

# MAGNUM 3404

## Natural Plus ABS Resins

The mass (continuous process) ABS technology of Dow ensures an ABS resin that combines excellent processability with a stable light base colour that is ideal for self-colouring.

MAGNUM\* 3404 is an excellent general purpose extrusion/thermo-forming resin with outstanding processability.

### Applications

- Transportation
- Sanitary ware
- Leisure

Properties <sup>(1)</sup>	Test Method			Value	
	ISO	ASTM	DIN		
Physical Properties					
Density, kg/m <sup>3</sup>	1183B	D-792-B	53479-B	1050	
Bulk density, kg/m <sup>3</sup>	60	D-1895	53468	650	
Melt flow rate (230 °C/3.8 kg), g/10 min.	1133	D-1238	53735-N	1.8	
(220 °C/10 kg), g/10 min.	1133	D-1238	53735-U	5.5	
Thermal Properties					
Vicat softening point (50 °C/h, 5 kg), °C	306B	D-1525-A	53460	100	
Vicat softening point (120 °C/h, 1 kg), °C	306A	D-1525-B		110	
HDT, annealed (120 °C/hr, 1.82 MPa), °C	75/A	D-648	53461-A	101	
Mechanical Properties					
Charpy notched, kJ/m <sup>2</sup>	23 °C	179/2C	53453	13	
	0 °C	179/2C	53453	11	
	−20 °C	179/2C	53453	10	
	−40 °C	179/2C	53453	8	
Charpy notched, kJ/m <sup>2</sup>	23 °C	179/1eA	53453	16.5	
	−30 °C	179/1eA	53453	9	
Charpy unnotched, kJ/m <sup>2</sup>	23 °C	179/1eU	53453	no break	
	−30 °C	179/1eU	53453	no break	
Izod notched, kJ/m <sup>2</sup>	23 °C	180/1A		22	
Tensile yield, 100 mm/min., MPa	DIS527/D	D-638-M	53455-6-3	46	
Tensile elongation, %	DIS527/D	D-638-M	53455-6-3	40	
Tensile modulus, 1 mm/min., MPa	DIS527/A		53455-t-3	2200	
Flexural strength, 1 mm/min., MPa	178	D-790-M	53452	70	
Flexural modulus, 3 point, MPa	178	D-790-M-A	53457-B3	2150	
Flexural modulus, 4 point, MPa		D-790-M-B	53457-B4	2200	
Shear modulus, MPa	23 °C	537	D-4065	53445	880
Rockwell hardness, R-scale	2039/2	D-785B		85	
Ball indentation	2039		53456	100	
Flammability Ratings					
Flame class rating <sup>(2,3)</sup>	all colours			HB	
Special Properties					
UV stability, 300 hrs <sup>(4)</sup>					

(1) Typical properties, not to be construed as specification limits.

(2) This numerical flame-spread rating is not intended to reflect hazards presented by material under actual fire conditions.

(3) UL ratings are given for the density reduction range 0–15 % (see UL listing for details).

(4) UV stability is colour-dependent.

## Safety and Handling Considerations

Material Safety Data (MSD) sheets for MAGNUM ABS resins are available from Dow Plastics, a business group of The Dow Chemical Company and its subsidiaries. MSD sheets are provided to help customers satisfy their own handling, safety and disposal needs, and those that may be required by locally applicable health and safety regulations such as OSHA (USA), MAK (Germany) or WHMIS (Canada). MSD sheets are upgraded regularly, therefore, please request and review the most current MSD sheet before handling or using any product.

The following comments are general and apply only to MAGNUM ABS resins as supplied. Various additives and processing aids used in fabrication and other materials used in finishing steps have their own safe use profile and must be investigated separately.

### Hazards and Handling Precautions

MAGNUM ABS resins have a very low degree of toxicity and under normal conditions of use should pose no unusual problems from ingestion, eye or skin contact. However, caution is advised when handling, storing, using or disposing of these resins and good housekeeping and controlling of dusts are necessary for safe handling of product. Workers should be protected from the possibility of contact with molten resin during fabrication.

