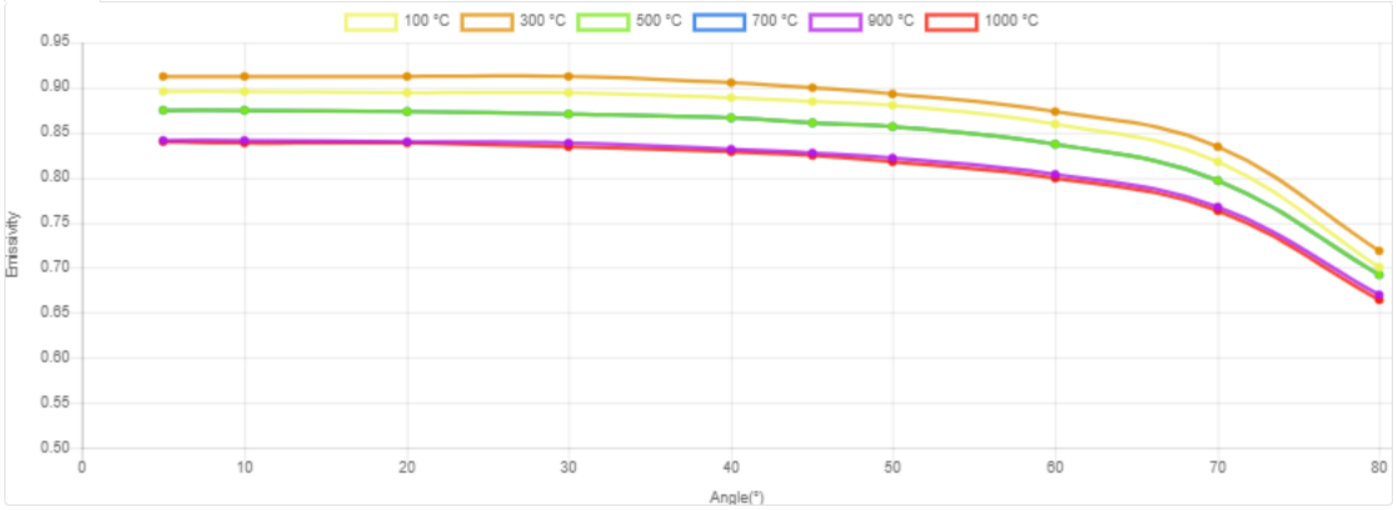
Directional dependence of effective emissivity for selected temperatures for band 7.5 – 13 µm (resp. for infrared camera FLIR A615)