Handling and fabrication of plastic resins can result in the generation of vapours and dusts. Dusts resulting from sawing, filing and sanding of plastic parts in post-moulding operations may cause irritation to eyes and upper respiratory tract. In dusty atmospheres, use an approved dust respirator. Granules or beads may present a slipping hazard. Good general ventilation of the polymer processing area is recommended. Processing may release fumes which may include polymer fragments and other decomposition products. Fumes can be irritating. At temperatures exceeding melt temperature, polymer fragments can occur. Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Use safety glasses. If there is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles. If vapour exposure causes eye discomfort, use a full-face respirator. No other precautions other than clean body-covering clothing should be needed for handling MAGNUM ABS resins. Use gloves with insulation for thermal protection, when needed.

### Combustibility

MAGNUM ABS resins will burn, and once ignited, may burn rapidly under the right conditions of heat and oxygen supply. Do not permit dust to accumulate. Dust layers can be ignited by spontaneous combustion or other ignition sources. When suspended in air, dust can pose an explosion hazard. Dense black smoke is produced when product burns. Toxic fumes are released in fire situations. Fire fighters should wear positive-pressure, self-contained breathing apparatus and full protective equipment. Water or water fog are the preferred extinguishing media. Foam, alcohol resistant foam, carbon dioxide, or dry chemicals may also be used. Soak thoroughly with water to cool and prevent re-ignition.

### Disposal

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. For unused or uncontaminated material, the preferred options include sending to a licensed recycler, reclaim, incinerator or other thermal destruction device. For used or contaminated material, the disposal options remain the same, although additional evaluation is required (see, for example, in the USA 40 CFR, Part 261, "Identification and Listing of Hazardous Waste"). All disposal methods must be in compliance with Federal, State/Provincial and local laws and regulations.

As a service to its customers, Dow can provide lists of companies which recycle, reprocess, or manage chemicals or plastics, and companies that manage used drums. Contact the nearest Dow sales office for further details.

### Environment

Generally speaking, in the environment lost pellets are not a problem except under unusual circumstances – when they enter the marine environment. They are inert and benign in terms of their physical environmental impact, but if ingested by waterfowl or aquatic life, they may mechanically cause adverse effects. Spills should be minimised and they should be cleaned up when they happen. Plastics should not be discarded into the ocean or any other body of water.

### Product Stewardship

The Dow Chemical Company has a fundamental concern for all who make, distribute and use its products, and for the environment in which we live. This concern is the basis of our Product Stewardship philosophy by which we assess the health and environmental information on our products and then take appropriate steps to protect employee and public health and the environment. Our Product Stewardship programme rests with every individual involved with Dow products from the initial concept and research to the manufacture, sale, distribution, and disposal of each product.

### Customer Notice

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## Medical Application Policy

Dow will not knowingly sell or sample any products into any commercial or developmental application which is intended for:

- Long term contact with internal body fluids or internal body tissues. [Long term is a use which exceeds 72 continuous hours (except 30 days for PELLETHANE\* polyurethane elastomers)];
- Use in cardiac prosthetic devices regardless of the length of time involved (cardiac prosthetic devices include, but are not limited to, pace-maker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems and ventricular bypass assisted devices);
- Use as a critical component in medical devices that support or sustain human life; or

- Use specifically by pregnant women or in applications designed specifically to promote or interfere with human reproduction.

In addition, for Dow Engineering Plastics products, new business opportunities require a business assessment prior to sale or sampling Dow products.

Authorised distributors and resellers will adhere to the Engineering Plastics Business medical policy.

The Engineering Plastics business does not endorse or claim suitability of their products for specific medical applications. It is the responsibility of the medical device or pharmaceutical manufacturer to determine that the Dow product is safe, lawful

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