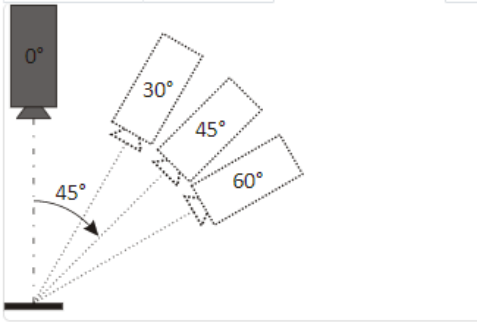
Graph | Table | Diagram



Graph | Table | Diagram

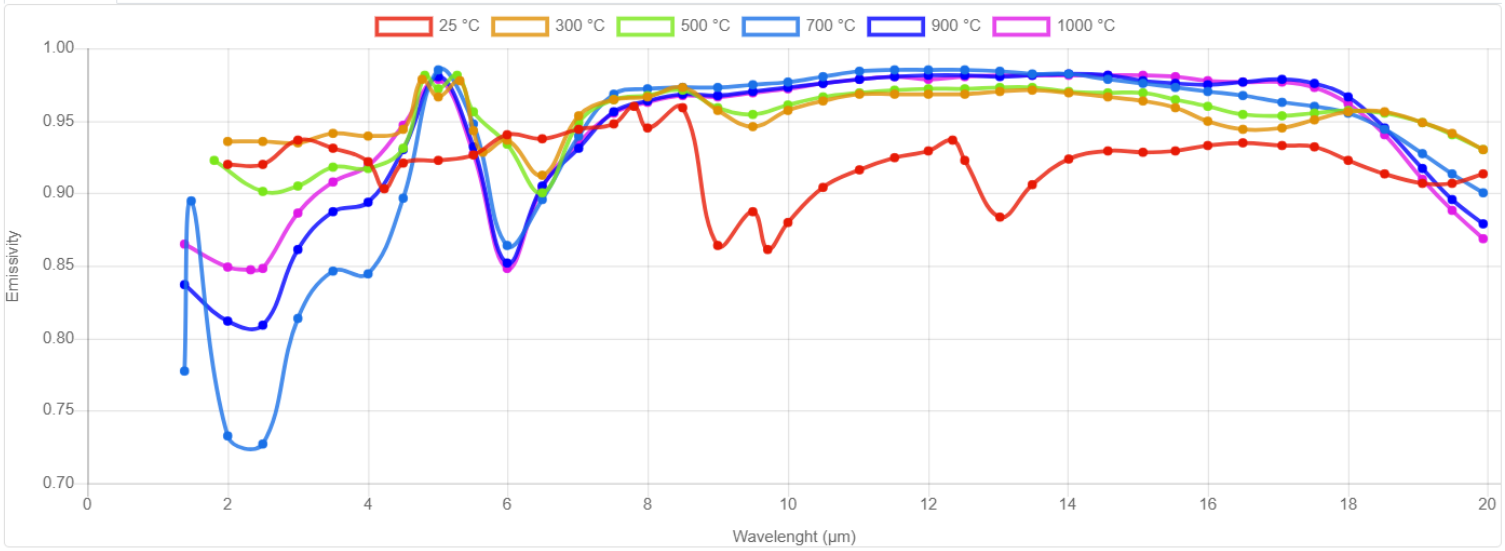
Angle (°)	Emissivity (100 °C)	Emissivity (300 °C)	Emissivity (500 °C)	Emissivity (700 °C)	Emissivity (900 °C)	Emissivity (1000 °C)
5	0.895	0.912	0.875	0.875	0.842	0.840
10	0.895	0.912	0.875	0.875	0.842	0.839
20	0.894	0.912	0.874	0.874	0.840	0.838
30	0.894	0.912	0.871	0.871	0.838	0.834
40	0.889	0.905	0.866	0.866	0.832	0.829
45	0.884	0.900	0.861	0.861	0.828	0.824
50	0.880	0.893	0.856	0.856	0.822	0.818
60	0.860	0.874	0.837	0.837	0.804	0.800
70	0.817	0.835	0.797	0.797	0.768	0.764
80	0.701	0.719	0.692	0.692	0.670	0.664

Graph | Table | Diagram



Spectral dependence of normal emissivity for selected temperatures

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)



Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

Wavelenght (µm)	Emissivity
19.94	0.913
19.49	0.907
19.06	0.907
18.52	0.913
18.01	0.923
17.52	0.932
17.06	0.933
16.51	0.935
16.00	0.933
15.53	0.929
15.07	0.928
14.57	0.929
14.02	0.924
13.50	0.906
13.03	0.884
12.53	0.923
12.35	0.937

12.00	0.929
11.52	0.925
11.03	0.916
10.50	0.904
10.01	0.880
9.71	0.861
9.50	0.887
9.00	0.864
8.50	0.959
8.00	0.945
7.81	0.960
7.52	0.948
7.01	0.944
6.50	0.938
6.00	0.940
5.51	0.926
5.00	0.923
4.50	0.921
4.24	0.903
4.00	0.922
3.50	0.931
3.00	0.937
2.50	0.920
2.00	0.920

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

Wavelenght (µm)	Emissivity
19.94	0.930
19.49	0.941
19.06	0.949
18.52	0.956
18.01	0.956
17.52	0.951
17.06	0.945
16.51	0.944
16.00	0.950
15.53	0.959
15.07	0.964
14.57	0.966
14.02	0.969
13.50	0.971
13.03	0.970
12.53	0.968
12.00	0.968
11.52	0.968
11.03	0.968
10.50	0.964
10.01	0.957
9.50	0.946
9.00	0.957
8.50	0.973
8.00	0.966
7.52	0.965
7.01	0.953
6.50	0.912
6.00	0.937
5.64	0.928
5.51	0.943
5.32	0.978
5.00	0.966
4.78	0.979
4.50	0.944
4.00	0.939
3.50	0.941
3.00	0.935
2.50	0.936
2.00	0.936

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

Wavelenght (µm)	Emissivity
19.94	0.930
19.49	0.940
19.06	0.949
18.52	0.955
18.01	0.957
17.52	0.955
17.06	0.953
16.51	0.954
16.00	0.960
15.53	0.965
15.07	0.969
14.57	0.969
14.02	0.970
13.50	0.973
13.03	0.973
12.53	0.972
12.00	0.972
11.52	0.971
11.03	0.969
10.50	0.966
10.01	0.961
9.50	0.954
9.00	0.959
8.50	0.971
8.00	0.967
7.52	0.965
7.01	0.949
6.50	0.900
6.00	0.934
5.51	0.956
5.28	0.981
5.00	0.972
4.81	0.981
4.50	0.931
4.00	0.917
3.50	0.918
3.00	0.905
2.50	0.901
1.80	0.923

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

Wavelenght (µm)	Emissivity
19.94	0.900
19.49	0.913
19.06	0.927
18.52	0.944
18.01	0.955
17.52	0.960
17.06	0.963
16.51	0.967
16.00	0.970
15.53	0.973
15.07	0.976
14.57	0.979
14.02	0.982
13.50	0.982
13.03	0.984
12.53	0.985
12.00	0.985
11.52	0.985
11.03	0.984
10.50	0.980
10.01	0.977
9.50	0.975
9.00	0.973
8.50	0.973
8.00	0.972
7.52	0.968
7.01	0.939
6.50	0.896
6.00	0.864
5.51	0.948
5.00	0.985
4.50	0.897
4.00	0.844
3.50	0.846
3.00	0.814
2.50	0.727
2.00	0.733
1.47	0.895
1.38	0.777

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

Wavelenght (µm)	Emissivity
19.94	0.879
19.49	0.896
19.06	0.917
18.52	0.945
18.01	0.966
17.52	0.976
17.06	0.979
16.51	0.977
16.00	0.975
15.53	0.976
15.07	0.978
14.57	0.981
14.02	0.982
13.50	0.981
13.03	0.980
12.53	0.981
12.00	0.981
11.52	0.980
11.03	0.979
10.50	0.976
10.01	0.973
9.50	0.970
9.00	0.967
8.50	0.968
8.00	0.964
7.52	0.956
7.01	0.931
6.50	0.905
6.00	0.852
5.51	0.932
5.00	0.980
4.50	0.930
4.00	0.894
3.50	0.887
3.00	0.861
2.50	0.809
2.00	0.812
1.38	0.837

Graphs | Table (25 °C) | Table (300 °C) | Table (500 °C) | Table (700 °C) | Table (900 °C) | Table (1000 °C)

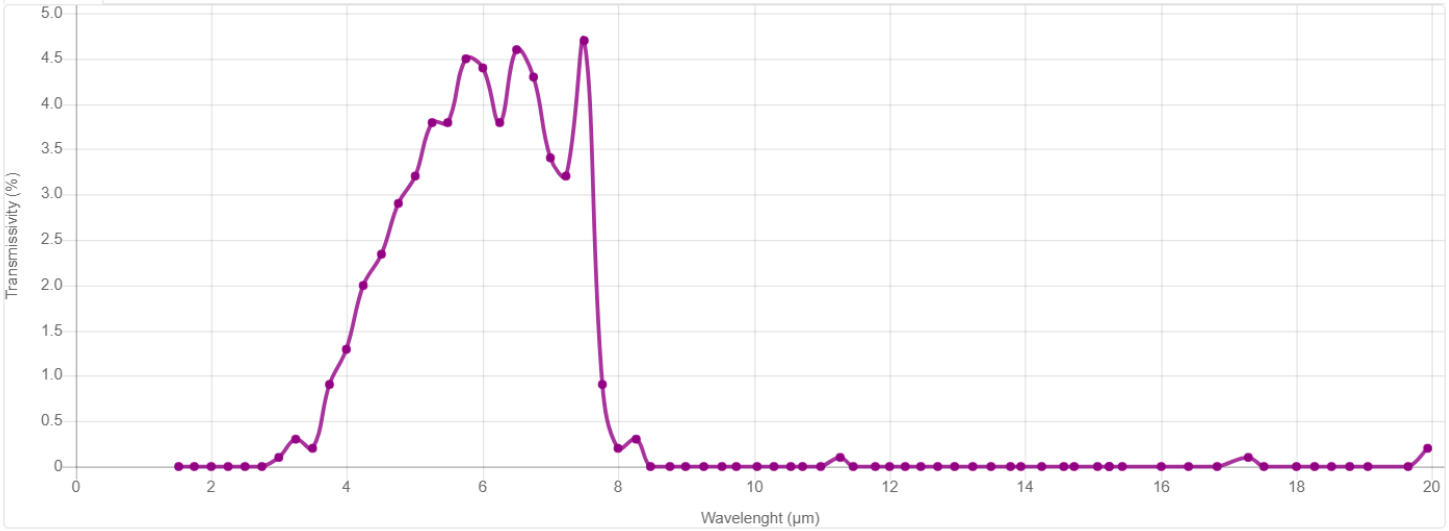
Wavelenght (µm)	Emissivity
19.94	0.869
19.49	0.888
19.06	0.910
18.52	0.940
18.01	0.962
17.52	0.973
17.06	0.977
16.51	0.977
16.00	0.978
15.53	0.980
15.07	0.981
14.57	0.981
14.02	0.981
13.50	0.981
13.03	0.981
12.53	0.980
12.00	0.979
11.52	0.980
11.03	0.979
10.50	0.976
10.01	0.972
9.50	0.969
9.00	0.966
8.50	0.967
8.00	0.963
7.52	0.955
7.01	0.935
6.50	0.904
6.00	0.848
5.51	0.927
5.00	0.979
4.50	0.947
4.00	0.919
3.50	0.908
3.00	0.886
2.50	0.848
2.32	0.847
2.00	0.849
1.38	0.865

Optical properties - transmissivity

- band transmissivity up to 1.2 % in the wavelength band 7.5 – 13 µm (commonly used infrared cameras) at room temperature

Spectral dependence of transmissivity at room temperature

Graph Table



Graph Table

Wavelenght (µm)	Transmissivity (%)
1.52	0.0
1.75	0.0
2.00	0.0
2.25	0.0
2.50	0.0
2.75	0.0
3.00	0.1
3.25	0.3
3.50	0.2
3.75	0.9
4.00	1.3
4.25	2.0
4.50	2.3
4.75	2.9
5.01	3.2
5.25	3.8
5.49	3.8
5.76	4.5

6.00	4.4
6.26	3.8
6.51	4.6
6.75	4.3
7.00	3.4
7.24	3.2
7.49	4.7
7.76	0.9
8.00	0.2
8.26	0.3
8.47	0.0
8.76	0.0
9.00	0.0
9.26	0.0
9.53	0.0
9.75	0.0
10.05	0.0
10.29	0.0
10.54	0.0
10.71	0.0
10.99	0.0
11.27	0.1
11.47	0.0
11.79	0.0
12.00	0.0
12.23	0.0
12.47	0.0
12.71	0.0
12.96	0.0
13.23	0.0
13.50	0.0
13.79	0.0
13.94	0.0
14.25	0.0
14.57	0.0

14.73	0.0
15.07	0.0
15.25	0.0
15.43	0.0
15.25	0.0
16.00	0.0
16.41	0.0
16.84	0.0
17.29	0.1
17.52	0.0
18.01	0.0
18.26	0.0
18.52	0.0
18.79	0.0
19.06	0.0
19.64	0.0
19.94	0.2

Thermal conductivity

- 0.52 W/mK (100°C)
- 0.50 W/mK (300°C)
- 0.67 W/mK (500°C)
- 2.05 W/mK (700°C)

Other properties

- Coating thickness 150 µm (according to recommended application)
- Coating roughness Ra = 3.5 µm, Rz = 25 µm

Chemical composition

Propane, butane, hydrocarbons, isobutane, C6, Isoalkane, ethylbenzene, butan-1-ol, cyclohexane.

Warning

H222-H229 Extremely flammable aerosol. Pressurised container: May burst if heated. H315 Causes skin irritation. H319 Causes serious eye irritation. H336 May cause drowsiness or dizziness. H411 Toxic to aquatic life with long lasting effects. P101 If medical advice is needed, have product container or label at hand. P102 Keep out of reach of children. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P211 Do not spray on an open flame or other ignition source. P251 Do not pierce or burn, even after use. P260 Do not breathe spray. P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F. P501 Dispose of contents / container in accordance with regional regulations. Buildup of explosive mixtures possible without sufficient ventilation. Contains: Hydrocarbons.